

**IDK** 2020

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9<sup>th</sup> Interdisciplinary Doctoral Conference

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**IX. INTERDISZCIPLINÁRIS DOKTORANDUSZ  
KONFERENCIA 2020  
ABSZTRAKTKÖTET**

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CONFERENCE 2020  
BOOK OF ABSTRACTS**

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*Elnöki köszöntő*

Kedves Doktoranduszok, Doktorjelöltek és Fiatal Kutatók!

Nagy szeretettel köszöntelek Benneteket az IX. Interdiszciplináris Doktorandusz Konferencia Absztraktkötetének hasábjain.

Immáron nyolc éve, hogy a Doktorandusz Önkormányzat első alkalommal megrendezte ezt az eseményt, amely az elmúlt évek alatt szervezetünk egyik zászlóshajójává vált. Úgy gondolom szervezetünk büszke lehet arra, hogy az elmúlt közel egy évtized alatt több száz doktorandusz és fiatal kutató tudományos előrehaladásához és szakmai fejlődéséhez járulhatott hozzá. A rendezvény sikerét mi sem bizonyítja jobban, hogy a résztvevők száma évről-évre növekedett. Az idei évben közel 400 résztvevő gondolta úgy, hogy megtisztelti rendezvényünket jelenlétével és érdemesnek találja a konferenciát arra, hogy legújabb kutatási eredményeit bemutassa.

Úgy gondolom, hogy a magas résztvevői szám azt is szemlélteti, hogy a különböző hallgatói kezdeményezéseknek, hallgatók által szervezett konferenciáknak és rendezvényeknek rendkívül magas létjogosultsága van hazánkban. Kiemelkedően az ilyen nehéz időkben, amikor a hallgatóknak minden lehetőséget meg kell ragadniuk, hogy doktori tanulmányaikat befejezzék, tapasztalatot és tudást gyűjtsenek. Ehhez próbálunk meg hozzájárulni rendezvényünkkel, amely reményeink szerint az elkövetkezendő két napban minden kedves résztvevőnk számára sikereket fog hozni.

Ezúton szeretnék köszönetet mondani a konferencia résztvevőinek, kívánok szakmai sikereket az elkövetkezendő két napra és szeretettel várunk jövőre is mindenkit a X. Jubileumi Interdiszciplináris Doktorandusz Konferenciára.

Üdvözlettel,



Závodi Bence

*elnök*

*Pécsi Tudományegyetem  
Doktorandusz Önkormányzat*

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*Presidential Welcome Speech*

Dear Doctoral Students, Doctoral Candidates, and Young Researchers,

I warmly welcome you on the pages of the 9<sup>th</sup> Interdisciplinary Doctoral Conference's Book of Abstracts.

Eight years have passed since Doctoral Student Association firstly organized this event which has become the flagship of our organization. I believe we can be proud because we have contributed to the scientific advancement and professional development of hundreds of doctoral students and young researchers over the past nearly a decade. The success of the event is evidenced by the fact that the number of participants has increased year by year. This year nearly 400 participants thought they would honour our event with their presence and find the conference worthwhile to present their latest research findings.

I think that the high number of participants also illustrates that various student initiatives, conferences, and events organized by students have an extremely high legitimacy in Hungary. Especially in such difficult times, when students must seize every opportunity to complete their doctoral studies, gain experience and knowledge. We will try to contribute to this with our event, which we hope will bring success to all our dear participants in the next 2 days.

I would like to thank all the participants of the conference; I wish them professional success for the next two days and we look forward to seeing you next year at the 10<sup>th</sup> Anniversary Interdisciplinary Doctoral Conference.

Best regards,



Bence Závodi  
*president*  
*Doctoral Student Association*  
*University of Pécs*

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# **Kommunikáció és nyelvtudományok I.**



# **Communication and linguistics I.**



## Multilingualism and its impact on Tunisians' identities

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Language has been for a long time viewed as an identification insignia providing one of the best telling clues for people's identity and where they belong. Exploring issues of identity can be extremely complex, and necessitates engagement with a wide range of different fields that have explored the notion of identity in different ways. This relationship between language and identity is symbiotic and it is enormously supported in the recent literature [1,2,3,4,5]. The current study considers the phenomenon of multilingualism among Tunisian adults of 19-25 years of age. It explores whether multiple language acquisition has any impact on identity. It supports the idea that multilingualism carries implications for identity because of the characteristics of spoken languages. We chose to work with our theme in a mixed-methods research manner. For that, two materials have been used: a survey questionnaire and an interview. We expected to find multilingualism reflecting a conscious association between language and identity. However, we found different perspectives. Although Tunisians hold a positive attitude towards multilingualism and its advantages in general, only some of them have associated their ability to speak different languages with the fact of having separate identities. They believe that the coexistence of their languages is a defining characteristic of Tunisia. They did indicate considerations of how multilingualism shaped their thinking and attitudes.

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*Keywords: multilingualism, identity, multilinguality, multilingual identity*

## Identification of American-English pure vowels by Iranian monolingual and bilingual EFL learners compared to American native listeners

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**Introduction:** We aim to describe and predict pronunciation problems for Iranian learners of English as a foreign language (EFL). EFL speakers typically have an accent that is reminiscent of the learner's native language [1], which may compromise their intelligibility [2]. We map out the mental conception of the American-English monophthongs (the pure vowels /i: ɪ, e:, ε, æ:, ʌ, ɑ:, ɔ:, o:, ʊ, u:/ [3]) in terms of vowel quality and duration of two groups of adolescents in Iran. These were either monolingual speakers of Persian (an Indo-European language with three front and three back vowels: /i, e, æ, u, o, ʌ/, [4]) or bilingual speakers of Persian and Azeri (a Turkic language with three additional central vowels: /y, ɯ, œ/ [5]).

**Method:** We developed a set of 43 reference vowel sounds synthesized in an /m\_ f/ context at perceptually equal distances of 1 Bark along the height (F1, 7 steps) and backness/roundness (F2, 9 steps) dimensions (excluding 20 impossible combinations), with either 100-ms or 200-ms steady-state durations (yielding a total of 86 stimulus types). Twenty-two monolingual Persian and 27 bilingual Azeri/Persian learners of English identified each of the sounds as one of the eleven English monophthongs (forced choice). The experiment was repeated with 20 American native listeners from the Los Angeles area. We test the hypotheses that (i) the bilinguals will have more narrowly defined English vowel categories than the monolingual learners while (ii) both learner groups will fail to exhibit the vowel quality by duration interaction that is characteristic of native English listeners [6].

**Results:** The three extra (central) vowels in Azeri offer no advantage over the Persian six-vowel system for Iranian EFL learners. Monolinguals nor bilinguals were sensitive to the vowel quality contrast /i: ɨ/ and /u: ʊ/; only duration was used as a distinguishing feature. Like the EFL listeners, the American controls did not differentiate between the low back vowels /ɔ: ɑ:/ (the Californian *cot-caught* merger) but made a clear combined spectral and temporal distinction between /i: ɨ/ and /u: ʊ/.

**Conclusions:** Especially the contrast between /i: ɨ/, with its high functional load in English, needs attention in the teaching of EFL to Iranian students, whether Persian monolinguals or Azeri/Persian bilinguals. We predict, and will test in future experiments, that the vowel pairs identified here as problematic will be insufficiently contrasted in the EFL learners' speech production as well.

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**Keywords:** American English, Azeri, duration, EFL, formant, perceptual identification, Persian, vowel synthesis

## **The mistakes on Ukrainian and Russian street signs as a result of the changes in the language policy for Hungarian-speaking population in the city of Berehove (Beregszász) in western Ukraine**

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This article is about language diversity in Berehove, which is called as the center of Hungarian culture in Ukraine. A lot of people there consider Hungarian as their own mother tongue, but they also need to know the state language. In Soviet times it was Russian language, but now it is Ukrainian. This means that Hungarian-speaking population who studied Russian as a second language in the Soviet schools, now use it very rarely, which leads to forgetting of the language skills. At the same time, the importance of Ukrainian language is increasing day by day, but not everyone in Berehove learnt this language. The situation becomes curious due to the tourists (usually from another parts of Ukraine), who come here constantly. In such conditions local people try to earn as much money as possible, so they write ads for these tourists in Ukrainian or sometimes in Russian, where the mistakes could be seen almost everywhere. Some authors did certain researches on the problems of teaching Ukrainian as a state language in Transcarpathia (István Csernicskó, Erzsébet Bárány), about the linguistic landscape of Berehove (Kornélia Hires-László) and of Transcarpathia's tourism (Zoltán Karmacsi), but they did not focus on the practical side of such problems. The aim of this work is to reveal the typical mistakes with the use of Ukrainian and Russian languages in the city of Berehove. The necessary data is analyzed based on the street signs there.

**Results:** During the analysis, numerous mistakes in the spelling of Cyrillic letters were revealed, as well as violations of the rules of Ukrainian and Russian grammar.

**Conclusions:** The nature of some mistakes suggests that many Hungarians from the city of Berehove and its environs have serious problems with the knowledge of Ukrainian and Russian. This problem especially concerns Ukrainian language, which is the only official language in Ukraine now.

*Keywords: Berehove, Beregszász, Transcarpathian Hungarians, Ukrainian language, Russian language*

## Bilingual Visual Word Recognition in a Language Decision Task (an EEG measurement and its analysis)

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We describe implementation of the EEG measurement on language processing and production that happens in the brains of bilingual compared to monolinguals. Concerning the reaction time on deciding whether or not a word is correct and classified as existing or pseudo words according to their repertoire capacity of each language, in terms of the starting age and the matter of their second language acquisition. Due to the high speed of transformation between visual, orthographical, semantic and conceptual neural representations, EEG will be utilized to capture the changes that happens in the responsible areas of processing and production in the brain of resting or activation while presented by the written form of the word on a display for a set period of time weird to a device to record the reaction time of their decision.

**Results:** In the data analyses, right after classifying all results in four main groups focusing mainly on the matter of age period of language acquisition and the choice of language they classified each word into. A total general comparison among the early and late acquisition groups for each variable was done using ‘T-Test: Two-Sample Assuming Equal Variances’, and ‘ANOVA: Two-Factor with Replication’ to show the differences between late and early groups for all trials. Our results showed similar patterns to what was expected and hypothesized in previous studies. L1 and L2 words processing depend on the age of L2 acquisition. We could state that Early bilinguals performed in a better means than Late group, and the chief finding in our study that Late group’s topographic distribution of EEG results were higher activation areas and crammed than its opposite of Early instructed group.

**Conclusions:** The main finding of our research that supports the previous finding in John G. Grundy, John A. E. Anderson, and Ellen Bialystok[1] study on monolinguals and bilinguals, hypothesizing bilinguals have more complex brain signals than monolinguals; that our study carried out and took it to step further on the bilinguals level of comparison between the Early and Late acquirers of L2, and showed supportive findings that age factor plays a role in language processing and recognition revealing that Early bilinguals had greater brain signal complexity than Late bilinguals in occipital regions. In addition, Early bilinguals achieved better performance with a higher occipital brain signal complexity, however Late bilinguals relied on coupling with frontal regions to demonstrate gains in performance.

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[1] <https://doi.org/10.1075/lab.18040.bia>

*Keywords: lexical access, word recognition, processing languages, bilingualism, electroencephalogram*

## Teachers' Language Awareness and Students' Proficiency in the Hungarian Foreign Language Classroom

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**Introduction:** The issue of multilingualism is not a trivial concern linked to language education; therefore, one should pay more attention to the topic of multilingualism in the school context [1]. However, there was a positive tendency in Hungarian foreign language learning in the past 20 years, Hungary has still not gained a prominent place in terms of foreign language knowledge due to the latest statistics compared to other European countries [2]. Younger generations learn several languages besides of their mother tongue so it would be reasonable to evaluate the whole linguistic repertoire of these people in this changing world [3]. Recently, a handful of studies have investigated language teachers' beliefs about multilingualism and multilingual pedagogy [4].

**Aim, method:** The pilot study aims at investigating foreign teachers' language use and students' achievement in the Hungarian primary school context. Teachers' questionnaire was conducted in order to observe teachers' language use [5]. 50 pupils were asked to fill in a modified cloze test between January and March, 2020 at two primary schools. The major objective of the modified cloze test is to investigate pupils' foreign language proficiency in German (L2) and in English (L3) based on their known vocabulary. Data were analysed using SPSS 22 to compare the two groups in terms of L2 and L3 proficiency.

**Results:** Results of teachers' questionnaire indicated that teachers still predominantly use their mother tongue in the foreign language classroom. Preliminary results of the statistical analysis showed that pupils visiting nationality class obtained better results (M:69,4) than their peers visiting the normal class (M:63,1) in terms of L3. Surprisingly, the proficiency level of German L3(M:78,6) outperformed the level of English as an L3(M:73,86) in the normal school.

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*Keywords: multilingualism, language teaching, primary school, English, German*

## A contrastive analysis between Standard Chinese and Standard Hungarian

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After teaching Hungarian students for a while, I have found that the problems of Chinese vowels for Hungarian students are very interesting. Round vowels [u] and [o] exist both in SH and MC. However, Hungarian learners often mixed round lip sounds like "ou (to vomit) and uo ( I )" in SC. In order to get a deeper understanding of the nature and causes of these problems, I have done a research about this topic: "A contrastive analysis between Standard Chinese (SH) vowels and Standard Hungarian (SH) vowels". I believe it would attribute to both some linguistics aspects and education practice. Basing on minimal pairs and complementary distribution of SC vowels in a syllable, I assume that there are five vowel phonemes and four distinctive features in SC. As for SH, following the idea of Siptár & Törkenczy (2000), I assume that there are seven vowel phonemes with four distinctive features. Then I mainly focus on comparison of SC vowels and SH vowels basing on features and their phonological patterns. In addition, I have done a qualitative research with a questionnaire. The objects are all adults who is more than 18 years old. Because of the limited number of Hungarian students who are studing Madarin Chinese, I have only collected 51 cases.

**Results:** First, in SC the vowel constraints must consider the syllable constituent. However, in SH phonology vowel constraints seem to apply to subsyllabic constituents or inter-syllabic constituents, in other words not to the constituent syllable itself. Then in SC the vowel sequence is allowed to occur in one syllable, and pre-nuclear vowel or post-nuclear vowel is limited to high vowel glide, which fills onset or coda position. However in SH vowel sequence must belong to two syllables, because SH does not allow diphthongs and triphthongs. Third according to the acoustic features of SC and SH (Zhu 2010- 268; Gósy 2007), SH back round vowels are relatively more round and more back than SC back round vowels, vice versa. Fourth, according to SPSS analysis of the questionnaires, Hungarian students regard "ou (to vomit), ua (the baby) and uo ( I )" of SC as the same group.

**Conclusions:** (1) [a] is [+round] in SH, so visually it is easy to confuse Hungarians. (2) Even SH also have back round vowels [u] and [o], but acoustic features of these two sounds are very different between SC and SH. F2 of SC [o] and F2 of SH [u] overlap, which may cause problems for Hungarians from perception. (3) There are no diphthongs and triphthongs in SH, so for Hungarian students monophthongs[o] and diphthongs like [ou/uo/au] are not so distinctive. (4) Moreover in one syllable features are fixed in one vowel phoneme in SH, but in SC in one syllable features can slide from one to another basing on tongue position and labial shape. Thus this kind of flexible slide for lip and tongue in SC within one syllable is hard to articulate for Hungarians.

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*Keywords: Standard Chinese, Standard Hungarian, vowels*

## A Magyar Honvédség és a kríziskommunikáció

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Hazánkban az 1990-es években jelent meg a kríziskommunikáció, mint a Public relations szakma önálló részterülete. Az elkövetkező években és évtizedekben először a multinacionális és kisebb vállalatok, majd az állami szektor szereplői is felismerték a hatékony válságkommunikáció szerepét és fontosságát egy-egy vállalati vagy szervezeti krízis kapcsán. Napjainkra - különösen a vállalati szférában - a szervezetek már külön erőforrást biztosítanak a válságokkal és krízisekkel kapcsolatos hatékony menedzsmentnek, beleértve a felkészülést, az oktatást és magát a kríziskezelést. Mindez azon a felismerésen alapul, hogy egy jól kezelt válságot követően a szervezet reputációja és az előállított termék értéke is kevésbé csökken, esetleg csak minimális szinten változik, annak helyreállítása kisebb költségvetési forrásokat von ez az adott vállalattól. Az állami, közszolgálati szereplők kisebb anyagi ráfordítás mellett is komoly tudásbázist építettek és építenek a válság-, krízishelyzetre való felkészülés kapcsán.

Kutatásomban az állami szektor egyik speciális szereplője, a Magyar Honvédség különböző szintű kríziskommunikációs eseteit vizsgálom, a szervezet szintjén kezelhető esettől, a komoly politikai kérdéseket és társadalmi érdeklődést eredményező krízishelyzetekig, melyek válságmenedzsmentje, válságkommunikációja szervezeti szinten a legmagasabb szintű vezetők bevonásával valósul meg, szem előtt tartva a szervezet bürokratikus és parancsuralmi rendszere miatti kötöttségei által generált kihívásokat.

A honvédség, napi működése és szerteágazó feladatrendszere miatt is „veszélyes üzemnek” tekinthető: a felkészítések, kiképzések és gyakorlatok állandó veszélyforrásokat hordoznak, a csapatmozgások kockázatként jelennek meg legyenek azok vasúton vagy közúton megvalósuló mozzanatok. Emellett a nemzetközi szerződésekből adódó kötelezettségek nyomán a külföldön szolgálatot teljesítő állomány biztonságosnak a legkevésbé sem mondható környezetben hajtja végre feladatait nap, mint nap. Számos olyan esetről tudunk az elmúlt években, évtizedekben, amelyek szervezeti szinten komoly kríziskommunikációs feladatot róttak, úgy a vezető-, mint a szakállományra.

Előadásomban néhány kiragadott esetet bemutatva ismertetem a Magyar Honvédséget érintő legfontosabb kríziskommunikációs eseteket, értékelve a felkészítés, felkészülés, reagálás és a kríziskezelés tapasztalatait, levonva a következményeket, a pozitív és negatív tapasztalatokat.

*Kulcsszavak: kríziskommunikáció, kommunikáció, Magyar Honvédség, katona*

# **Gazdasági és pénzügyi jog**

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**Economic and financial law**



## Financial consumer protection aspect of cryptocurrencies

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Over the past decade, a number of innovations have made it easier to manage our finances, which the scientific literature collectively calls FinTech. FinTech is a collective term for new technologies that create an active connection between financial services and IT developments and that either emerge as new e-services on the market or further develop existing financial services using computer programs. Among the Fintech technologies in my presentation, I will present the cryptoassets and the blockchain technology, especially I will describe the financial consumer protection concerns they raise and examine whether financial consumer protection instruments cover cryptoassets under the EU law. The relevance of the question is shown by the fact that in December 2019 there were more than 4,900 different cryptoassets in circulation, with a market capitalization of € 180 billion worldwide.

**Results:** In my paper I will describe the types of cryptocurrencies - namely utility tokens, asset tokens, security tokens and cryptocurrencies – and their inherent dangers. I also examine whether or not these cryptoassets could be considered as money or financial assets according to the EU law in force. Based on the answer I will analyze whether the consumer protection instruments in place apply to the cryptoassets.

**Conclusions:** Domestic and foreign authorities must take into account the risks and benefits of cryptoassets when they create new regulation for them. With the proliferation of cryptoassets, new threats have emerged in the financial system that the authorities need to be prepared for. The reason for this is that malicious users would like to take advantage of the unregulation of cryptoassets, which will not only harm others, but may also jeopardize the stability of the financial intermediation system. States should also ensure adequate protection for consumers and investors, especially given that consumers and investors understand the risks involved in the acquisition, possession and usage of cryptoassets. Consumers may not be aware of certain features of cryptoassets or the underlying mechanisms of the cryptomarket and the risks they may cause. At the same time, it is important to note that innovation is an important driver of economic development. It is therefore necessary to create regulations that minimize risks but do not result in over-regulation and do not hinder further developments.

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**Keywords:** *blockchain, cryptocurrency, cryptoassets, consumer protection*

## **The issues of wealth taxation – the case of Hungary**

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In the second half of the 20th century, as a result of economic crisis, a significant number of states took public and tax reform steps. These reforms have brought to the development of the conditions for an optimal and fair public burden distribution system. Many experts have sought to define the principles of justice and fairness in the context of taxation. Wealth taxes can be a significant element of optimal tax systems. Many of them have evolved differently depending on space and time and national characteristics. Recent sociological studies show growing wealth inequalities on both global and local levels. There is a rising interest to wealth taxes, and it is directly tied to the startling realization that we have returned to an ultra unequal world such as existed a century ago. Many fear that the ever increasing concentration of wealth in the hands of the very rich threatens democracy. Optimal tax systems play an important role in resolving injustices in society, that is why it is appropriate to discuss the subject. The global pandemic health crisis has already caused a global and national economic crisis. The public debt is rising and the states must replace the lost government revenues in other ways with different forms of withdrawal. A new-spirited, comprehensive review of the role of wealth and property taxing has not been carried out yet, and today's legal scholars have not undertaken to carry out this complex task.

The study aims to review the issue of broader-based wealth taxing. The investigation primarily cover the Hungarian legislative environment, but European and overseas examples will be detailed too. The research seeks to explore the legal, economic, and social aspects of the introduction of sophisticated, full-scale wealth taxation in Hungary. The concerns on the subject have been confirmed by the end of the manuscript, as there are several unanswered questions surrounding the tax under discussion, which the legislator will have to provide a consistent, thoughtful solution that taxpayers can understand.

*Keywords: inequality, taxation, wealth*

## **The Technology of Business-to-Consumer (B2C) Business Models**

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No wonder the 21st century is called the age of technology. This age of technology using the Internet has completely changed the way people interact with each other and with other participants. As a result, thanks to technology-driven innovations, the majority of users transacted business, financial and trade transactions over the Internet. The e-commerce mechanism has expanded and erased all boundaries, geographic and time constraints of commercial transactions. This article's first part will focus on the nature e-commerce and its business models, while the second part will be about the technologies for applying B2C business models and in the 3rd part there will be some factors for attracting consumers. The article will end with some recommendations and conclusion regarding the B2C business models.

**Results:** In this article will be using the research materials published in theme on B2C applications by comparing the technologies and techniques of some large B2C companies in terms of customer experience.

**Conclusions:** Electronic Commerce (EC) is a business mechanism in which electronic network transactions carried out over the Internet. It encompasses the process of purchasing and selling products, services, and information electronically. Many business models, such as buying and selling stocks and online airline tickets, are maturing, some even exceeding. Certain B2C business models technologies, such as customer data analysis, can be used to understand customer behavior and their online channel experience. One of the techniques of B2C companies for boosting its retail sales can be using the recommendation systems for simple interactions with consumers.

*Keywords: e-commerce, business models, B2C business models, consumer experience*

## **Wyoming: Liberal crypto regulation**

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In the United States of America, cryptocurrency regulation is in the crossfire of state and federal legislation. Apart from that, the regulation tendency can be separated into two mainstream directions. States in the first type of regulation flow are where the legislator main concept is to provide a favorable and soft legal framework in order to enhance the widespread of innovative technology-based startups. Moreover, they would like to support distributed ledger technology (DLT) especially blockchain entrepreneurs.

This legislation direction can be called the liberal regulation movement. Wyoming and Colorado are two examples of these crypto-friendly US states. Another group of states represents the other position. This group can be labeled as a conservative regulation movement. They prefer a slower pace of regulation. They would like to create a stricter and more rigid legal framework in order to prevent or minimize the maleficent abuses, scams, money laundering etc. This group do not want to ban any crypto solutions but want a proper supervision system above them. States such as New York, New Mexico, and California, belong to this conservative regulatory direction.

In my present study I would like to examine and summarizes the regulation tendency of Wyoming during the period of 2018-2020.

*Keywords: Wyoming; DLT; blockchain; cryptocurrency; token; ICO*

## Innovation in the financial sector: crowdfunding

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Intensive innovation is considered one of the main characteristics of the 21st century's digital economy and it should be noted that it affects the financial sphere, too. There is a tendency showing that more and more innovative, so-called FinTech financial service provider offers simpler, faster and cheaper, yet high quality financial services. These technology-based financial services range from account management through means of payment and loans to investments [1],[2].

The European Union takes a positive view of the FinTech phenomenon: it supports innovative financial solutions that can play a role in building the technological background for a competitive cross-border economy. In connection with this, it should be highlighted that many FinTech solutions fall under the scope of revised EU laws (eg. PSD2, AMLD5), however, a significant number of these solutions are considered risky and no regulation has yet been established regarding them. Crowdfunding, as a FinTech solution, is located between the two finalities: a draft regulation was issued in 2018 but it does not introduce provisions to the entire crowdfunding activity and has not yet entered into force.

In connection with the above, the aim of my research is to introduce the four different types of crowdfunding [3] by comparing them to traditional (financial) services and the related draft regulation by highlighting concerns that may occur from proposed future regulation.

The research basically uses a comparative and analytical method to achieve the above goal and attaches great importance to EU legal documents in the analysis of the legal sources.

**Results:** There are a number of similarities between the business models of crowdfunding and traditional financial services. However, one should count with so significant differences that crowdfunding cannot be subject to financial rules in force. However, the draft regulation in this area does not consider all types of crowdfunding. Given the differences, the financial consumer protection provisions in force may not be applicable to crowdfunding.

**Conclusions:** There is a need for comprehensive regulation that covers all types of this quasi financial service and not just business types. Financial consumer protection rules must be given high priority in the development of regulation.

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*Keywords:* crowdfunding, EU regulation, FinTech, innovation

## The Fraud rule comparison under the letter of credit law between the United States and the United Kingdom

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In international trading, the letter of credit payment is mostly chosen among other kind of payments since it generally solves problems between the seller and the buyer. The International Chamber of Commerce ("ICC") has issued Uniform of Customs and Practice ("UCP") which is a set of principles based on international practices of letter of credit in 1933 and until now, the latest version of UCP is UCP 600 which is formed in 2007. Nonetheless, there are some legal aspects that ICC and UCP consider as national issues and leave those problems for national law. One of the biggest problems is the fraud rule, which is the exception of the independent principle- the backbone rule of the letter of credit. As we may be aware, the process of payment under the letter of credit is unstoppable, nonetheless, banks are allowed to suspend their payment to the beneficiary even though the drafts tendered comply with the requirements under the letter of credit if fraud is found in the transactions thanks to the fraud rule. Because of its complicated features, the fraud rule has set up several debates and create "the most controversial and confused area" [1].

Some countries have tried to have their own legal framework for letter of credit law and even have fraud rules included. The United States has tried to embody the operation of letter of credit in the Uniform of Commercial Code ("UCC") and regulates the fraud rule within the same Code. A regulation for letter of credit and fraud exception would prevent overwhelming litigations. This not only enhances the rights and obligations of various parties but also remains the commerce utility of letter of credit, makes documentary credit is still recognized as a favorable finance device of international trade. Another leading country in law is United Kingdom has different view about the fraud rule and offers s different way for the fraud rule application.

With the author researches, this presentation analyzes the nature of letter of credit, recapitulates the important aspects of fraud standards under the law in two leading common law countries which are United State and United Kingdom.

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# **Neveléstudomány I.**



# **Educational science I.**

## The latent narrativity of Hungarian history teaching

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Hungarian history teaching is, according to generally held opinion among educators, source-centred. In principle, this means that the focus in classroom teaching is on the analysis of historical sources. The purpose of the teaching is to develop skills. The content of the teaching is less important, and it is secondary to the skill development. Paradoxically, the content of history teaching in Hungary is important both to curricula and in classroom practice, and is also considered important by history didactics experts. So is history teaching in Hungary really source-oriented, or is it more influenced by other theories? The aim of my research was to explore which theories have defined history teaching in two model European countries: Germany and England. After that, I wished to examine how those theories have influenced history teaching and history didactics in Hungary. The research was of a theoretical type, and its method was a comparative analysis of the scientific literature.

**Results:** German history teaching has been defined by constructivism and narrativity since the 1990s. The key element of narrative history teaching is the conviction that one can only make use of history, i.e. to draw consequences from the past to inform the present and the future, by relating it. The past only orients the individual pupils if they can formulate their own narrative of it. History teaching should not offer just a pre-made narrative for pupils, but must help them deconstruct (i.e. analyse) and reconstruct it. English history teaching, on the other hand, has been source-oriented since the 1970s. Its focus is not on the content, but on the analysis of sources. However, since the turn of the millennium, there has been a growing criticism that this keeps pupils from having a "big picture" of history, and consequently the students often think that the past is dead and gone, and it has no impact on the present and the future.

The classification of Hungarian history teaching as source-centred became generally accepted at the turn of the millennium. History didactics experts, influenced by the then popular competence-based teaching theory, wished to change radically that classroom practice, which had traditionally placed little emphasis on the development of skills. Still, evidence indicates that our history teaching is not only source-centred, but is in many respects narrative, too. Curricula place great emphasis on the listing of the content. In classroom practice, it is important for teachers to teach and for pupils to learn the content. Direct instruction prevails over autonomous pupil activities. The secondary school leaving exam (redesigned in 2005) is also narrative in nature, due to the importance of the written essays and the oral exam. Narrativity has been present in Hungarian history didactics for many decades.

**Conclusions:** In contrast to generally held views, Hungarian history teaching can be held to be (latently) narrative rather than source-centred. The narrative approach to history teaching is in line with international scientific trends, and is close to the German theory and practice. Arguably, narrativity should be stronger emphasized in Hungarian history didactics. Although one has to bear in mind that the new approach does not replace, but integrates, source analysis and skills development.

*Keywords: history didactics, source-centeredness, narrativity, Germany, Hungary*



## Language and Immigration: Teacher identity, attitudes and professionalism when teaching immigrant learners in English as a medium of instruction

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**Introduction:** Evidence from various studies shows that non-native population is increasing in classrooms, especially considering immigration as one of the key catalysts. This therefore leaves us with a question of what teachers may think of the language diversity that may exist in their classrooms. It also triggers a question of whether teachers are ready to embrace global changes and implement changes by being creative around the use of the medium of instruction, to accommodate learners that speak a different language.

**Aim:** This paper aims to investigate whether teacher attitude, identity and professional training are congruent with the language diversity that exist in classrooms, and whether, the medium of instruction may hinder effective teaching and learning for immigrant learners. It is well known fact that language is a unifying and cohesive glue for societies, while holding an important heritage and cultural role according to Reagan & Osborn (2001).

**Method:** The article will use available empirical evidence recorded on this subject.

**Conclusions:** This paper wishes to conclude by presenting to what extent immigration is viewed as a threat to this traditional role of language in schools, since schools are key sector of society.

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*Keywords: Immigration, language, diversity, creativity, medium of instruction*

## Internationalization of higher education — Case study from the University of Szeged

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By the beginning of the 21st century, the promotion and support of the international presence of higher education became more important in the countries' higher education policy. Internationalization has also reached higher education in Hungary, and the University of Szeged has entered this path. The most obvious sign of the internationalization of higher education institutions is the appearance of foreign students. The number of international students enrolled at the University of Szeged is increasing annually. Current research examines the number of foreign students enrolled at the University of Szeged and the composition of their countries of origin. In addition, the study examines the main factors influencing the school choice of international students at the University of Szeged. I collected quantitative and qualitative data to answer my research questions. To determine the extent of the catchment area, I used the database of the Education Directorate of the University of Szeged, which contained anonymously the country of origin of the foreign students between 2014/2015 - 2018/2019 academic years. Beside of this, I used some database to present the number of foreign students who coming with other scholarships (e.g Erasmus, Stipendium Hungaricum) and their sending countries. In addition to the statistical data, I also made online questionnaire research. The questionnaire was filled out with enrolled foreign students at the University of Szeged. Compared to the first semester of the 2012/2013 academic year, the total number of foreign students at the University of Szeged nearly doubled in the first semester of the 2019/2020 academic year. In terms of total number of foreign students in the 2018/2019 academic year, the catchment area of the University of Szeged extended to 114 countries, of which the largest sending countries are Asian countries. In terms of European countries, Germany, Spain, and the United Kingdom are the three largest sending countries. Results indicate that foreign students selected the University of Szeged because they are attracted by the reputation of the university and its prominent position in university rankings, as well as the high quality of teaching. Other important aspects are the attractiveness of the city of Szeged and the low cost of living in Hungary. The growing number of international students may be one of the moderators of the decrease in the number of local students at the University of Szeged. In addition, the competitiveness of the university is largely determined by its success in broadening its international dimension.

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*Keywords:* internationalization, international students, student mobility, school choice, higher education

## The importance of conceptual knowledge in teaching mathematics

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Many studies revealed that the student's low achievement in mathematics, and the great difficulties that they face while learning is refer to lack of the concept understanding. Therefore, in this presentation, the importance of conceptual knowledge in teaching mathematics is focused on. The meaning of conceptual knowledge according to the previous studies is analysed and compared with procedural knowledge. In addition, my research plan is highlighted, that is on the same area, in this presentation.

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## A humán és a tantestületi tőke szerepe az újító pedagógusok szemléletmódjában

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**Bevezetés:** Az iskolák a világon mindenütt új utakat keresnek nevelési programjainak fejlesztése és a tanulók eredményességének javítása érdekében [1]. Hargreaves és Fullan [2] szakmai tőke-elméletében rávilágít arra, hogy a pedagógus hivatásra is vonatkoztatható humán, szociális és döntési tőke meghatározó az iskolai eredményesség érdekében. Kutatásunkban az oktatási innováció fogalmát konkrét intézményi bázishoz kötjük, amelyben létrejöttek az oktatási újítások.

**Célkitűzés, Módszer:** Kutatásunk jelenlegi kvalitatív szakaszában a felvett interjúk két témakörének elemzését végezzük el, amelyben a humán és a tantestületi tőke szerepét vizsgáljuk az újító pedagógusok szemléletmódjában összefüggésben az innovációk kidolgozásával, elterjesztésével.

**Eredmények:** Az aktív szakmai életút szoros korrelációt mutat a jó gyakorlatok keletkezésével. Az innovációk kidolgozásában jelentős szerepet játszik a humán tőke gyarapítása, azonban fontos a kiemelt figyelmet igénylő tanulók fejlesztése, felzárkóztatása mellett az iskola menedzselése is. A passzív, vegetáló szakmai életút kevés esetben kedvez az innovációs hajlandóságnak. A tantestületi tőke és az innovációk hatékonyságának összefüggését feltárva látható, hogy az innováció sikerességének egyik meghatározó tényezője a folyamatos megújulásra képes nevelői, oktatói testület. Az összetartó erő kialakulásában jelentős szerepet játszanak a szakmai közösségek, munkacsoportok, ugyanakkor kevesebb a szerepe az iskolán kívül eltöltött közös tevékenységeknek.

**Következtetések:** Az innovációk elterjesztésének útjai átívelnek egy adott intézmény zárt falain, a humán tőke gyarapítása és a hálózatosodás révén megvalósul a tudásmegosztás, tehát e két tőketípus jelentős szerepet tölt be az iskolai eredményesség javításában.

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*Kulcsszavak:* oktatási innováció, humán tőke, tantestületi tőke

## **Történelem és néprajz**



## **History and ethnography**

## The European balance of power in the public debate about the Peace of Utrecht (1710–1713) – The main genres of the debate with special regard to the Parliamentary Papers

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In the period after the *Peace of Westphalia* (1648), more and more treatises were published on the concept of balance of power, which was becoming an important guiding principle in European political thought. The term became part of the official language of diplomacy with the *Treaty of Utrecht* (1713), the first major European treaty to incorporate the term into its formal provisions. Article II declared the treaty's main purpose as “to settle and establish the peace and tranquillity of Christendom by an equal balance of power (which is the best and most solid foundation of a mutual friendship, and of a concord which will be lasting on all sides)” [1]. The concept developed into one of the fundamental milestones of English foreign policy and political thought at the turn of the 17th and 18th centuries.

The subject of the present lecture is the final years of the *War of the Spanish Succession* (1701–1714) in England, when the Tories came to replace the former Whig government in 1710. Already from the outset of the war, both politicians and pamphleteers identified its purpose as preserving the balance of power, virtually preventing a union of France and the Spanish empire. Building on previous research – among others on Müllenbrock's *The Culture of Contention* [2], – I will present my new results on the public controversy about the ending of the war in the English media. The analysis focuses especially on the contemporary incorporation of the concept and political key-term of ‘(European) balance of power’ into the different genres (political pamphlets, political essays, political periodicals, newspapers, broadsides and sermons) of English political media.

The first half of the presentation will analyse in detail the chief Tory propagandist Jonathan Swift's (1667–1745) anti-war political pamphlet, *The Conduct of the Allies* (1711), which achieved extraordinary popular success and serves as an emblem of a new era in which public opinion would have an increasing role in shaping foreign policy. In this pamphlet Swift argues that the English monarch must be able to maintain the constitutional position as holder of the balance *at home* to fulfil the ideal of holding the balance of power *in Europe*. The second half of the lecture will present the most important new results of the recent research in the contemporary and relevant parliamentary records relating to the principle of balance of power, especially in the *Journals of the House of Commons and Journals of the House of Lords*.

*Acknowledgements:* László János Doctoral Research Fellowship (2019–2020) and Doctoral Student Association of the University of Pécs

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*Keywords:* balance of power, Treaty of Utrecht, English political thought, political pamphlets, Jonathan Swift

## The myth of Kennedy's "Camelot": a staple of American folklore

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“Once upon a time in Camelot”: not in the foggy realm of Albion, but in the land of America. Theodore H. White described the Kennedy administration as “a magic moment in American history, when gallant men danced with beautiful women, when great deeds were done...” [1] The White House, it seemed, was the center of the universe. Bill O’Reilly and Martin Dugard wrote that “... Camelot is not a dream. It is reality...” [2] But Camelot was neither a dream nor reality: it was a comforting declaration, a legend, a myth which – after John F. Kennedy’s tragic assassination on November 22, 1963 – became a staple of American folklore. [3] This myth was destined to shape JFK’s legacy and political image. In my presentation I will examine the factors which have contributed to the formation of this political image [4]. The complex personality [5] of the 35<sup>th</sup> President of the United States of America not only survived the horror of assassination, but Jackie Kennedy’s Camelot story [6] made him a legend which rapidly became an indelible part of the American collective memory [7].

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*Keywords: John F. Kennedy, Camelot, political image, Cold War, Jackie Kennedy, United States of America*

**Air and radio reconnaissance activities of the Hungarian People's Army in 1968 in connection with the intervention in Czechoslovakia**

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In my presentation, I will cover a certain aspect of the 1968 military invasion of Czechoslovakia, the aims and results of air and radio reconnaissance. The General Staff of the Hungarian People's Army and the Hungarian political leadership needed information about the invasion of Czechoslovakia. To this end, the General Staff focused on radio reconnaissance and air reconnaissance, focusing primarily on NATO activities, global public responses, and military activities in neighbouring states. The question arises as to how this was solved by the units entrusted with it. How efficient were they able to operate? Why did the responsible group headquarters (MNVK 2) prefer these two detection methods? I would like to present these in more detail in my presentation.



## Architectural Socialist Realism versus Communism as a Political Ideology: the history of a show-trial

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In my research I look at both the practical and theoretical conflict between socialist realism in architecture and the ideological standpoint of its practitioners, the architects. I seek to unfold the nuanced history of socialist realist architecture in Hungary with a special focus on the very ideological conflict between theorists and practitioners that framed the (reinforced) birth and decline of the socialist realist method. To do that, I focus on the years of socialist realist construction (1951-1954), offering a critical analysis of the great architectural debate that took place in 1951. The debate was in fact a show-trial of both modernism and functionalism, two architectural styles that were inherently intertwined with socialist, oftentimes even communist ideology in the early-mid-20<sup>th</sup> century, and both would greatly influence globalized architecture later on.

**Methodology:** I utilize discourse analysis as well as looking at the architectural debates from a *long-durée* perspective. Therefore, I look at the ideological standpoint of those modernists pre-1945 who were caught up in a political conflict after the war; and I similarly present the ambiguity in today's perception of the socialist realist method.

**Conclusions:** The general conclusion of my research is that the insertion of the socialist realist method into architecture managed to put both theorists and practitioners in conflict with their ideology. Lukács failed to understand the impractical nature of the grandiose method as highlighted in his remarks to modernist architect Máté Major. Communist architects, like Major himself, were caught up in a cross-fire between party ideology and their own dedication to building communism out of modernist constructions.

*Keywords: socialist realism, communism, ideology, architecture*

## The Cooking Methods in the Ancient Near East. Archaeological and ethnographic sources

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Cooking activity is one of the most basic and indispensable tasks in a person's life. They differ from country to country and from period to other depending on the development of beliefs, customs, available resources, economic relations, etc. By returning to this period of time and reviewing previous studies that were concerned in this area as a result of the archaeological discovery, it drew our attention to the continuation of many methods of cooking and techniques used in firing, in addition to adopting the same diet used at the moment. During this study we are looking to determine the use of the cooking pots, the diet that had been followed by the people lived in this area. The places of sooting traces on the vessels which assists to identify the type of fire were used. By studying technologies still in use today, we are able to gain insight into ancient methods of cooking and the ovens that exist previously. To achieve this, the necessary data must be collected from many archaeological sites in the area concerned and studied, in addition to making a direct look at the technologies that are still in use for comparison.

**Results:** These pots were used for many purposes as preparing the food, storing, grinding, cutting, and cooking. They also relied on many of the foodstuffs which still exist like grains, burghul, differs meats, in addition to a special type of cakes and honey [1]. By conducting an ethnoarchaeological study, many ancient cooking methods are still used in these areas, using the so-called "tannur", hearth, heating pits [2].

**Conclusions:** The interest of this pottery takes more consideration during the last time. Since the cooking pots play a sensitive role in daily life, which made them accompany all periods and ages.

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*Keywords: cooking, foodstuffs, ethnoarchaeological*

## The question of the status quo policy of Austria-Hungary. Historiographic relevance of policy actors in the 19<sup>th</sup> century

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By the end of 19<sup>th</sup> century, the German unification and the Franco-Prussian war threatened to change the world order and create an international conflict of the Great Powers (Britain, Austria-Hungary, Russia, Germany, and France). From 1875 to 1878, the Great Eastern Crisis has reached a climax, only to be peacefully settled by the Berlin Congress, postponing the question and resulting in the global conflict of World War I. An ever-important question of historiography is in the focus of the presentation. Contemporary publicists and historians of the era were both intrigued by the ever-important question of causality: what and how the chain of events lead to conflict? The explanation regarding different state or non-state actors provided by diplomatic history was expanded by different, additional approaches. Therefore, new studies on Austro-Hungarian politics and policy-making of the time contradicted earlier works that only focused on the role of certain decisionmakers, such as the Minister of Foreign Affairs, Count Gyula Andrassy in the above-mentioned crisis[1].

**Results:** The results of the research were in consequence of using a methodological approach from the disciplinary area of International Relations as a historical approach. The research categories from the field of Foreign Policy Analysis helped to broaden the scope of sources involved in the historical explanation. The field of ‘high politics’ and the international system was expanded with material and literature concerning the ratification levels of bureaucracy, domestic actors, and public opinion[2]. These factors together helped to validate the different parallel and obscure accounts of history.

**Conclusions:** Involving different sources is a regular treatment to any investigative research, but involving the new factors to explain the course of international or even transnational history can be beneficial for historiography and can help historians to find a ‘social scientific treatment’ to their issues. In conclusion, the study seeks to highlight the importance of International History as an interdisciplinary genre which has a more totalistic approach to its subject. International History requires the historian to create a deeper understanding as well as to involve the history of thought, economic, and transnational factors along with the regular involvement of the diplomatic archive material[3].

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*Keywords:* International History, Foreign Policy Analysis, Austria-Hungary, Count Gyula Andrassy, Eastern Question

## Tracts and translations – Hungarian historical and theological works in the 17th century Thomason Collection

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**Introduction:** One of the most famous assemblage of documents from the English Civil War Era is the Thomason Collection of Civil War Tracts, which was gathered between 1640–1661 by the book dealer and renowned collector, George Thomason. It includes more than 22000 documents, mostly pamphlets, treatises, illustrations, engravings, and manuscripts. The collection is located in the British Library, UK, and is available for research in the forms of microfilms and digitalized copies.

**Results:** As a researcher of the collection and the era, I have encountered a few Hungarian entries, among which I could identify the works of Izsák Fegyverneki (d. 1589) and János Nádányi (1643–1707), both Calvinist pastors and historians. Nádányi's major work, the *Florus Hungaricus, sive rerum Hungaricarum* was translated to English by James Howell, a royalist pamphleteer and historian of the Civil War. Among the estate of Howell, a short entry signifies that he had completed the work on an assignment, however, the patron behind the commission is unknown. Izsák Fegyverneki's tract, the *Enchiridii Locorum communium Theologicorum*, completed in 1586, was dedicated to Stephen Báthory, the voivode of Transylvania. It was translated to English by Dudley Diggs, Jr. a royalist peer and contemporary of Howell. We can also suspect a commission behind the endeavour, but further investigation is needed to clarify this issue.

**Conclusions:** In the presentation, I attempt to outline the way in which the works reached and captivated the attention of the English royalists, and address the ideological significance of them in the pamphlet literature and political climate of the 17th century England. The translational methods and techniques are also to be discussed, applying an interdisciplinary approach. A comprehensive analysis has never been completed on the political and diplomatic history of these works; therefore, the topic provides several new research aspects and hold out the promise of fascinating results both in regards of English and Hungarian historiography.

*Keywords:* royalism, translation, tracts, historical collections, English and Hungarian relations

## Mezőgazdasági és földügyi szakigazgatás Magyarországon 1945–1968

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A második világháború végétől a hatvanas évek végéig szinte folyamatosan mozgásban volt a magyar vidék. Kik járták a falvakat? Földmérők, térképészek, gazdasági felügyelők, földrendező, népnevelők, pártszervezők, pártkáderek, agronómusok. Annak ellenére, hogy agrártörténetírásunk bővelkedik olyan munkákban, amelyek az 1945. évi „földreformot”, vagy a mezőgazdaság szovjet mintájú kényszerkollektivizálását állítják vizsgálódásuk középpontjába, nem egyszer kombinálva a helytörténetet a társadalomtörténettel, a földművelésügyi vagy agrárügyi igazgatás története viszonylag elhanyagolt kutatási terület e témakörökben. Hogyan alakult az országos és a helyi igazgatásnak a mezőgazdaságot, s ezen belül a földügyeket érintő szervezete, hatásköre a második világháború végétől a tanácsrendszer bevezetéséig? Hogyan alakították át a mezőgazdasági szakigazgatást a centralizált bürokratikus közigazgatás részeként a szovjet típusú tanácsrendszerben?

**Eredmények:** Az elemzés során a mezőgazdasági szakigazgatás egészét érintő általános szervezeti, szerkezeti változásokra, illetve ezen belül a földügyi szakigazgatásra fókuszálok. A kutatás által feltárt források alapján megállapítható, hogy (1) a „földreform” során létrejött szervek átmenetileg fontos részét képezték az igazgatási hálózatnak, (2) ezek a szervek a „proletárdiktatúra” kiépülésével megszűntek, (3) a centralizált tanácsrendszeren belül szinte folyamatosan történtek változtatások az agrárigazgatást érintően. A fő kereteket a tanácsrendszer alkotta, s ezen belül hozták létre a mezőgazdaság kollektivizálásának részét képező földbirtokpolitikai intézkedéseket végrehajtó földügyi szakigazgatást, amely 1967-től földügyi hivatalként összefogta a földügyek intézését. A szakigazgatás a mezőgazdasági ügyek terén a lokális, helyi, legalsóbb szinten volt a leggyengébb, ez volt a legkérdésesebb pont nem csak 1945-ben, hanem 1945 után is.

**Következtetések:** Általános következtetés az, hogy a vizsgált időszakban a magyar kommunista vezetés az agrár-, szövetkezet- és földbirtokpolitika rövidebb vagy hosszabb távú intézkedéseit főként a közigazgatási egységek mellett vagy tőlük függetlenül, felülről szervezett állandó vagy ideiglenes bizottságok útján hajtatta végre. A szakigazgatás szervezetének, működésének történeti feldolgozása elengedhetetlenül szükséges ahhoz, hogy (1) az állami beavatkozás mechanizmusát, módszereit részleteiben feltárhassuk, (2) elsősorban a mikro szint kutatása során a parasztság és állam közötti viszony, kapcsolat, hatások és kölcsönhatások még inkább kiemelhetők legyenek.

*Kulcsszavak: közigazgatás, bizottságok, tanácsrendszer, kommunista diktatúra, földbirtokpolitika*

# **Interdiszciplináris jog és közszolgálat**



# **Interdisciplinary law and public service**

## In the web of security challenges, or the case of the Israeli Defense Forces with asymmetric warfare

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**Introduction:** In the last years military science has defined by mapping, forecasting, and developing possible responses to asymmetric challenges and threats. Although asymmetric warfare is not a new phenomenon of the modern age, it's still a problem, mostly because we looking for the way how can we properly cope with it. This come from the diversity of challenges and from their dynamic, rapid change. By the asymmetric warfare we lose the order in modern warfare.

**Research framework:** The Israeli Defense Forces (IDF) is one of the world's best-equipped and most trained armed forces. They have experience from first-hand about the impact of asymmetric warfare. In the Second Lebanon War, they learned how is, if an organization isn't enough flexible or innovative. The realization has fundamentally shaken Israel's defense policy. Shaken the notion of invincibility. Shaken the notion, that an adaptive, well-prepared, rapidly acclimatizing armed force will provide protection for the country.

**Methods and results of research:** In the presentation, after reviewing the theoretical background, I would like to outline the edifications, which came from the second Lebanese War. Also outline their implications for the IDF. The special characteristics of the security situation in Israel, the question I want to answer: what kind of challenges and how should the IDF finds answers "today" to prepare for the conflicts of "tomorrow"?

*Keywords: asymmetric warfare, threat-based armed force organization, hybrid warfare, Israel, Israeli Defense Forces*

## Challenges of defense against drones

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As a result of technological advances in recent years, basically anyone can afford an unmanned aerial vehicle. The complexity of the tasks, performed by drones is increasing. Their flight time, flight range, and other abilities are rising as their prices are decreasing. Today the line between civilian and military drones is getting blurred. There are plenty of evidence for civilian drones, intended for recreational or industrial purposes are not only used for peaceful purposes. The proliferation of commercial off-the-shelf drones means emerging risk. The public and the scientific world is divided by the widespread of commercially available small aircraft systems. Some people welcome the increasing capability of drones and they would use them as soon as possible, despite the many existing unanswered questions. Others are doubting the sustainability of the commercial drone trends. Drones cannot be treated as toys anymore. It is necessary to find viable methods and solutions to ensure safety. Therefore the aim of this research is to analyze the requirements and methods of identification and countering drones. Investigate the currently existing capabilities and propose possible solutions to mitigate the risks.

**Results:** In the course of my research, I found that the process of defense against drones can be divided into a couple of well-defined steps. One of these is the identification which is a crucial and important decision making point, regarding the whole defense process. I analyzed and systematized the requirements and the currently available tools and possible methods of both protection against drones, and drone identification from multiple perspectives. I also found that there is no a single, widely accepted way of remote drone identification and the regarding laws are yet to be implemented.

**Conclusions:** The wide spread of commercial drones means emerging, new kind of threats despite the many positive use cases of drone technology. These threats must be mitigated to maintain safety and to keep the drone industry on a developing track. To this end new laws, and the supporting technology is required, especially in the field of remote drone identification, drone detection and disabling drones.

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*Keywords:* countering drones, remote drone identification, CUAV, RID



## **The regulatory framework of the European Union on cyber defence. Today's policy and possible changes in the near future**

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The cyber warfare that is currently fought across the world is, besides international terrorism, the biggest threat to the national security of every highly-developed country. In the light of the numerous cyber attacks that happened in recent years and that were often directed against nations within the European Union, finding the answer to the following question is pressing more than ever: How can the EU lawmaking actively and effectively support the Member States in their objective to defend their cyber territory as well as their citizens? In this article the author presents the cyber security laws and strategies of the European Union that are currently in force with the aim to point out the areas, where improvement is needed, moreover to identify the lack of certain regulations.

*Keywords: cyber defence; international cyber law; cyber warfare; cyber policy; cyber security; national security; regulatory framework*

## Roots of bargaining in the work community of the Church

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Even the Catholic Church is a participant on the labour market. Its employees as well as its institutions have a special legal status within the organization, as they are members of a so called *work community* of the lay apostolate [1].

The dogmatical equity between the members of this collegiality requires even using a peaceful form of solving labour law disputes, hence the Church in several countries has let to evolve a special bargaining system for that reason. The activity of these reconciliation and arbitration committees is very important especially in those countries, where the general jurisdictional way of solving collective labour disputes is not granted for the church-owned employer institutions and employees, as a result of the strictly interpreted principle of the separation of the churches and the state [2].

It could be observed, that the bargaining system within the Catholic Church developed in parallel in certain states and international law entities, while the roots of these evolutions seem to be different in many aspects. The task of the research is to detect the possible origins of this ecclesiastical bargaining model in the history of law.

**Results:** It is without any doubt, that the institution of reconciliation of the Catholic Church originates in the civil law. By analyzing the national norms of certain states, the role of the Soviet- and the German legislation emerges.

With the analysis and the comparison of these two legal systems a strong prevalence of the lay jurisdiction in labour law disputes could clearly be observed up until the end of the second decade of the twentieth century.

It is also important to be mentioned, that each national regulation had the possibility to influence the evolution of the ecclesiastical model.

**Conclusions:** After an accurate examination of the historical facts on national legislation, it should be laid down, that the roots of the special bargaining system of the Catholic Church can be found in the labour law reconciliation-models of certain Western-European states [3].

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*Keywords:* work community; Catholic Church; lay-apostolate; labour law; bargaining

## Role of Print Media in Judicial Activism

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**Introduction:** In this paper, the role of print media is particularly analyzed with regard to judicial activism. It is explained that media is an important part of a democratic society, so it is vital to see how things related to judicial activism are portrayed in the media. To understand, what is the role played by print media in the negative or positive portrayal of judicial activism by keeping the social construction of reality theory as a theoretical framework for this study. Then the discussion will be discussed under the theory of social functionalism. It is identified that role of media is critical in framing the social construction of reality so whatever they will portray about judicial activism; it will be taken as a real fact of society (Adoni & MANE, 1984).

**Aim:** The major objective of this study is to study the role of print media in the depiction and framing of judicial activism in Pakistani society. The detailed review of literature is done with regards to the social construction of reality, social construction of reality through language, media, and social construction of reality, judicial activism, and social construction of reality (Berger & Luckmann, 2011).

**Results:** The research methodology used for this research is based on the qualitative method. The purposive sampling has been used to collect data from the sample population. The data is collected by conducting in-person interviews with retired chief justices from Pakistan. The other sample of data collection is the lawyers, law experts, as well as, journalists covering judicial news. The content analysis of news related to judicial activism is also done by reviewing newspaper articles from Dawn, The News, The Express Tribune, and The Nation. After analyzing collected data, it is found that role of print media is very critical in framing the social construction of reality regarding judicial activism. This role is found to be negative and positive in different instances (Hossain, 2018).

**Conclusions:** In the end, based on findings, discussion on collected data like focused discussions, in-personal interviews as well as content analysis of newspapers; the final conclusion will be made that what role was played by print media with regards to judicial activism, whether this role was positive, negative or neutral in nature. Moreover, the implications of the study will also be discussed in detail.

*Acknowledgements:* To start with, I would like to thank my Professor Tamás Antal who has been an amazing superviros during this period. I would also thank my family and friends, who have always been supportive for me.

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*Keywords:* Judicial Activism, Social Construction, Democracy

## The impact of Covid-19 in the digital platform work

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The labour market is experiencing a major shift, due to the Covid-19 pandemic. The majority of the labor force was obliged to work from home and familiarized themselves with new technologies while, an estimated 5.4 per cent of global working hours were lost, equivalent to 155 million full-time jobs. (ILO, June 2020)The “digital labour platforms” seemed to be very attractive these days, due to the flexibility they offer and the fact that they were open to jobseekers spread throw-out the world.

Despite that, the situation in this sector is not ideal. The pandemic revealed that individuals engaged in work through digital platforms, often classified as “independent contractors”; freelancers or self-employed face inadequate access to sick leave and unemployment-insurance benefits. This is attributed to the classification of platform workers as self-employed, their short work contracts, or even the fact that some platform work is not considered an economic activity (Commission, 2020).

The inability to find tasks in a continuous bases and the gap between unpaid work spend to identify suitable tasks jeopardize an adequate level of income and encourages platform workers to put emphasis upon generating of “income”, than contributing to the social protection schemes. On the other hand many of them cannot reach the national thresholds to do so.

The low level of social protection coverage for platform workers was apparent in the 2017 ILO survey. Overall, only six out of ten respondents were covered by health insurance, only 35 per cent had a pension or retirement plan, 37 per cent benefited from some form of social insurance, and 29 per cent received government assistance (ILO, Digital labour platforms and the future of work: Towards decent work in the online world, 2018).

Platform work has a great potential to offer employment opportunities and ease access to the labour market particularly for specific groups such as people with disabilities or caring responsibilities but there is an immediate need for a better regulation in the international and national level, ensuring decent working conditions for all individuals engaged in platform work.

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*Keywords: digital platform work, social security, pandemic*

## Emlékeztőtvények Magyarországon a XX-XXI. században

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**Bevezetés:** Az emlékeztőtvények kutatása egyértelműen interdiszciplináris. Habár joganyagok felkutatása történik, de feldolgozásuk igényli a történetudomány, a pszichológia, a szociológia és olykor a nyelvészet kutatási módszereit is. Jelen előadás és tanulmány arra vállalkozik, hogy Magyarország XX-XXI. századi történelmének emlékeztőtvényeinek illusztrálásával és az azok összegyűjtésének bemutatásával megmutassa, hogy a velünk élő emlékezet miként lehet normatív úton befolyásolható.

**Célkitűzés:** Célkitűzésem az, hogy megmutassam, hazánk elmúlt 120 esztendejének kollektív és immáron kulturális emlékezetét miként lehet jogi úton, a jogi norma kötelező voltának figyelembe vételével meghatározni.

**Módszer:** Módszerem alapja hazánk hivatalos jogszabálykeresője. Az ebben való keresés kifejezetten az emlékezettel, az emléknappokkal, az általam relevánsnak tartott XX. századi történelmi események kifejezéseivel összefüggésben szó szerinti keresés. Mint gyakorló jogász és kutató, a felelősségem abban is tetten érhető, hogy mely joganyagokat tekintem relevánsnak. Ehhez kettős nézőpont-tágítás szükséges. Egyrészt az, hogy szem előtt tartsam, hogy az emlékeztőtvény kifejezés nem felel meg a hazai jogi hierarchia „törvény” kifejezésének, hanem minden joganyagot felölel. Másrészt pedig minden egyes joganyagot átolvasva kell eldöntennem, hogy relevanciája mivel hozható összefüggésbe.

**Eredmények:** A fent bemutatott módszer segítségével megkapott releváns joganyagokat csoportosítva mutatom be, hogy mely jogterületek és milyen módon kapnak szerepet az emlékezet formálásával összefüggésben.

**Következtetések:** Kutatásom eredménye az, hogy láthatóvá válik, a jog világa miként tud hatással lenni a közösség és az egyén emlékezetére a maga normativitásával.

*Kulcsszavak: emlékezetpolitika, jogalkotás, traumaemlékezet, XX. századi magyar történelem*

# **Egészségtudományok**

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**Health sciences**

## Investigation of Serum Phenylalanine and Tyrosine Isomers in Acute Coronary Syndrome Patients

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The aim of this study was to examine the association of phenylalanine (Phe) and tyrosine isomers (Tyr) (meta-tyrosine, ortho-tyrosine and p-tyrosine; m-, o- and p-Tyr) with oxidative stress following myocardial injury. Furthermore, to check the usefulness of Phe and Tyr isomers mainly m-Tyr as predictive biomarkers in acute coronary syndrome (ACS).

**Results:** Serum levels of Phe and m-, o- and p-Tyr, measured using r-HPLC, and were compared between 44 patients with ACS and 26 healthy control subjects. Serum p-Tyr were significantly lower in ACS patients than in the healthy controls (34.9 vs. 54.1,  $\mu\text{mol/L}$ ,  $P < 0.000$ ) whereas, serum m-Tyr were significantly higher in the ACS patients (14.6 nmol/L) than in the healthy controls (6.1 nmol/L,  $P < 0.001$ ). The ROC curve analysis of m-Tyr in ACS patients relative to healthy controls revealed promising sensitivity and specificity, which was at an optimal cutoff of 9.1 nmol/L, 72.7% and 61.5%, respectively.

**Conclusions:** The results of this study shows that increased serum m-Tyr levels can reflect the oxidative stress induced by inflammation after myocardial injury similarly to the decreased p-Tyr levels. Furthermore, ROC analysis documents the possible value of m-Tyr as a biomarker for ACS.

*Keywords: Acute coronary syndrome, oxidative stress, phenylalanine, para-tyrosine, ortho-tyrosine, meta-tyrosine*

## Patient Education on Infection Control in Pécs, Hungary: A Pilot Study

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**Introduction:** Healthcare-associated Infections (HAIs) are the most serious problems faced by patients worldwide [1]. Studies showed that patients can reduce the spread of HAIs in hospitals, hence suggestions on involving the patients in Infection Control (IC) were given [2].

**Aim:** To assess patient education on IC measures in Pécs, Hungary.

**Methods:** A descriptive, cross-sectional, pilot study was conducted in February 2020. A developed questionnaire was distributed to 115 patients at Pécs university hospital. The questionnaire included two parts; demographics part, and education part which included questions to assess whether patients were being educated on several IC measures.

**Results:** The response rate in filling the questionnaire was 70.4%. Of the 81 respondents, 55.6% were females, the mean age was  $55.17 \pm 15.5$  years. 23.5% of the patients were having their first hospital admission. 80.2% stated that they were educated on HAIs and 72.8% on the risks of acquiring an HAI. 77.8% were educated on hand hygiene, 77.8% were educated on respiratory hygiene, and 79% were provided with brochures regarding hand hygiene and/or respiratory hygiene. 13.6% of patients were in isolation. Of those who were isolated, 81.8% were informed about the reason for placing them in isolation and 72.7% were educated on the usage of personal protective equipment.

**Conclusions:** The present study shows a relatively acceptable percentage of patient education on IC in Pécs, Hungary. Hospitals are recommended to put more efforts on engaging their patients in IC through education and participation in a way to prevent the spread of HAIs. Further studies with a larger sample are recommended to assess patient education on IC measures in several hospitals in Hungary.

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**Keywords:** patient, education, infection control, Hungary



## Assessment of Lockdown Effectiveness: Covid-19

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**Introduction:** World Health Organization (WHO) announced COVID-19 as a pandemic as of March 12, 2020. Most countries initiated a travel ban for travelers. However, scientists consider that this intervention may have only postponed the spreading of the virus for another 3 to 5 days. [1] Social distancing precautions are vital in fighting the COVID-19 pandemic, but they must be evaluated through periodical assessments to maintain their effectiveness.

**Aims:**To assess the lockdown effectiveness in each of Italy, Germany, Spain, France, the USA and China using the average Infected Patient's Ratio (IPR) tool.

**Methods:**Quantitative data analysis. The Infected Patient's Ratio (IPR) tool was developed to measure the number of patients resulting from one infector during the incubation period. This tool measures the number of new patients whom are infected by one primary infector in the incubation period.

**Results:** The drop in IPR means that the lockdown has started to be effective from the 1st day in all countries, but varied from one country to another due to other factors.

**Conclusions:** By using the IPR tool, a spontaneous decrease after 10 days of lockdown can be noticed if the lockdown is effective. IPR tool can be used by different countries to assess the lockdown effectiveness.

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**Acknowledgements:** This work was supported by EFOP-3.6.3-VEKOP-16-2017-00009. (Development of scientific workshops of medical, health sciences, and pharmaceutical educations)

**Keywords:** COVID-19, lockdown, pandemic

## Factors associated with Burnout Syndrome among geriatric nurses

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Work on health exercise profound influence on the health-sickness process in any work contexts. In the geriatric health department, there is rapid and continuous technological development, due to the significant increase elderly in the society, requiring more and more from those health professionals [1,2]. These factors, coupled with stress chronic condition, may put health professionals at risk for Burnout Syndrome (BS). BS is a psychosocial phenomenon that emerges as a response to the various occupational stressors present at work. It is characterized mostly by three dimensions, emotional exhaustion, depersonalization and low professional achievement [3]. The aim is to analyze the factors associated with Burnout Syndrome in geriatric nurses.

**Methods:** This is a cross-sectional analytical research, that it will be carrying on at geriatric departments in Brazil, Germany and Hungary hospitals. Data collection will be performed with all nurses from geriatric departments of the chosen hospitals that agree to participate in these research. The questionnaire consist of five sets of questions: Individual, Work, Social and Health Aspects, and also plus the Copenhagen Burnout Inventory, to investigate the BS such as dependent variable. To the data analysis will be use the Statistical Package for the Social Sciences (SPSS) version 22.0, to perform the descriptive and inferential statistical analysis.

**Results:** We are expecting to find a high levels of BS in these countries but characterized with different on dimensions and aspects related to BS. The work characteristics, such workload, productivity pressure, conflicting are high associated with BS, and influence to a greater extent the exhaustion dimension. Recognition and feedback itself are other important role as individuals do their best and enjoy feedback on their performance and dedication in their work. And we are expecting to find more work problems situations from highest to lowest in Brazil, Hungary and Germany respectively. Other aspect that we are waiting different levels among these countries is the social support, because people who receive the support have an eminent ability to develop their actions in the face of the demands and stressful events, and consequently less prone to SB.

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*Keywords:* Burnout syndrome, geriatric, nurse, work disease, occupational exhaustion

## Estimation of short- and medium-term survival of sudden cardiac arrest based on initial rhythm

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**Introduction:** Sudden cardiac arrest (SCA) is a clinical syndrome, the most generally definition is: unexpected premature natural death due to cardiogenic causes on a person with or without a known heart disease, prevented by sudden loss of consciousness and occurs within an hour of the onset of acute symptoms. The incidence of sudden cardiac arrest is widely reported in published literature (15-48%), which depends on geographical and demographic indicators.

**Methods:** Our research was aimed at examining short- and medium-term survival in patients with sudden cardiac arrest following the resuscitation. In case of sudden cardiac arrest we compared the data of our patients divided into two groups at the time of hospital departure, and then 1 and 3 months after. During our investigation, between 1 January 2016 and 1 October 2018, suffered from 134 patients with data we compare. Data from patients who have been proven to be shocked(I) or not to be shocked (II) following initial rhythm. The most important endpoint is the death data between the two groups. In the statistics analysis, we used T-test and ANOVA for comparison the data. Our exclusion criteria included inaccurate documentation and uncertain rhythm.

**Results:** 68% of patients were in the shock group, where survival was significantly higher at all three observed times than at the non-shocked group.

**Conclusions:** In the population we examined, there was also supported theory that patients with shock rhythms in the survival indicators are significantly better than those with non-shocked rhythms. We experienced significantly higher survival in our patients, both on hospital departure and 30th day survival data.

*Keywords: sudden cardiac arrest, ventricular arrhythmias, survival*

## Role of Traditional Medicine/Complementary and Alternative Medicine in prevention and or treatment of COVID-19

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The most recently discovered infectious agent causing Respiratory virus Infections [1] (RVI) known as COVID-19 that have threatened the life of many across the globe was declared pandemic on the 11th of March 2020[2]. As a result of its high transmission and mortality rate, the COVID-19 pandemic did not only set researchers into action but has led to the dependence and discovery of active ingredients in self-medication from alternative medicine by serendipity. For centuries, the use of herbs, plants etc., have been used to treat or diagnosed different kinds of diseases and illness. Infectious microbes from time in memorial have been the players the key players when it comes to infection. There's no doubt that during this pandemic, individuals from varying background and races did not explore TM/CAM to prevent and or cure themselves from the viral agent causing this COVID-19 pandemic.

The aim of this article is to highlight the probable role played by TM/CAM in the prevention and Cure of COVID-19 among the population.

Evidences in the use of TM/CAM for the cure or treatment of COVID-19 through proof from published articles in PubMed, Science Direct, Google Scholar and reports from individuals on social media were explored and analysed.

Interventions discussed in this article focused on the active ingredients/ vitamin supplement (Vitamin B, C and D) found naturally in these herbal mixtures which has proven the effect of TM/CAM in reducing, suppressing or regulating the new cases of COVID. Immunity is said to be the key factor when it comes disease theory. The use of TM/CAM has been used to boost immunity [3][4] especially because many have been; and are still using the TM/CAM as an alternative in this confused pandemic situation that no medication nor vaccine has been found to be the cure or preventive measure for this menace. It is important to know that this research doesn't endorse the unregulated consumption of TM/CAM without proper guide. But tends to prove it efficacy and therefore harness the ingredients for clinical trials. Though, many herbal concoctions have not yet been ascertained to treat nor cure COVID-19 by CDC and WHO, this article suggests the recommendation of the use of TM/CAM with active ingredients against the COVID-19 virus, because, there's no doubt that the use herbal medicine played several roles in saving people lives during this COVID-19 pandemic.

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*Keywords:* Complementary medicine, alternative medicine, COVID-19, pandemic, prevention and cure.

## Health-conscious behaviour and exercise awareness study in distance physical education among secondary school students in West Hungary

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**Introduction:** At the time of the introduced restrictions due to SARS-CoV-2 epidemic physical education took place in the form of distance learning in Hungary, 2020. Our research focused on the opinion of effectiveness, their perceptions of adolescents (11-19 yrs) concerning exercise and healthy lifestyle and its characteristics. We aimed to explore the efficacy perceptions of exercise and healthy lifestyles in the studied adolescents that characterized them at the time of the epidemic.

**Aim and Method:** We examined primary and secondary school students in Hungary in 18 public education institutions (N = 276; 59% girls). Their mean age was 16.14 ( $\pm$  9.9) years. In addition to demographic and exercise questions, we used two psychometric scales in addition to calculating body mass index (BMI). Participants completed the Hungarian version of the Exercise Self-Efficacy Scale (ESES; Kroll et al., 2007) and the Self-Rated Abilities for Health Practices (SRAHP; Chilton, Gosselin & Haas, 2018).

**Results:** The results showed that 96.7% of the total sample underwent physical education outside of class exercise during the quarantine. 43.8% of respondents indicated that they moved more during quarantine than before, 37.7% said they moved less, and 18.5% said their exercise habits did not change. Both boys and girls were satisfied with quarantine physical education (5 / 4.1 and 5 / 4.3) and liked their physical education teacher equally (5 / 4.5 and 5 / 4.5). However, only 5 / 3.6 (above average) boys and girls completed the hourly / workout program. 54% trained according to the plan of their physical education teacher, 26% followed the instructions of their coach and 20% followed both. Both boys and girls were more likely than average to do training programs (5 / 3.5). According to the students, the presence of peers was 5 / 3.1, the presence of the coach / physical educator could also have facilitated the effectiveness of their exercise in a ratio of 5 / 3.1.

Boys 'and girls' exercise self-efficacy ( $t = 2.159$ ,  $df = 274$ ,  $p < 0.032$ ) and health awareness well-being experiences ( $t = 2.099$ ,  $df = 274$ ,  $p < 0.037$ ) differ significantly in favor of boys. Comparison of the results of the primary school upper age group (11-15 years old) and the secondary school age group (16-19 years old) ( $t = 2.557$ ,  $df = 274$ ,  $p < 0.011$ ).

**Conclusions:** The results suggest that efficiency perceptions of exercise and well-being in the studied age group are more positive for boys and the younger age group. The results predict students' later life development and personal development, including the influence of what activities they will be involved in (Bandura, 2001).

*Keywords: quarantine, exercise, P. E. education, opinion of efficiency*

**Építészet**



**Architecture**

## The impact of social interaction on the leftover space

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With the rapid economic development, the original layout structure and spatial functions of the city have been affected. Under the large-scale data transmission in the Internet age, residents' daily social habits have also undergone many changes. From personal daily life to activities related to external social networks, etc., the related spaces have also undergone their own reorganization. The key factor of residents' participation in the space also reflects the characteristics of urban leftover space itself, which is non-permanent, flexible and potential. The perspective of this article is not only to analyze the attributes of leftover space, but also to focus more on human activities. By summarizing the residents' social interaction and the factors affecting these behaviors, a living community with the purpose of spatial emotional connection is established or reconstructed in the existing leftover space. In this way, the degree of connection between people and space is deepened, so as to guide the public to actively participate in the adjustment of the characteristics of leftover space and space optimization, broaden the application boundary of space, expand the dimension of design, and make leftover space no longer neglected.

**Results:** This article analyzes the urban leftover space from the perspective of social interaction, and establishes social flexibility through external intervention and internal guidance. In this way, the "leftover" boundary is extended and the adjacent space functions are stitched together. It mainly involves the comprehensive design of space function and environment, creating high-quality communication space and multi-level activity space. The construction of multiple functions is conducive to increasing people's interaction in the space, promoting the emotional connection between people and space in the experience, and forming a sense of belonging. Under the diversified behavioral needs of the public, the functional design of urban leftover space also tends to be mixed, that is, urban leftover space can meet other types of needs while meeting basic behavioral needs. The "fuzzy" processing of the space boundary makes each area of the space more flexible and produces diverse interactions. In addition, this is to link and combine small-scale intervention with large-scale strategies to guide the public to actively participate and awaken the vitality of the remaining urban space.

**Conclusions:** From the analysis workflow, it is the "point" of social interaction that radiates to the "surface" of spatial update. This article advocates paying attention to the urban leftover space in daily life, as a catalyst for restoration, which ultimately affects people's life and communication. Through the construction of a multi-participation mechanism, the public is guided to switch from the role of "bystander" to "participant", promote interaction in the process of participation, strengthen the relationship between the outside world and the leftover space, and expand the social function of leftover.

*Keywords: leftover space, social interaction, public participation, community*

## Interdisciplinary Architecture

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The present research explores the connection between the built environment and fashion design. It looks into architecture and pattern design methods from the aspect of perception. In doing so, the project attempts to leave behind shape and silhouette-oriented design rules for a wider exploration and experimentation of creating unique design paths. Through the designer's collaborations, it explains how architecture plays an interdisciplinary role in fashion design.

The designer explored the similarities in the aspects of architecture and fashion design such as source of inspiration, similar structures, and function in the use of materials. To challenge creativity, three capsule collections were designed based on these three aspects.

**Results:** In a print design project for a hotel, the designer experimented with the idea of using the same inspiration for the garments as the interior designer used for the space. In a structure design project, the horizontal section of a large-scale sculpture was adopted as the basis for silhouette design. In the third project, a steel-mesh covered residential building inspired the design of a shirt collection.

**Conclusions:** Analysing the design process, it turns out that experimenting with scale was the logic behind all three projects. Scaling down large-scale structures resulted in a unique outcome. This approach to fashion design added timelessness to the capsule collections, which is an important factor in terms of sustainability.



## **The Application of Regional Cultural Elements in Landscape Architecture Design-Taking the Reconstruction Design of Jingdezhen Ceramic Industrial Block as an Example**

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Jingdezhen is an important city of ceramic culture. It was the site of many official kilns in ancient China and also the key development area of China after 1949. Here people can see the ceramic industry with a thousand years of history, as well as the construction relics left by the rapid construction of the industry 50 years ago. But for a modern city to live in, the environment here is too old. In recent years, China has advocated urban cultural construction. However, most of them are exploratory projects. After studying these cases, I got some inspirations about urban construction. Based on these inspirations, I excavated the traditional handicraft culture of Jingdezhen, combined with regional functions, and carried out a space form research and design practice that integrates culture, function and life. The environment I chose to renovate is a block next to a 45-year-old kiln. I hope that some design can solve the functional integration while retaining the memory and culture of the city, and can bring intimacy to the people here. I will summarize the design practice and discuss the issues and design methods that need to be paid attention to in the construction of creative cities.

*Keywords: Regional Culture; Urban memory; Landscape Architecture ;Reconstruction Design*

## **Neveléstudomány II.**



## **Educational science II.**

## Self-assessment as a core part of career planning – the results of three surveys conducted among a group of young intellectuals

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**Introduction:** Since Parsons, Super and Holland's early theories, self-knowledge has been recognized as an indisputable prerequisite to choosing a career. The most frequently assessed personality traits are interests, skills and values. Knowledge of these qualities is fundamental to the individual when setting up a self-image that can be fit in a particular environment -based on Holland's terminology- or assigned to a particular occupation -based on Super's terminology [1].

The aim of this research was to examine whether the students of an artistic-type higher level vocational training, the "Television Production Assistant", had chosen the vocation that matched their personality traits, work values and work motivation. In doing so, I conducted three self-assessment tests – two of them are among the best known and most widely used models - among 85 students.

**Results:** The results of the Holland's Code Test indicated that it was only half of the respondents whose personalities matched the work environment. A surprisingly high proportion of the respondents showed interest in an entirely different work environment. However, the results of Super's Work Values Inventory Test and the Work Motivation Test clearly revealed that the respondents would prefer to work in a team in which each task was assigned to a different individual, but this cooperation could result in a much higher productivity and efficiency. Taking the particular features of this occupation into account, it could be ascertained that this occupation would be a good match to the great majority of the respondents.

**Conclusions:** All the tests made it clear to us that self-assessment had to be considered as the first and most important part in the career orientation process. Although the first test showed a partial match, we need to consider the fact that this generation is particularly interested in the world of media and many of them learn how to take good photographs or shoot a film purely out of interest. The two other tests clearly indicated that most of the respondents would do well in this occupation. Therefore these tests proved to be very useful in providing the respondents with feedback about their career decisions.

*Acknowledgements:* I owe special thanks to Dr. Tamás Vámosi, my supervisor. This paper and the research would not have been possible without his exceptional support.

*Keywords:* self-assessment, career planning, skills, interests, values

## **New Direction of Educational Pedagogy after Pandemic: Analyses the Dimensions and Demands**

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Covid-19 pandemic is a tentative issue and extemporaneous natural hazard so effects can't be measured immediately on human society in all sectors and also is not determined sustainability and consequences still now over the world for forthcoming period. But it has been presumed the effects on education arena how it impulses us to rethink our capacity, skills, philosophy, scope, expectations, plan and all. Because this pandemic climaxes the educational pedagogy including education philosophy, policy, curriculum, contents, management system have been developed in 20th century and our beneficiary (students) groups origin in 21th century and they are experiencing by witnessing transformation and demand of new direction. The most important challenge is to ensure equality and equity for all nations to adapt with new normality because of economic and developmental gape among them; so all nations will be run by the new educational philosophy where new conflict will be placed among these specially emphasizing on skills and productivity whereas questions will be aroused to chase the situation in upcoming days and might be despised traditional and conventional knowledge. Because pandemic teaches all nations that self-mechanism and self-dependency is very needed in emergency period that's why path way, demand and dimension must be transformed in considering future challenges. Where there teacher's specialization of all level in technology and virtual teaching activities will be required, but the concern is that is the traditional ICT training enough to conduct virtual class? Is it possible to interact between teacher and student or among the student? So how will be the pathway to adapt new normal through virtual teaching-learning? Because real teaching-learning practice have an influential effects on both teachers and students; so it would claimed long term behavioral impact on social and family life. On the other hand, assessment process specially formative assessment is not possible perfectly because appearance and normal interaction is absent here. So how will it be secured the gap in new normal? Inadequate infrastructures among the nations which reveal the opportunities gape in education system will affect to attain equality. At a time, a great number of children (approximate 57 millions) will stop to go school permanently; so what will be the paradigm to educate or integrate them in leaning? Continue education or lifelong learning may expect new pattern after affecting by pandemic. After all, every segments of education from primary to tertiary, formal, informal and nonformal education will be regarded in new demands because the education system will be witnessed massive changes over the world that why policy, practice, reality have to be determined by measuring dimension of new normality.

*Keywords: Pandemic, New direction, Educational Pedagogy, Dimensions, Demand*

## All that is wrong with the term empowerment

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**Introduction:** This presentation is not aimed against empowerment as a process or outcome, on the contrary. However, I would like to tackle the inherent contradiction between the term's morphosemantic meaning and the concept we use it for. Empowerment became a widely used term in 1990s and is still very common in contexts such as social work, community building, psychology, medicine, etc. My doctoral thesis focuses on empowerment of adults by the means of educational theatre and drama, and this research came to be while I was building up my theoretical framework.

**Structure:** First I summarize the theory and value orientation of empowerment, then I point out the emphasized significance of the language applied during empowering processes as stated by Rappaport[1], Zimmerman[2], and indirectly, Freire[3]. I interconnect this approach of linguistic significance to other theories, such as speech-act in pragmatics (Austin[4]), and interactionism. I describe the morphosemantic meaning of the term and then discuss in which ways it matches and in which others it contradicts empowerment as a value orientation. I even advert shortly the issues with the translation of the term to Hungarian.

**Aim:** I intend to challenge the validity of the term empowerment as it is used in the scientific terminology based on its morphosemantic meaning and the approach of empowerment.

**Method:** Secondary research.

**Results & Conclusions:** I conclude that the term fail to illustrate the approach of empowerment and discuss some existing (e.g. enablement, self-efficacy, etc.) and possible new alternative terms for it.

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*Keywords:* empowerment, terminology, empowerment-oriented language, semantics

## **Towards Analyzing Several Teaching Strategies Used Achieve Inclusive Education for Students with Special Needs**

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Present research is highlighting the fact that there is always a scope of the reformation in an inclusive education environment, which refers to that an adaptive environment where physical structures, teaching methods, curriculum, policy and practice of education environments must be accessible to all students without any discrimination. The right kind of educational structure and teaching strategies should be framed to maximize the inclusion. This paper is validating and comparatively scrutinizing the available teaching strategies for special students. There are various developed and practiced teaching strategies which are proving worth to adopt them. But one cannot deny with the need to analyze the feedback and to update these teaching strategies promptly as per the learners' needs. Study suggests Cooperative teaching has transformed the special education but some of the teaching strategies are suffering from several anomalies i.e. reducing the degree of inclusivity and also diverging from inclusive academic objectives. The analysis of these strategies is done by using quality parameters as learning outcomes, students' perspective of adoption, teachers' efforts, way of implementation and some more crucial parameters suggested in previous research. By the result of this systematic review based comparative study stakeholders of special education will get to know about both essentials and drawbacks of these strategies, which should be taken into care while applying these strategies for the inclusive classroom setup. This study intends to explore mandatory features that should be included but do not exist in the contemporary strategies.

*Keywords: Inclusive education, teaching strategies, special students, learning outcome, adoption*

## Fúvószenekar, mint a közösségi tanulás színtere

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Az esettanulmány több szempontból vizsgálja egy hazai kisvárosban működő zeneiskola kiemelkedő kulturális és zeneoktatási tevékenységét. A tanulmány kiemelt figyelmet fordít az intézmény jelenlegi és volt növendékei alkotta fúvószenekarra. A közösségi tanulás és a társadalmi innovációs folyamaton túl kitér a zene pozitív hatásaira is. Célja feltárni és bemutatni a helyi kulturális társadalmi innovációs folyamatokat, mely során vizsgálatra kerül a város és annak kulturális élete is. A folyamatok bemutatása során kitér az esettanulmány olyan személyekre, akik hatással voltak település kulturális és társadalmi innovációs folyamataira az elmúlt évtizedek során.

Az elméleti áttekintést követően az empirikus kutatás bemutatására kerül sor. A vizsgálat során féligstruktrált mélyinterjú készült a zenekar alapítójával. A kvalitatív primer adatok feldolgozása mellett, az esettanulmány elkészítéséhez online, a zenekar alapítójával készült elérhető korábbi interjú is felhasználásra került.

Az esettanulmány kutatási kérdése: Hogyan illeszkedik a zenekari közösség a helyi közösségekbe, valamint milyen pozitív hatások figyelhetők meg a „Z” generációs diákok tekintetében a zenekari közösségi tanulás során?

**Következtetések:** A zenei tanulmányok, azon belül is a zenekari közösségi tanulás segítségével lehet a „Z” generációs diákoknak az (1) iskolai integrációs folyamatok támogatására, (2) a siker élmény megtapasztalására és (3) a több generáció együtt tanulása pedig támogató lehet a szociális készségek fejlesztésére egyaránt.

*Kulcsszavak:* közösségi tanulás, egyéni oktatás, generációk, zenepedagógia

## A személyiségfejlesztésre irányuló hatások vizsgálata az iskolai közösségi szolgálat különböző tevékenységi területein

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Több sikeresen működő nemzetközi program példáira alapozva Magyarországon 2011-ben bevezették az Iskolai Közösségi Szolgálatot. Ennek keretében a nappali tagozaton tanuló középiskolás diákoknak 50 óra iskolánk kívüli tevékenységet kell elvégezniük a jogszabályban meghatározott nyolc terület egyikén. Dr. Bodó Márton Az iskolai közösségi szolgálat bevezetésének tapasztalatairól szóló könyvében a következő 5 kiemelt célját fogalmazza meg a programnak: közösségépítés, aktív állampolgárságra nevelés, személyiségfejlesztés, pályaorientáció és önkéntességre nevelés. A 2018-ban diákok körében végzett, önkéntes alapon kitöltött online felmérés (N=9960) a diákok tapasztalatait dolgozza fel és többek között azt vizsgálja, hogy mennyire valósultak meg ezek a kitűzött célok a szolgálat teljesítésekor. Az eredmények azt mutatják, hogy a másokra való odafigyelés, az alkalmazkodóképesség és a kommunikációs készség területén figyelhető meg leginkább pozitív változás a válaszadók körében. Jelen kutatás eredményeinek felismerése új célok megfogalmazását teszi lehetővé az Iskolai Közösségi Szolgálattal kapcsolatban. Az előadás a közösségi szolgálat keretein belül megvalósítható készségek, kompetenciák fejlesztésének fontosságát hangsúlyozza és bemutatja a diákok szemszögéből eddig elért eredményeket.

*Kulcsszavak: Iskolai Közösségi Szolgálat, személyiségfejlesztés, nonformális tanulás, készségfejlesztés, önkéntesség*



## **Kommunikáció és nyelvtudományok II.**



## **Communication and linguistics II.**

## Evidentiality and modality in the Bulgarian language

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Modern Bulgarian and Macedonian are the only Slavic languages which preserved and even enriched their temporal system. In the other Slavic languages, the simple past tenses, the aorist and imperfect have almost completely disappeared, and the role of a single preterite has been taken over by the perfect. Of the Slavic languages only Bulgarian and Macedonian retained the forms of perfect with a resultative meaning, which led to the appearance of indirect verb forms (evidentiality).

Evidentiality links the Bulgarian language to the Balkan-West Asian language area. The first period of the development of modality and evidentiality can be dated back to the 12-13th century. However, research on the development of evidentiality is complicated due to the far fewer written records from this period (i.e. the Middle Bulgarian period) compared to the Old Bulgarian period (10-11th century).

Evidentiality is a verb category that expresses the relationship between information and the source of information. This grammatical hypercategory can be related to many other verb categories, but its exact composition and quality vary from language to language, and even in related languages it often does not show full or even partial similarity.

In contrast, epistemic modality refers to the relationship between the speaker and the information. It is a conceptual domain that is related to the speaker's (logical) assessment of truth about certain propositional contents, or the speaker's subjective assessment of the content (within the functional-cognitive framework) that determines the degree of certainty [1].

There is a clear relationship between evidentiality and modality, but modality is scalar/graduated and evidentiality is not. Different markedness conditions can be found in different evidential categories depending on how indirect the perception of the information is and how complex the conclusion is.

**Results:** The development of Bulgarian evidentiality can be traced back to an internal language change process, namely to the transformation of the perfect into a resultative tense, which may have reached its present state as a result of the Ottoman-Turkish influence. By comparing evidentiality and modality, I present the evidential and modal markedness relations of these categories in the Bulgarian evidential system, together with other related aspects.

**Conclusions:** During the development of Bulgarian evidentiality, the initial, purely indirect evidential category was complemented with additional evidential categories carrying epistemic overtones, for which we can find examples in other languages of the Balkan Language League as well.

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*Keywords:* evidentiality, modality, Bulgarian, temporal system, language change, language contact, areal linguistics

## Linguistic differences in MA abstracts written by native and nonnative speakers of English: a pilot study using machine learning

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To identify the native language of a foreign language user from his or her target language production has been one of the hot topics both in Second Language Acquisition (SLA) and Natural Language Processing (NLP) research. In this paper, we analyze a corpus of abstracts collected from MA theses in linguistic-related fields by students from the United Kingdom, China and Hungary. Our aim is to detect the use of certain specific features of English users from different L1 backgrounds by performing machine learning experiments and see what features are the most useful for distinguishing the language use of the three groups of English speakers.

**Results:** It is revealed that it is primarily morphological and semantic features that distinguish native and non-native language use. As for the two groups of non-native speakers, Hungarian students tend to use their personal viewpoint more frequently while their Chinese counterparts prefer to be more objective.

**Conclusions:** All in all, morphological features seem to contribute the most to the automatic distinction of the three groups of speakers

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*Keywords:* SLA, learner corpus, NLP, corpus linguistics, machine learning.

## The case study of Russian immigrants in Hungary: L1 lexical and grammatical attrition

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The native language of an individual usually goes through changes as a consequence of migrating to a foreign language environment[1]. Especially, if the emigrant puts an effort into the development and acquisition of the L2, it will have an even stronger effect on L1 attrition[2]. Bilingual individuals, who are exposed to an environment with a dominant L2 tend to become attriters, with a decrease of vocabulary as the most common manifestation. Language attrition is a phenomenon that is not experienced by healthy monolinguals, it is usually an outcome of bi- and multilingualism.

The main aim of the study is to answer the questions whether extralinguistic variables have an influence on lexical and verbal fluency; to what extent length of residence plays an important role in language attrition. Several extralinguistic factors have been identified to have an impact on attrition, such as age, length of residence in the foreign environment and frequency of use. This paper reports on the preliminary results of the research and presents case studies. The participants of the study were all Russian first language speakers in Hungary. All of our partakers are bilinguals, who spent about 30 years in Hungary.

For this study Social Personal Background questionnaire completed with personal interviews was used to collect data to investigate the deviance in speech fluency. All of the questionnaires were collected online/offline; interviews were recorded and transcribed. The L1 language skills was assessed by three instruments. First, the story-cartoon, coined to Mercer Mayer “Frog, where are you?”- 30 slides, pictures-based story line, helping to gather the additional data on speech fluency. The second source we used to collect the data on free speech was the interview conducted with the help of questionnaire, compiled by Merel Keijzer [3](2007) and adapted for Russian speakers. The additional data for verbal fluency of our participants was collected according to Schmid [4](2004): the most common semantic category “animal” and the most frequent letter in L1 alphabet.

**Results:** The results show that the reduction of vocabulary and fluency, grammatical mistakes and distorted usage of lexemes presented in the spoken production of the participants. The effects of extralinguistic variables do not show a pattern due to the limited number of cases.

**Conclusions:** Based on the mixed results we suggest that drastic changes in the L1 for some of our participants has not taken place due to unsuccessful integration to the society and lack of language contact in a foreign country.

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*Keywords: bilingual, lexical attrition, verbal fluency*

## Research methods and methodology in law enforcement language teaching

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The concepts of globalisation, digitalisation and lifelong learning have been present for years in higher education. One of the main tasks of the institutions of higher education is to prepare the students for the competences demanded by the labour market. One of its crucial segments is the active and sufficient language knowledge, so its improvement is essential whether we talk about the institutions of higher education at home or abroad.

The research is carried out at the University of Public Service (hereinafter: UPS), Faculty of Law Enforcement, Department of Foreign Languages for Specific Purposes in the following two academic years. The participants of the research are the full-time students of the Faculty of Law Enforcement (N=100) and we observe the actual level of the students' digital and verbal communication and their improvement in ESP classes [1]. The research has three parts: (1) qualitative research; (2) classroom research; (3) quantitative research.

The study aims to present innovative language learning methods [augmented reality (Czékmán 2017) and social networking sites (Uricska 2020)] [2];[3] that satisfy the requirements of digitalisation, and can be applied in a multimedia environment as mobile devices (e.g. tablet, smartphones) can be effective in the application of language learning methods. We observe the effectiveness of different language learning methods by applying Dani's (2014) HY-DE model [4], with which the students can monitor their completed assignments and try to identify their difficulties, therefore the instructor can develop their problem-solving strategy and critical thinking as well.

Due to the results of the research, the law enforcement technical language, as a working language, can gain a prominent place in law enforcement training. On the other hand, the positive result of the research can also lead to the development of general and communicative competencies necessary for effective communication in English and the peculiarities of digital competencies.

*Acknowledgements:* The research is carried out in the framework of the new language strategy of the UPS. We would like to say thanks the Rector's Council, the Dean of the Faculty of Law Enforcement and the leader of Department of Foreign Languages for Specific Purposes for accepting the research plan.

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*Keywords:* higher education, HY-DE model, language learning strategy, digital and verbal communication, language learning methods

**The effects of English language acquisition and its sociological and psychological dimensions on Arabic language maintenance and attrition (A Case Study of an 11-years old girl in a multilingual community)**

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The acquisition of the first and any additional language affects each other negatively and cause complications in language maintenance or language attrition for bi/multilingual speakers who are living in multilingual communities. As assumed by (Jessner, 2017), languages systems in a multilingual's brain are in constant competition, therefore a multilingual speaker needs to expand efforts both for additional language acquisition and for first language maintenance. As these two languages are in a constant interaction, they cause positive and/or negative effects (language transfer, language interference). This study seeks to determine the effects of second and/or multiple language acquisition factors, social factors, psychological factors, developmental factors on both languages' processes negatively, and assume that the decline of both first language communicative needs resources and language maintenance effort amount lead to the first language attrition. The study involves an 11 years English/Arabic bilingual child (Mais) who is constantly exposed to both languages since birth, as she lives in a multilingual community (Bahrain). A dialogue was recorded and has been prepared beforehand in order to trigger her in a way that detects her both languages flaws and errors. In the bi/multilingual's brain who is living in a multilingual community, the bilingual systems, i.e. Arabic, English, are in constant interaction and thus affecting the processes of each other. As this paper suggests that one language in the subject's repertoire is affecting the other negatively and vice versa, which would result in failure of languages maintenance, acquisition and development. This study resulted in several outcomes where it is detected that the child is experiencing interchangeably languages interference between English with Arabic. These outcomes influenced both of the languages' acquisition and development processes negatively. In other words, as hypothesized, Arabic language attrition resulted from the decline of both Arabic language communicative needs resources and language maintenance effort amount.

*Keywords: Bilinguals, Acquisition, Maintenance, Attrition, efforts, Sociological and Psychological Factors*

## The Perceptual Assimilation of American-English Monophthongs by Palestinian-Arabic EFL learners

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This research examines American English vowel perception by Palestinian-Arabic (PA) high-school learners of English in a formal classroom setting (i.e., they learned English as a foreign language for 12 years in school while living Palestine) in order to identify (and predict) areas of difficulty in the perception of the American English (AE) vowel sounds so that teaching (materials) can address such issues rather than spending time on sounds that do not constitute a problem. According to the Perceptual Assimilation Model (PAM), learning problems are predicted when two L2 phonemes are perceived as good tokens of a Single Category in the L1 (SC scenario) [2]. In this research, 40 participants (20 male) PA high-school listeners performed a perceptual assimilation task for the AE pure vowels. In a glottal-alveolar /hVd/ carrier monosyllable uttered by two male native speakers of American English (four tokens per vowel), PA participants examined how the 11 AE vowels /æ, ɑ, e, ε, i, ɪ, o, ɔ, u, ʊ, ʌ/ [7] set against the 6 PA (3 long-short pairs of vowels distinguished by duration) /i, i:, a, a:, u, u:/ [4] and [5] and then rated their goodness on a 5-point scale. Stimulus presentation and data collection were done by a Praat MFC script [3].

**Results:** The results revealed that the non-native listeners focused on the duration of the vowel to distinguish their perception of the AE vowels, i.e. the assimilation of L2 vowels to their L1 categories was temporally associated. Seven SC contrasts were identified i.e., heed-hayed /i:-e:/, hid-head /ɪ- ε/, hud-hood /ʌ- ʊ/, hod-hawed /ɑ:- ɔ:/, hawed-hoed /ɔ:-o:/, hawed-who'd /ɔ:-u:/, and hoed-who'd /o:-u:/. Moreover, a Category Goodness (CG, intermediate learning difficulty predicted) problem was identified for the had-hod /æ:- ɑ:/ contrast. Therefore, we can conclude that contrasting (pairs of) vowels related to duration distinctions was easier than contrasting vowels that involve height and tongue advancement distinctions.

**Conclusions:** Generally, the perception of English vowels by PA high-school learners of English conformed PAM's predictions knowing that participants studied EFL for 12 academic years but focusing on listening and speaking is scarce [1] and [6].

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*Keywords: Palestinian Arabic, EFL, Vowel Perception, PAM-test*

# **Nemzetközi jog I.**

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# **International law I.**



## **Electronic Monitoring (EM) in the Criminal Justice Systems of the V4 Countries – with special regard to Hungary**

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With the development of the technology we can expect that the spreading of the application of EM in the criminal justice systems will continue worldwide. For better understanding EM needs to be examined from comparative aspects. According to Europe, based on various features, such as history, cultural and legal aspects, political background and criminal policy certain groups of countries can be identified however the European picture is pretty colorful in that matter. One of them are the Middle- and Eastern European countries, where EM started being used during the second decade of the 21st century. In this paper I focus particularly on the V4 countries and their main features according to the EM regulations, such as the reasons of introduction, the year of introduction and the application of EM. Hungary gets a special focus since the other goal of the paper is to overstep the potential language barriers and provide a general overview of the Hungarian picture of EM, which could be useful for foreign scholars as well.

*Keywords: alternative sanction, criminal justice, electronic monitoring, imprisonment, pre-trial detention*

## Our Journey to the Stars...The Problem of Statehood in the Exploration of Outer Space

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Digitalization and technological development are having an increasing impact on our world. Due to the negative impact of humanity, our planet will slowly be unable to support us, which is why it is time to turn our gaze to the stars. The expansion of outer space raises a number of issues of international law. For example, can a space station be considered a state territory? *The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* which has been in force since 1967, does not provide for such matters[1].

On September 9, 2017, the Space Kingdom of Asgardia[2] was formed in the online space, which has several criteria of statehood: state territory, population, government. At the same time, it lacks the ability to liaise with other subjects of international law. And it only exists on the Internet.

**Conclusions:** Is this the future? There is no clear answer to this under the current rules. If humanity emerges into the cosmos, it will mature into a much more modern regulation. In that case, the Member States of the United Nations would have to work much more closely together, and it would be worth setting up a joint monitoring body to deal with any disputes that might arise.

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*Keywords:* international law, space law, digital law

## Sea law dilemmas of the Hans Island's location

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Denmark and Canada have confronted their claims to a small rock known as Hans Island, which is situated in the Arctic region. This is a bleak uninhabited and uninhabitable island measuring 1.3 km<sup>2</sup> (1,290 m long and 1,199 m wide), in the centre of the Kennedy Channel of Nares Strait, which separates Ellesmere Island from northern Greenland and connects Baffin Bay with the Lincoln Sea. However, no one can regard this tiny land as unimportant, that it has been causing long-lasting tensions and disputes between Canada and Greenland. On 28 November 2012, Canada and the Kingdom of Denmark – announced that they – had reached a tentative agreement on the maritime boundary at the Lincoln Sea. This agreement partly settles long-standing uncertainty over the northern boundary between the two countries. Most of the boundary between Canada and Greenland was established by a continental shelf delimitation treaty in 1973. Except for some occasional expeditions, the island was largely unheard of until 2005, when the Canadian Minister of Defence, set the Canadian flag with the text 'Welcome' on the island. This resulted in an official protest from the Danish Government and induced some crazy expeditions, which are often referred to as the 'battle of the bottles': Canadian visitors left whiskey and Danish visitors left brandy bottles when they removed the other sides' flag and raised their own flag with the same text. These activities were carried out by the national forces of both States.

**Results:** The maritime boundary at the Lincoln Sea does not settle the dispute over Hans Island, which is situated right in the middle of a potentially important sea route to the Arctic Ocean. Sovereignty over the island has long been disputed and the continental shelf delimitation treaty of 1973 delimitation line stops on each side of the low-water mark of the island. The 'battle of the bottles' activities probably was done to demonstrate 'effective control' over the island. [1].

**Conclusions:** My research encompasses to the recent history of Hans Island and the origins of the competing sea law claims of Canada and Denmark. It will explore possible factors behind the recent occurrence of diplomatic hostilities. I analyse the relevant case law of the International Court of Justice (ICJ), on maritime border dispute cases, which can be applied to the Hans Island case. I draw up the three rationales according to which the ICJ decides such territorial disputes and explain how the current case presents a unique challenge for the court. Finally, I seek for the equitable solution of the said border dispute, which may exert widespread consequences for the resolution of international conflicts in other to remote, uninhabited areas in the future. [2].

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*Keywords: sea law, sovereignty, territorial dispute, continental shelf, maritime boundary*

## **The role of Governments and international organizations in promoting the Blockchain technology and its applications**

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The development of technology has led to the emergence of innovations in international trade and the Internet has brought many significant changes to the economy and trade. One of these recent issues is the Blockchain technology that can make a big revolution to international trade and different aspects of Law and regulation policies. This research seeks to observe the efforts – in the field of Blockchain technology and its regulation – which must be taken on the national governmental level (f. e. procedures, mechanisms, sanctions, etc. that only government can do effectively) and those on the level of international organizations, to promote the efficiency of Blockchain technology and its applications. A survey in the governmental and international activities in the field of Blockchain, based on an exploratory analysis shows that Blockchain recognition requires a high level of cooperation among the governments and organizations. Partnerships and forums under the supervision of Organizations can increase transparency in the regulation of Blockchain Technology. These partnerships and forums can help experts to reach a unified, multilateral approach to the regulation of this technology.

*Keywords: Blockchain; cryptocurrencies; smart contracts; international organizations; policy making*

## The Necessity to Reform Investor-State Dispute Regime: Will UNCITRAL Proposals Solve the Problems of Current ISDS Mechanism?

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International investment law and particularly investor state dispute settlement (ISDS) are currently the subject of many heated debates, from the fairness of bilateral investment treaties, to the lack of binding precedent in ISDS, to the impartiality of arbitrators. The international community is divided in identifying problems of the existing system and the approach to reform or change the system. Some think that giving powers to the domestic courts to try the investment related cases are not the ideal fora, as evidenced by differing standards of deference across jurisdictions and the lack of familiarity with international treaties and international rules of arbitration. Others think that the ISDS system gives sweeping powers to corporations to sue governments before private arbitral tribunals, and to claim dazzling amounts in compensation for the introduction of new regulations, including those that are non-discriminatory, legitimate and in the public interest. Even a threat of ISDS claims can persuade countries to shy away from introducing new regulations or tightening existing rules that find fault with transnational corporate industry.

Since 2017 the United Nations Commission on International Trade Law (UNCITRAL) Working Group III is discussing different options for a reform of Investor State Dispute Settlement (ISDS). One of reform proposals include Multilateral Investment Court (MIC). The critics opine that such a court will bring some procedural improvements, but otherwise leave the main principles and systemic flaws of ISDS intact. The MIC will continue to enable corporations to demand compensation for public interest measures taken by governments, including better environmental protections or stricter social standards. The critics also opine that UNCITRAL, to a large extent, is driven by the same institutions and individuals that share a common interest in the long-term survival of the system. This process thus runs a real risk of producing middle-ground solutions that will only further institutionalize and re-legitimize the system. Moreover, the proposed system is similar to the WTO dispute settlement system, although not the same, that is currently under intense pressure.

**Methodology:** Legal dogmatic method as well as comparative legal analysis will be used to analyze the sources and various legal arguments.

**The importance of scientific utilization of results:** Findings of the research will be useful to understand the nature, dimension, and magnitude of the existing problems regarding the ISDS system. The recommendations will be useful to solve existing problems or to establish a fair ISDS regime.

**Results:** UNCITRAL process runs a real risk of producing middle-ground solutions that will fail to address the fundamental flaws of the ISDS system and will only further institutionalize and re-legitimize the system.

**Conclusions:** Every reform proposal has its specific advantages and disadvantages and responds to the main concerns in a distinctive way. The extent of the disenchantment caused by awards in the area, which many states feel go beyond the consent they had given the tribunals, must be solved. To solve the problems experience of the ISDS and WTO dispute settlement system shall be utilized.

*Keywords:* Investor-state, Dispute settlement, Investment court, UNCITRAL

## A Palesztin-eset a Nemzetközi Büntetőbíróság előtt

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Palesztina államiségával kapcsolatos kérdések évtizedes múltra tekintenek vissza a nemzetközi közjog esetjogában és tudományos életében. A II. világháborút követően Palesztinát zsidó és palesztin államra osztották, amely a Közel-Kelet arab lakosságának éles ellen állását váltotta ki. Az 1967-ben kirobbant hatnapos háború során Izrael elfoglalta Gázát, Ciszjordániát, a Golan-fennsíkot és Kelet-Jeruzsálemet. Az Egyesült Nemzetek Szervezetének Biztonsági Tanácsa (a továbbiakban: ENSZ, ENSZ BT) az 1967. évi 242. számú határozatában felszólította Izraelt fegyveres erőinek visszavonására az elfoglalt területekről továbbá Palesztina függetlenségének és területi integritásának tiszteletben tartására. A következő évtizedekben érdemi előrelépés nem történt, Palesztina államiséga bizonytalanná vált. Az első érdemi változásra 1993-ban került sor az első Oslói Megállapodás aláírásával. A Megállapodás alapján a Palesztin Felszabadítási Szervezet (a továbbiakban: PSZF) számára Izrael fokozatosan átad egyes hatósági jogköröket, amely alapján lehetősége nyílt az államiséghez szükséges strukturális és államigazgatási feltételek teljesítésére.

2015. január 1-én a PSZF kérvényezte a Nemzetközi Büntetőbíróság (a továbbiakban: ICC) eljárását a Római Statútum (a továbbiakban: Statútum) 12. cikk (3) bekezdése alapján, amely a nem részes tagállamok számára nyújt lehetőséget eseti alávetési nyilatkozat benyújtására. Az ICC válasza több mint 3 évet váratott magára. 2018-ban az akkori Főügyész, Moreno Ocampo nyilatkozata szerint a Statútum 12. cikke alapján egy állam rendelkezik hatáskörrel az ICC joghatóságának elfogadására. Felhívta a figyelmet azonban arra, hogy Palesztina államiséga kérdéses, az ICC-nek pedig nincs jogköre annak érdemi eldöntésére. 2019. december 20-án Fatou Bensouda, az ICC jelenlegi Főügyésze nyilatkozatot tett közzé a palesztin helyzettel kapcsolatban. Az előzetes vizsgálatot követően úgy értékelte, hogy valamennyi feltétel adott a palesztinai helyzetre vonatkozó hivatalos nyomozás megindításához és kérte az ICC-t, hogy határozzon a területi joghatóság kérdéséről. A Főügyész érvelése szerint az ICC területi joghatósága kiterjed a hatnapos háború során elfoglalt területekre, nevezetesen Gázára, Ciszjordániára, és Kelet-Jeruzsálemre. Értékelése alapján nem szükséges a palesztin államiséggal kapcsolatosan állást foglalni, hiszen azzal, hogy csatlakozott a Statútumhoz, automatikusan elfogadta az ICC joghatóságát. Annak ellenére, hogy a nemzetközi közjogon belül államiséga vitatott ügy véli, hogy az ENSZ Közgyűlésének 67/19 számú határozata - amely megfigyelői státuszt biztosít számára az ENSZ-ben - felruházta a nemzetközi szerződésekhez való csatlakozásának képességével. Véleménye alapján Palesztina teljesíti az államiség valamennyi nemzetközi jogi feltételét, azonban kiemeli, hogy a speciális esetek során az ICC-nek alkalmazkodnia kell, és az eset összes körülményét figyelembe véve, eseti alapon kell megítélni a feltételrendszerek teljesülését. Továbbá kiemeli, hogy az Oslói Megállapodások által rendezett, a PSZF és Izrael között taxatív megosztott büntetőigazságszolgáltatási joghatóságnak nincs hatása az ICC joghatóságának gyakorlására, annak ellenére, hogy Palesztina nem rendelkezik joghatósággal izraeli állampolgárok felett.

Előadásom során a Főügyész indítványának mély elemzésén keresztül teszek kísérletet az ICC joghatósága korlátainak bemutatására.

*Kulcsszavak: Nemzetközi Büntetőbíróság, Római Statútum, Palesztina, államiség, nemzetközi közjog*

# **Közgazdaságtan I.**

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## **Economics I.**

## Entrepreneurship development performance in Egypt An empirical study based on the Global Entrepreneurship Index (GEI) data 2006-2017

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**Aim and methods:** Entrepreneurship has played an essential role in enhancing economic development by providing jobs, creating new products, and welfare for the community (1,2). The paper aims to analyze and assess Egypt's entrepreneurial profile by stressing on strengths and weaknesses, individual and institutional variables for the Egyptian entrepreneurial profile. The paper uses the Global Entrepreneurship Index (GEI) methodology to analyze the Egyptian context, which has shown varied results. The article follows policy suggestions based on the bottleneck method to improve the GEI overall for the Egyptian profile. As Szerb and Trumbull mentioned, addressing or improving the bottlenecks or weaknesses positively influences the GEI overall country(2).

**Results:** The Egyptian entrepreneurship profile still below performance, where around two-thirds of the total fourteen entrepreneurial pillars below the lowest 33 percentile from the participated countries in the dataset. The analysis of institutional and individual variables has demonstrated that the Egyptian entrepreneurship index has weak institutional variables with some progress and strength points in individual variables. The paper also used a comparison analysis between Egypt profile and Saudi Arabia and South Africa to measure Egyptian entrepreneurship performance. The biggest bottleneck for the Egyptian performance appears to be in Risk acceptance and networking pillars. Egypt also lagged behind the two other countries in internationalization, opportunity startup, and culture support. Egypt's relative strong points are found in human capital and relative strength compared to south Africa in risk capital pillar. So, aspirations sub-index pillars have shown some advantages for the Egyptian condition compared to the other two countries.

**Conclusions:** The paper concluded that the pillars of Egyptian entrepreneurial aspirations appeared as a vital aspect of the entrepreneurship ecosystem. In contrast, Egyptian entrepreneurial abilities pillars have contained more weak points with slight strength points. Furthermore, Egyptian entrepreneurial attitudes have considered the main disadvantage of forming the Egyptian entrepreneurship index. The risk acceptance and networking pillars have shown the weakest aspect of the Egyptian entrepreneurial profile. Therefore, the bottleneck analysis demonstrated that increased effort by 50% for each of these pillars would improve the Egyptian entrepreneurial profile condition by three percentage to score improvement for index.

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**Keywords:** *Entrepreneurship Ecosystem (EE), Global Entrepreneurship Index(GEI), Egypt*



## Where is the Fine Line between Deprivation and Poverty? A Review of Concepts and Definitions Used Today

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Social policy aimed at improving the living conditions of the disadvantaged used to classify its target groups mainly by single dimensional standards, such as their lack of sufficient income to make ends meet. However, in the second half of the 20th century new multi-faceted definitions of poverty started to emerge that brought along the need for multidimensional measurement approaches. Concepts closely related to poverty, such as social exclusion or deprivation are used more and more extensively in the analysis of social conditions of a region as well as an instrument of policy making. If we seek to understand and therefore distinguish the concepts of poverty from deprivation – regardless of the absolute or relative nature of the measurement approaches – a closer look at what these phenomena cover should be taken. The aim of my research was to shed light on the difference between the most commonly used poverty concepts and the idea of relative deprivation. By conducting an extensive literature review I established the basis of the theoretical differentiation between these concepts and hence laid down the groundwork for further research concerning the appropriate dimensions for such composite indicators aiming to measure the above mentioned phenomena.

**Results:** The general understanding of deprivation refers to the state of lacking resources and/or opportunities compared to reference groups. Although poverty is often defined in a similar way, it can also be argued that people with fewer resources than others may experience different forms of deprivation while objectively being well above the poverty line. Hence it is essential to differentiate between concepts and definitions. Furthermore, deprivation indices are fairly new in the field of “poverty research”, hence their methodology is generally not equally mature. An empirical example of this can be seen if we take a closer look at the AROPE (At Risk of Poverty or Social Exclusion) indicator. An OLS model created within the scope of this research shows that the explained variance in the AROPE value of the EU member states is relatively high even if we take only income inequality dimensions into account.

**Conclusions:** Even the most widely used and fundamental poverty measurement approaches differ significantly from one another, although they all seem to have common roots and merits – and relative deprivation indicators are no different either. The deprivation measurement approaches follow the latest trends in poverty research in a sense that they are typically multi-dimensional and relative measures that rely greatly on non-monetary indicators as well. A very significant difference from most of the “mainstream” poverty approaches is that relative deprivation measures often take subjective elements into account as well, and hence they provide a wider scale of dimensions and indicators that might also seem more suitable for capturing the societal context and relative nature of the phenomenon of deprivation. There is a long road ahead of researchers aiming to develop a deprivation index that is capable of capturing the real state of the society, but the road that poverty research is taking looks promising for future exploration.

*Keywords: poverty, deprivation, relative deprivation, AROPE*

## **Macroeconomics and Politics in Hungary: How an Illiberal Government Characterised by Populist Rhetoric Deals With its Public Budget**

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We know that populism and authoritarianism are caused by both economic and cultural components. However, what happens when an authoritarian and populist leader is in power? Does he or she focus on real economic problems, or does he or she mainly focus on discourse manipulation? In other words, is this a political and economic system sustainable in the long run or to deal with a crisis? This work focuses on this underrated aspect of the literature by bringing together populist discourse as an independent variable, public finances as an intervening variable, and economic stability as a dependent one. To do so this work focuses on Hungary, as it is a country that has been administered by a government characterized by populist characteristics for more than ten years. In practice, this work will first apply the 2007 economic diagnostic framework of Rodrik to analyse if the reasons behind the populist rhetoric match the economic diagnostic of the country. It will then analyse the composition of the public budget and spending of Hungary, to understand if the current economic situation is sustainable or not. This paper will analyze how institutional disconnection between politics and the economy works by using different descriptive statistics. It will use the macroeconomic data available at the World Bank database and at the Hungarian Central Statistical Office.

*Keywords: CEE, populism, authoritarianism, growth*

## What is the current path of innovation ecosystem research?

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**Introduction:** The concept of innovation ecosystem today is a frequently used term in the context of national and international competitiveness, knowledge-based economy and industry 4.0. At the same time, it is important to emphasize that there is no consensus on the precise definition of the above mentioned concept and their conceptual framework, either in the academic sphere or in the day-to-day practice of institutions and companies that put scientific results into practice.<sup>1</sup>

**Aim:** The lecture does not attempt to synthesize different definitions of the innovation ecosystem, or to create a new concept, mainly because there are many papers on similar topics in the foreign literature.<sup>2</sup> The aim of the presentation is to accompany the development of the concept by presenting conceptual frameworks set up by the most influential authors, pointing out that the interpretation of the concept has expanded both horizontally and vertically over the past fifteen years.<sup>3</sup>

**Methods:** The methodology is based on Scopus, which is a comprehensive literature database. Through state-of-the-art search tools with Scopus, the users are able to discover critical information, monitor trends, and identify subject matter experts. In addition, scientific metric analyzes are not only useful in developing the publication strategy of researchers in connected with this topic, but also shed light on issues that will become even more important in the future.

**Results:** We conclude as a result, that the number of studies on the subject has grown exponentially since 2015. The most influential authors are Americans, British and Chinese. The topic is quite interdisciplinary, but the focus remains on the field of business management and strategy development.<sup>4</sup>

**Conclusions:** The concept on innovation ecosystem is currently not established clearly. However, based on the literature review and scientific metric analysis, it can be stated that despite the criticisms of the relevance of the term, the visibility of researchers in this field is increasing.

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*Keywords: innovation ecosystem, scientific metric analysis, Scopus, interdisciplinarity*

## Investigating the sustainability of a current account deficit using an asymmetric ARDL Model

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It is clear from the economic literature that running a current account deficit is not a problem if it can be sustained (Obstfeld and Rogoff, 2007). Following the literature, this paper uses intertemporal solvency approach to define current account sustainability. South Africa's stubborn current account deficit has been mainly driven by interest repayments due to country's large reliance on portfolio inflows to meet its financing needs (Freund and Warnock 2005). Running a persistent current account deficit for longer periods, while its financing depends on short-term capital inflows, raises concerns about the country's ability to repay debt (Freund and Warnock 2005). This research paper aims to determine whether South Africa is running a sustainable current account deficit over the period 1990Q1 to 2018Q4. This is an important question because the longer the country delays to adjust its current account deficit, the more costly it becomes to narrow this deficit (Freund and Warnock 2005). Unlike the majority of existing literature that assume linearity in variables, this paper uses an asymmetric or nonlinear autoregressive distributed lag model (NARDL) to assess the long-run relationship between exports and imports plus interest payments and current transfers.

**Results:** The results show lack of evidence for both symmetric and asymmetric long-run relationship between exports and imports, thereby suggesting that the current account deficit is unsustainable. The variables were found to be symmetrical only in the short-run. These findings suggest that the current account did not follow a mean-reverting nonlinear process over the period 1990Q1 to 2018Q4.

**Conclusions:** Given the difference in findings between nonlinear analysis used in this study and linear techniques that have been employed previously for the South African economy, it shows that assuming linearity can be misleading. This further shows that it is important to differentiate between positive and negative shocks as economic agents often respond differently to these. The paper further highlights that the country's financing method of the current account might be characterised as "Bubble Financing" (that is, dependence on further borrowing to repay the existing debt).

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*Keywords:* *urrent Account Adjustment, Short-term Capital Movements, Nonlinear ARDL*

## The evaluation of economic integration maturity of Ukraine during the last 10 years

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The paper discusses the issue of integration maturity in the case of Ukraine. The country has joined the European Union's Eastern Partnership program in 2008 and since then several economic issues and problems were revealed related to their accession. The aim of this paper is to analyze the economic integration maturity of Ukraine before the Maidan square revolution and since then. The paper suggests that the country was not fulfilling the Copenhagen criteria in 2014 and during the reign of the Poroshenko administration the situation only worsened. The paper forms the hypothesis that Ukraine did not fulfill all the criteria of economic integration maturity and moved away from the EU accession even further since then. To prove this, the paper uses the methodology of economic integration maturity. The concept of integration maturity is more complex than the economic accession criteria since it shows how a candidate country is able to exploit the benefits of membership and minimize its drawbacks before and after the accession.

**Results:** Based on data analysis and document analysis it was examined how successfully the country could start its preparation for exploiting the economic stimulating effects of bringing closer its markets to the economic integration. In sum, it is stated whether Ukraine was meeting any of the accession criteria in 2014 and how they evolved since the latest regime change that took place in the country as the political will and direction has been defined accordingly.

**Conclusions:** With the assistance of these results the main hypothesis of the work is being proved and it can be stated that Ukraine is not prepared for accession to the EU from an economic perspective. Further contribution of the article would be identifying a roadmap for the future governments of the country in order to start a successful catching up process. Future prolongation of the work could be a research about the current possibilities of the Ukrainian government in the framework of Eastern Partnership.

*Keywords: Integration Maturity, Economic Integration, EU, Ukraine*

## A szabadkereskedelmi egyezmények dilemmái játékelméleti oligopólium megközelítésben

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**Bevezetés, Célkitűzések:** A kereskedelem liberalizálásának története szorosan köthető a GATT/WTO kiterjedéséhez, mely egyúttal magával hordozta számos bilaterális és multilaterális kereskedelmi egyezmény létrejöttét. Az országok közötti szabadkereskedelem a globalizált világgazdasági rendszer megnyilvánulása, a nemzetek egymás felé nyitásának kimenetele. A vám- és nemvám jellegű akadályok következetes mérséklése, megszüntetése rendkívül sok pozitív hatást generál: olcsóbb importtermékekhez való hozzájutást, a külföldi piacok könnyebb elérését, növekvő külföldi tőkebefektetéseket, vonzóképeség növekedést a résztvevő régiókban. Ennek szellemében azt állítjuk, hogy a szabadkereskedelmi egyezmények a résztvevők egyre szorosabb gazdasági és geopolitikai kohézióját eredményezik, ahogyan fokozatosan csökkennek az egymás között fennálló akadályok. Ezenfelül amellet érvelünk, hogy a gazdasági szereplők döntéseik során aktuális helyzetük javítására törekednek, mely lényegében gazdaságuk felemelését, politikai hatalmuk kiterjesztését jelenti.

**Módszer:** A kutatásban négy forgatókönyvet vázoltunk fel, melyek három országban játszódnak a megállapodás megkötése előtti és utáni állapotot szemlélítve. Az épített modellbe a vámok mellett adókat is elhelyeztünk, majd azt vizsgáltuk, hogy milyen mérséklési szintekig hozhat hasznot egy szabadkereskedelmi egyezmény megkötése, továbbá meghatároztuk azon kibocsátási szinteket, amelyek mellett a legmagasabb profit érhető el.

**Eredmények:** A gazdasági szereplők az egymás közötti interakciók során, legyen az együttműködés, vagy konfliktus bizonyosan olyan döntéseket hoznak, melyekkel legjobb belátásuk szerint javíthatnak az eredeti helyzetükön. Az épített modell alapján kimutatható, hogy mely pontban érhető el a legmagasabb haszon a résztvevő felek számára, azaz, hogy meddig éri meg a feleknek elmenni az engedmények tekintetében.

**Következtetések:** A tanulmány a kereskedelmi egyezmények játékelméleti oligopolisztikus modelleknek való megfeleltetése olyan új, újszerű módszertani eszközöket kínál, melyek hozzájárulhatnak a kereskedelmi egyezmények kapcsán felmerülő stratégiák kialakításához, értelmezéséhez, továbbá előjelzések készítéséhez.

*Kulcsszavak: szabadkereskedelmi egyezmények, adók, vámok, játékelmélet*

# **Politológia I.**

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## **Political science I.**

## Turkish modernization through Village Institutes

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**Introduction:** The Village Institutes (1940-1946) project is a program that was ahead of its time by aiming to improve the conditions of the villages and raise the level of education. Hence professionals have planned Village Institutes as a tool to bring revolution and reforms to villages. Village Institute has emerged with an exigency. Since the declaration of the republic, construction for the modern society began after the abandonment of the old patrimonial order [1]. Atatürk was able to modernize the state through reforms in the institutions; however, modernizing people created the hardest challenge. Townsmen, who represented a minority of the population were able to adopt the reforms; however, there was resistance by the majority of the population, villagers [2]. One of the reasons for this resistance is that the economic, social and cultural opportunities offered in cities could not be provided in rural areas due to economic hardships [3]. Village Institutes are crucial in this respect. İsmail H. Tonguç aimed to provide these opportunities within Institutes and modernize villagers. With this research, I aim to examine the impact of Institutes in Turkish Modernization. This study has been conducted through a document analysis method.

**Results:** As a result of this research, it can be said that this project has improved the conditions of rural areas and increased the level of education. The literate rate of villagers, the number of schools, teachers and students have risen sharply with Institutes. Also, they have applied a different curriculum and successfully implemented “education within work” concept. Thus, institutes have become producers.

**Conclusions:** With village institutes, villagers have met with concepts and activities such as the republic, reform, doctor, theatre, etc. which they were only familiar from the newspaper. For the first time, they have experienced what it is like to live in a republican country. They also realized that they do not need the landlords. They felt the existence of state in their side and started to challenge the landlords.

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*Keywords: Turkish Modernization, Village Institutes, Rural areas, education*



## Lay Participation in Iran and UK

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Lay participation is considered one of the symbols of participatory justice especially in the countries with a democratic context but its exercise as a democratic value, is not only relying on democratic approach of the governments but also relying on the historical and socio economical background of each society. Lay participation in courts can enhance civil activity of citizens. From other hand, there is always the fear that citizens without any legal studies can harm the justice in the general and some scholars are skeptical of the necessity of lay participation and calling for the abolition of the all lay-jury in order to avoiding their uncontrolled and unreviewable decisions.

Iran as an Islamic country with civil law system recognized the lay participation in its judicial system for the first time, in 1907, in the form of jury in political and press crimes. Another form of lay adjudication that could get success without any constitutional background in Iranian legal system is the Dispute Settlement Council (DSC). These councils promptly expanded throughout the country and according to the law they get competency for judging in minor cases (both civil and criminal cases) and making decision.

In the legal studies for analyzing the topic, especially in the case where one institution is transplanted from other jurisdictions, the comparative studies is something inevitable and here United Kingdom as cradle of lay participation is in the core of this comparative studies.

**Results:** Lay participation is extracting from the socio economical changes of each society and many pro or con discussions formed around it.

**Conclusions:** Lay participation followed different route in UK and Iran because of their different backgrounds and the best comparative method for study these countries is Law-in-Context method.

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*Keywords: Lay Participation, Participatory Justice, Jury, Iran, UK*

## Coalitions of V4 countries in gas security of supply

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**Aim:** Czechia, Hungary, Slovakia and Poland refer to themselves as Visegrad countries (V4) and began policy cooperation to have a better advocacy in the EU decision making. Energy has been a priority topic for cooperation. This article aims to assess the success of their cooperation to tackle Russian gas dependency.

**Method:** Cooperation of V4 countries to shape EU decision making on security of supply in the field of natural gas has been assessed by using voting results of the Council decisions between 2010-2020. Quantitative analysis was supported by qualitative methods to gain a better understanding on national and V4 preferences on infrastructure development: (i) V4 ministry representatives and think tank experts were asked in a focus group to score regional infrastructure investment projects, (ii) complementary background information on coalition forming was gathered from interviews and press.

**Results:** Obstructing V4 coalition forming pattern was found in relation to other energy and transport related topics, mostly related to climate and energy efficiency but not to natural gas security of supply. Absence of opposition by other EU countries against security of supply related legislation proves the success of the agenda setting of the V4. Partial success was achieved in the most emblematic issue of the last decade in the field: in the opposition against the Russian diversification strategy. EU legislative action was strongly pushed by V4 since 2014 but resulted in action only with a delay by 2019.

In depth analysis of national preferences against pipeline projects of the region reveal that though there is a shared negative sentiment against Russian diversification projects, the strong opposition position of 2014 was watered down by bilateral Russian deals and change in risk perception due to EU supported infrastructure investments. With regards to regional interconnection project proposals there is a lack of common goals and a clear divergence of agendas and weakness of V4 coalitions.

**Conclusions:** V4 coalition to support common agendas in the EU decision making is growingly present and was especially successful to mobilize EU action and grants to help tackle the natural gas security of supply risk that dominated CEE when they joined the EU. For the future, a common agenda of V4 is forming around keeping (cheap) natural gas in the energy mix in exchange of phasing out coal.

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*Keywords:* gas markets; security of supply; V4; coalition; Council voting

## Trojan horse and fig leaf: the role of populism in the global crisis of democracy and the postmodern autocracies

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It is my contention that populism could be an appropriate framework and binding force between the phenomena of global crisis of democracy and spread of postmodern autocracies. In order to substantiate this claim, I have examined first the characteristics of these phenomena and then I have focused the nature of the relationship between them, in particular with regard to the complex system of stability of new types of autocracies, in which, I think, populism playing a key role.

**Results:** Populism, understood in an autocratic interpretation of democracy, could be particularly dangerous and a Trojan horse for democracy. Above all, because its idea of a single, homogeneous and authentic people that can be authentically represented only by populists, and this representative claim is a moralized form of antipluralism [1,2,5]. In addition, populism is also an important feature of postmodern autocracies, especially of electoral authoritarianism [3,4]. By means of populism, it is possible for these regimes to hide and even legitimise the autocratic trends and exercise of power behind their formally multi-party elections and democratic façade, and the creation an uneven playing field for political contestation.

**Conclusions:** As a radical, traditional autocracy-like turn would be too expensive, postmodern autocrats need manipulated multi-party elections and other plebiscite techniques that could serve as quasi-democratic legitimation, and the populism that could transform political contestation to a life-and-death struggle and provides other important cognitive functions. Therefore, *populist autocracy*, as a paradigmatic type of postmodern autocracies, will remain with us for a long time, giving more and more tasks to researchers involved in them.

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**Keywords:** *democracy, autocracy, populism, representation, legitimacy*

## Public Attitudes Toward Immigrants - An Experimental Research in Hungary

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Since the migrant crisis has begun the Hungarian government started a campaign against the immigrants. This led to an increasing hostility against the immigrants. The leading party (Fidesz) along with the government tried to appear who are protect the Hungarian people from the immigrants. For this reason, we designed research where we can measure local people's attitudes towards the migrants. We asked two international student from Tanzania to take an early train from a small town to a bigger city in every morning when the local people usually commute. We asked them to do this for a whole week. Therefore, local people could be believed that the two young people moved their local community because they saw them on the train every morning to commute. During this period, we measured local people's attitudes within an online survey.

**Results:** The result is that the local people become more hostile towards the immigrants because they taught that the two international student moved to their neighborhood.

**Conclusions:** The campaign against the immigrants had a strong affect to the Hungarians. The local people felt less safe when they met the students at the station.

*Keywords: experiment; migration; intergroup contact; contact hypothesis*

## Újpestery Elemér kapcsolati hálói

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Tervezett előadásom címeként kutatási területem egy olyan szegmensét adtam, amely disszertációm túlnyomó részét fogja képezni. Egy diplomata életút vizsgálata során elengedhetetlen az adott személy viszonyrendszerének feltérképezése. Előadásom fókuszában elsősorban Újpestery Elemér politikai, hivatali és nem utolsósorban baráti kapcsolatai állnak.

Kutatásom jelenlegi pontján az általa írt levelek, követi jelentések támasztják alá következtetéseimet és az általam felvázolt személyes viszonyrendszereket.

Prezentációm felépítése alapvetően a kronológiai sorrendet követi, és a hangsúlyt diplomata pályájának fénypontjára, nevezetesen a Lisszabonban eltöltött évekre kívánom fektetni. Kapcsolatai tekintetében ezek az évek váltak meghatározóvá. A magyarországi külügyi titkári pozícióból kikerülve egy sokkal tágabb és szerteágazóbb viszonyrendszert ismerhettem meg, és válhatott annak részesévé. Az eddig általam feltárt tevékenysége és kapcsolatai alapján igen merész vállalkozás használni irányába a "szürke eminenciális" jelzőt. Bár a diplomáciai apparátusnak nem az első vonalába (nagykövetek, külügyminiszterek) tartozott, mégis a fellelhető hagyatéka, és az eddigi kutatásaim alapján érdemes személyével foglalkozni. Kapcsolatai szerteágazóak voltak, olyan exponált jelentőségű pozíciókkal rendelkező politikusokkal állt bizalmi kapcsolatban, mint Teleki Pál, Imrédy Béla, Kánya Kálmán, stb.

**Eredmények:** Eddigi kutatásaim alapján részleges eredményeket tudhatok magaménak. Elsősorban sikerült politikai hovatartozását, gondolkodásmódját tisztán látni, mindemellett kapcsolati hálóit - elsősorban - magyarországi vonalon összegyűjteni. Személyes hagyatéka segítségével nyújtott iskolázottsága és magánélete feltárásában is.

**Következtetések:** Kutatásom jelenlegi szakaszában világossá vált számomra, hogy bár nem volt arisztokrata származású és nem az első vonalat képviselő diplomata volt, mégis, ahhoz hogy Magyarország két világháború közötti és második világháborús külpolitikáját tisztán lássuk, elengedhetetlen Újpestery Elemér megismerése. Ezt a tapasztalatot kívánom megosztani a jelen konferencia alkalmával.

*Kulcsszavak: külpolitika, diplomácia, viszonyrendszerek, Horthy-korszak, Újpestery*

**Művészetek**



**Arts**

## Musical ekphrasis in I.S. Turgenev's novel Rudin

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I.S. Turgenev's novels are rich in various musical episodes, and his first novel Rudin (1856) is not an exception. At the beginning of the novel, an important - from our point of view - musical scene occurs in the third chapter, when the reader meets the main character, Rudin. He asks Pandalevsky to play the piano and he begins to play F. Schubert's "Erlking". The previous research of my analysis has focused on this musical fragment throughout the theme of intermediality, and the aim is to interpret this novel based on the ekphrastic phenomenon. This research examines the purpose of the musical ekphrasis: the impact it has on the main character, and how it might foreshadow his tragic fate. This mimetic musical ekphrasis allows us to interpret the novel from different aspects. The basis of this musical fragment is Goethe's ballad, Erlkönig (1782), which was set to music by F. Schubert in 1815. The ballad is set in a dark gothic and mysterious atmosphere, and the plot of the ballad is a Danish legend that inspired many romantic artists throughout history, and later became an adaptation of the German ballad. Consequently, there have been several changes of the form and media. On the one hand, this musical scene of the novel is in many ways reminiscent of the mysterious atmosphere of the ballad, and parallel motifs can be found in the novel such as the atmosphere of the evening; Rudin's eloquent speech; and Rudin's constant state of seeking the appropriate path in life. My aim is to examine how these motifs are manifested in Turgenev's novel. According to the analysis, on the other hand, this intertextual element can be perceived as "mise en abyme" (L. Dällenbach). Proceeding from the fact that the function of a diminutive mirror provides a key to a deeper understanding of the text, by analysing parallel motifs, my aim is to answer the question: to what extent is the motif of the boy and his father's peculiar journey a metaphor for Rudin's life?

*Keywords: Turgenev, Rudin, intermediality, musical ekphrasis, mise en abyme*

## **Hátrányos helyzetű női közösségek fejlesztése a design eszközeivel**

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Kutatásom során azt vizsgálom, hogy milyen módon csökkenthető a társadalmi nemek közötti különbség és erősíthető a női közösségek rezilienciája a szociális design eszközeivel.

Hipotézisem, hogy egy közösségi bevonáson alapuló design módszertan alkalmas olyan kompetenciák és tevékenységek fejlesztésére, amelyek bevételt tudnak generálni a női közösségeknek és segítenek abban, hogy a nők képességei, önállósága, önbizalma fejlődjön, önrendelkezése és a közéletben betöltött pozíciója erősödjön.

A célom, hogy kutatásom során a design research módszereivel gyakorlati és elméleti úton egy co-design (bevonó tervezés) alapú modellt dolgozzak ki, mely a közösségi tervezést és a kölcsönös tanulást helyezi középpontba. Az így létrejövő módszert valós környezetben, organikusan létrejött női közösséggel együttműködve folyamatosan tesztelem és a visszacsatolások alapján fejlesztem.

Előadásomban esettanulmányokon keresztül bemutatom az eddigi gyakorlati kutatást, amely főként terepmunka és oktatási szituációk keretében jött létre. A gyakorlati kutatás fontosabb állomásait kiemelve összevetem az általam vizsgált immerzív kutatási szituációkat. Az így elvégzett információgyűjtés alapján felvázolom a kutatás eddigi eredményeire épülő Mestermunka projektet, érintve azokat a teoretikus mezőket, amelyek részletesebb vizsgálatot igényelnek a megvalósítás során.



## Analytical restructuring of music, an ontological discussion in metaphysics

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Many have written about music, and many write about it, we talk about it, we know about it, but we do not truly know what music is. We cannot define it and even though what we say may be true, it is never sufficient enough, it can never be generalized, and it will not be satisfactory. In some living languages, the word “music” has no equivalent. In my PhD dissertation, of which this study is a part, I seek answers to ontological and epistemological questions about music and musical concepts as well as phenomena related to music using an analytic-synthetic method. This thought process is based on and found within the mental structure of a musician’s creative actions. I call this *analytical restructuring*, in which my thoughts on music - following on the paths of Kantian transcendental idealism reveals a reversed cognitive process. My doctoral research examines issues within the framework of musical phenomena, musical works, and musical performances in relation to the composer, performer, and audience. One chapter of my dissertation discusses the relationships between musical sounds which focus on causation. In this study, we find an introduction to the debate on causation in relation to sounds, in which I explore the conditions underlying the debate and its framework. In my further formulations, which relies on one side on the *Critiques of Kant* and on the other side on *analytical philosophy*, I subject scientific (physics- and neuroscience-based) knowledge and theories related to musical phenomena (which are not included in this paper and are presented in several chapters of my dissertation) to metaphysical analysis and examine these within the mind of the subject. Finally, I present a new meaning to the concept of music in its new structure, attempting at analytical restructuring.

*Keywords: music; philosophy of music; ontology of music; musical work of art; causality; Immanuel Kant; analytic philosophy*

## **The main characters of public arts in urban community**

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**Abstract:** Public Art has significant value to solve various problems of public life in urban communities as a channel of communication. The definition of public art has always been a controversial subject since it emerged. Public art is separated into diverse schools as various research perspectives and is sorted out their related historic backgrounds with different beginnings. From the perspective of the historical progression of public art, this study spread out their development processes for both traditional public art and community-based public art. It adopts a combination of literature review with case analysis to discover the development process of community-based public art through the evolution of public art. Additionally, we summarize their similarities and differences of both traditional and community-based public art and explore the characteristics of community-based public Art in practice of community. Furthermore, the study seeks to better understand the role of public art in developing communities by summarizing their characteristics.

*Keywords:* Public art, urban community, participation, locality, public interest, sense of identity

# **Gyógyszertudományok**

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**Pharmaceutical sciences**

## Collecting signals from the European rapid alert system for food and feed (RASFF): Tendencies in counterfeit food supplements for weight loss

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**Introduction:** POPULARITY of food supplements for weight loss management has been increasing. Obesity is considered as an epidemic; thus the treatment is of major importance. However, existing scientific evidence is insufficient to recommend their safe and efficient use [1]. Moreover, certain products are adulterated, containing sympathomimetic substances to enhance efficacy. These food supplements pose a serious health risk for consumers. The Rapid Alert System for Food and Feed (RASFF) was put in place to provide food and feed control authorities with an effective tool to information exchange on measures taken responding to serious risks detected in relation to food or feed. For recent years these RASFF warnings have not been comprehensively analyzed [2]. The aim of our work was to summarize the trends concerning adulterated food supplements associated with a warning released by the RASFF between 1988 and 2019, focusing on products with intended use as slimming agent. Data were extracted from the RASFF portal. Records were grouped into “A” for unauthorised ingredients, with intended use as slimming agent. The severity of the reports also have been overviewed. The risks and adverse effects were also assessed.

**Results:** 299 [11.7%] records of food supplements with quality problems were identified in the RASFF, and several of these products were marketed to facilitate weight loss. 182 (60.8%) of these contained synthetic drug ingredients. The majority of these products contained DNP (2, 4-dinitrophenol, 113 of 299, 37.8%). Sibutramine was the second most frequent adulterant (69 products, 23.07%) in 1988-2019.

**Conclusions:** Significant number of weight loss supplements is adulterated to satisfy patients' expectations. Hence, these products may cause serious adverse effects in sensitive patients. The data presented here can be used as a basis for a suitable prediction model for the quality control of slimming products.

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*Keywords:* RASFF, counterfeit medicine, obesity, food supplements, DNP, sibutramine

## Role of sodium stearate on co-spray-dried meloxicam potassium-containing dry powder inhalation systems

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Pulmonary drug delivery (PDD) allows for the local or systemic treatment of certain diseases. The possibility of local nonsteroidal anti-inflammatory drug treatment for cystic fibrosis and chronic obstructive pulmonary disease is mentioned in several publications [1,2]. They have an anti-inflammatory effect directly and they can indirectly slow down the pathophysiological cycle. Our research team has considerable experience in the formulation of meloxicam potassium (MXP) [3]. For PDD, the formulation of dry powder inhalation systems (DPIs) is preferred. On the one hand, these are the most common on the market, and on the other hand, the physicochemical properties of MXP make it possible. In view of the advantages and disadvantages, the method of production by spray-drying is the most expedient. The role of several excipients has already been studied for different active ingredients. Sodium stearate (NaSt) has not yet been studied for many drugs, however, the results reported so far in the international literature for DPIs are favorable [4]. The goal of this present work was to study DPI samples produced by co-spray-drying, applying MXP and different concentrations of NaSt.

**Results:** Physicochemical investigations, *in vitro* drug release and *in vitro* lung deposition measurements were carried out with the samples. Based on the studies stated that co-spray-drying of MXP with NaSt resulted in remarkable morphological differences by increasing the concentration of NaSt, which had a positive effect on cohesive work and somewhat affected the average particle size. These led to an improvement in *in vitro* aerodynamic results. Furthermore, applying of NaSt accelerates the dissolution in simulated lung fluid.

**Conclusions:** NaSt as excipient has a future for the formulation of the DPI systems because there are in the development focus the attainment of the higher FPF values and improvement of dissolution in lung fluid.

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**Keywords:** pulmonary drug delivery, dry powder inhaler, spray drying, meloxicam potassium, sodium stearate

## Lipid raft disruptors exert antinociceptive effects *in vivo*

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**Introduction:** Transient Receptor Potential (TRP) Vanilloid 1 and Ankyrin 1 (TRPV1/TRPA1) are nociceptors expressed in primary sensory neurons. Capsaicin (CAPS), resiniferatoxin (RTX), noxious heat can activate TRPV1. TRPA1 can be activated by e.g. formaldehyde or mechanical stimuli. Lipid rafts - which are rich in cholesterol, sphingomyelins and gangliosides - are specialized microdomains of the plasma-membrane. We previously described that sphingomyelinase (SMase) - an enzyme which hydrolyze sphingomyelins - myriocin (Myr) - an enzyme inhibitor - or synthetic products - which form complex with cholesterol - as our carboxamido-steroid (C1) and methyl  $\beta$ -cyclodextrin (MCD) inhibit TRPV1 and TRPA1 receptors *in vitro* on primary sensory neuron cultures and receptor expressing cell line [1, 2].

**Aim:** In this study we investigated the potential antinociceptive effects of lipid raft disruptors were investigated in mouse models of pain with different mechanisms.

**Methods:** Animals were pretreated locally with 50 mU SMase, 1 mM Myr, 100 or 500  $\mu$ M C1 and 15 mM MCD. CAPS (30  $\mu$ g/ml) was instilled into the right eye of the animals and the eye-wiping movements were counted until 1 min. CAPS instillation was repeated three times. RTX (0,1  $\mu$ g/ml) was injected into the right hindpaw, and the development of thermal allodynia and mechanical hyperalgesia was measured with an increasing temperature Hot Plate (10., 20., 30. mins after RTX injection) and Dynamic Plantar Aesthesiometer (30., 60., 90. mins after RTX injection), respectively. Intraplantar administered formalin (2,5%) evoked nociceptive behavior time were measured in two phases (0-5 mins and 20-45 mins).

**Results:** All compounds reduced the number of CAPS-evoked eye-wipings in the first hour, furthermore Myr and C1 had prolonged effect. On the one hand in the RTX-model SMase and Myr alleviated the thermal allodynia, while C1 and MCD did not modify it, and on the other hand SMase and C1 diminished mechanical hyperalgesia, but Myr and MCD had no effect. Only Myr did not reduce duration of nociceptive behaviour after formalin injection in the second phase.

**Conclusions:** Based on the present results we concluded that not only cholesterol but also sphingolipids have important role in the lipid raft integrity and targeting lipid raft integrity can open novel opportunities in pharmacological intervention of pain relief.

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**Keywords:** carboxamido-steroid, lipid raft, methyl  $\beta$ -cyclodextrin, myriocin, pain, sphingomyelinase

## Pharmacodynamic characterization of novel analgesic candidates: somatostatin 4 receptor agonists

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**Background:** Current therapy of chronic neuropathic pain is unsatisfactory, thus there is a great effort to develop analgesics with novel mechanism of action. Somatostatin released from capsaicin-sensitive peptidergic nociceptors at the periphery and GABAergic interneurons in the brain has analgesic and anti-inflammatory effects mediated by its sst<sub>4</sub> receptor without influencing the endocrine system. Therefore, sst<sub>4</sub> might be a promising target for drug development. [1, 2]. We investigated the effects of our four novel small molecule sst<sub>4</sub> receptor agonists in mouse models of neuropathic pain and neurogenic inflammation.

**Methods:** The binding abilities of our pirrolo-pyrimidine compounds were determined by *in silico* modelling and by G-protein activation assay on sst<sub>4</sub>-expressing CHO cells. The effects of the two most potent and most efficacious agonists were tested in a neuropathic pain and a neurogenic inflammatory pain model in mice. Traumatic mononeuropathy was induced by partial sciatic nerve ligation, neurogenic inflammatory pain was evoked by intraplantar administration of an ultrapotent capsaicin analog, resiniferatoxin. Mechanonociceptive and heat thresholds were determined by dynamic plantar aesthesiometer and hot plate.

**Results:** All four of our novel compounds bind to the same high affinity binding site of the sst<sub>4</sub> with similar interaction energy and induce G-protein activation. The most efficacious and most potent Compound 1 exerts 60-66% maximal anti-hyperalgesic effect in the neuropathy model after a single oral administration of 500 µg/kg dose and also reduces neurogenic inflammatory pain.

**Conclusions:** Our sst<sub>4</sub> agonists are promising analgesic drug candidates especially for chronic neuropathic pain.

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**Keywords:** somatostatin, neuropathic pain, neurogenic inflammation, analgesic drugs

## Karbapenem rezisztens bélbaktériumok vizsgálata dankasirályokban (*Chroicocephalus ridibundus*) és a Dunában

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**Bevezetés:**A karbapenem rezisztens bélbaktériumok (CRE) napjaink egyik fő problémáját jelentik. A CRE-k leginkább kórházi fertőzések okozói és az emberek a fő rezervoárok, de egyre gyakrabban írják le őket környezeti rezervoárokban illetve vadállatokban is. A téli időszakban nagyszámú dankasirály (*Chroicocephalus ridibundus*) gyűlik össze a Duna budapesti szakaszának dokkjain. Előszeretettel fogyasztanak emberek által hátrahagyott táplálékot (akár szemételepeken is) továbbá életmódjuk szerves részét képezik a különböző felszíni vizek.

**Célkitűzés:**CRE-k prevalenciájának vizsgálata dankasirályokban és a Dunában.

**Módszerek:**2020. Január és Március között 105 bélsármintát gyűjtöttünk dankasirályokból valamint 6-6 víz mintát a Duna fővárosi szennyvíztisztító telep feletti és alatti szakaszából. A sirály mintákat 2 mg/l cefotaximmal kiegészített eozin-metilénkék táptalajokra oltottuk, a víz minták Colilert módszerek kerültek feldolgozásra 10 mg/l ceftriaxonnal kiegészítve. Az izolátumok azonosítása MALDI-val történt. Érzékenység vizsgálat standard korong diffúziós módszerrel végeztük, a CRE típusok meghatározására MASTDISCS Combi Carba Plus illetve multiplex PCR technikákat alkalmaztunk.

**Eredmények:** A vizsgált madarak 7%-a (7/105) volt CRE hordozó, egy *Citrobacter*, egy *Enterobacter*, egy *Klebsiella pneumoniae* és nyolc *Escherichia coli* izolátumot azonosítottunk. A víz minták esetében csak a szennyvíztisztító utáni szakaszból vett mintákban találtunk CRE-t, hét *E. coli*, egy *Citrobacter* és egy *Enterobacter* tenyésztett ki. A Metallo béta-laktamáz (MBL)-termelő *E. coli* volt domináns a madarakban és a Dunában is; az NDM típusú gének fordultak elő leggyakrabban illetve VIM típusúak. A madarakban és a vízben is találtunk olyan *E. coli* törzseket, melyek egyszerre hordoztak NDM és VIM géneket. A két *Enterobacter* porin mutáns volt, míg a *Citrobacterek* és a *K. pneumoniae* NDM-termelők voltak. A korezisztencia szintek magasak voltak a sirály és Dunai izolátumok között; 10/11 és 8/9 ciprofloxacinnra, 10/11 és 8/9 trimetoprim-szulfametoxzolra, 4/11 és 4/9 gentamicinre, 9/11 és 8/9 tobramicinre, 2/11 és 4/9 amikacinre rezisztens volt. Az izolátumok mindegyike érzékeny volt tigecklinre valamint egy kivétellel kolisztinre is.

**Következtetések:** Eredményeink alapján a sirályok és a Duna is CRE rezervoárok lehetnek, továbbá a Duna fertőzőforrásként szolgálhat a madarak és emberek számára egyaránt. A sirályok kóborló viselkedésüknek köszönhetően hozzájárulhatnak a CRE terjesztésében alátámasztva ezzel az Egy egészség elv fontosságát az antibiotikum rezisztencia terjedésében.

*Kulcsszavak:* CRE, NDM, *E. coli*, sirály, Duna



## **Nemzetközi jog II.**

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## **International law II.**

## Private Security Companies and the European Migration- and Border Control

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**Introduction:** Private security companies have been involved in the creation and implementation of the European Agenda on Migration since the crises of 2015.[1] In connection with the conduct of such organizations there is always a possibility for human rights violations. Within the framework of this contribution I will attempt to shed light to the relationship of private security companies and the European Union in connection with migration and border control.

**Methods:** First of all, one has to examine what kind of private military and security companies play a role in the European migration and border control if any. In order to answer this question, I made inquiries to Frontex, i.e. the European Border and Coast Guard Agency, and to the European Asylum Support Office (EASO); both of them are agencies of the EU that are of utmost importance for the implementation of the EU's migration and border control activities.

**Results:** As a result of the abovementioned inquiry, I found that Frontex does not commission any private security companies for border control purposes; it uses the resources that Member States of the EU provide for the agency. On the other hand, EASO has a number of contracts in force with a private security company and there are open tenders for security related tasks across the Mediterranean. The subjects of those contracts which are in force are the provision of security services for EASO premises in Malta and provision of security services in Greece.

**Conclusions:** The analysis of the draft contracts and the public procurement plans regarding the two above-mentioned security services show, that private security companies do not play a significant role in the European migration and border control — at least from the perspective of the European Union — since they are only responsible for simple security related tasks such as performing internal patrols and keeping a log book recording of people entering a designated area. The sole security task that is related to migrant and asylum seekers is screening them upon entering and leaving hotspots. In light of these findings, it would be inconclusive to state that private security companies play a major role in European migration and border control from the point of view of the European Union.

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*Keywords:* private security companies, human rights, European Union, migration, DARIO

## International law perspective on Internet censorship: comparing legal frameworks of the United Nations and the Council of Europe

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**Introduction:** With the advent of the Internet, the opportunities for communication have grown significantly, but so have challenges to the preservation of the freedom of expression online. Recent developments indicate that states tend to adopt increasingly disproportionate laws and unnecessary online limitations. As a result, global Internet freedom has been deteriorating for the past ten years [1]. This is not to suggest that all state-imposed Internet restrictions negatively affect human freedoms. There is illegal and harmful online content, and it is in the interest of both the state and the users to have it removed. However, in order for the government's Internet censorship measures to be legitimate, they should comply with international law standards.

**Aim:** The purpose of this research was to clarify the international legal framework for the protection of freedom of expression online, particularly in reference to the conditions under which states can legitimately censor or restrict the information flow on the Internet.

**Methods:** The dominant research method was that of comparative jurisprudence. More precisely, the issue of online censorship was investigated through the lens of Internet regulatory approaches developed within the United Nations and the Council of Europe. The UN and CoE were chosen for the analysis because of their significant role in developing the international legal framework for Internet regulation [2].

**Results:** Having examined the relevant body of soft law and hard law elaborated within the UN and the CoE, I found that their regulatory approaches towards the online freedom of expression are alike and complementary. In particular, the UN and the CoE repeatedly reaffirmed in their respective resolutions, declarations, and recommendations, that the right to freedom of expression as prescribed by Articles 19 of the UDHR and ICCPR, as well as Article 10 of the ECHR, must be equally preserved online just as offline. Furthermore, both organizations broadly interpreted the freedom of expression online to include the freedom of opinion and the freedom of information.

**Conclusions:** Based on the analysis of Internet legislation drafted within the United Nations and the Council of Europe, I concluded that the UN and the CoE endorsed the same policy frameworks on legitimate limitations of the right to freedom of expression online. More specifically, both organizations stipulate that Internet-related restrictions of fundamental human rights (including the freedom of expression) must comply with the three-part, cumulative test requirements. That is to say, restrictive measures must be prescribed by law (principle of legality); pursue a legitimate aim (principle of legitimacy); and constitute the necessary, least restrictive means possible to achieve the stated aim (principle of necessity and proportionality).

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*Keywords:* International law, UN and CoE legal frameworks, Internet censorship, freedom of expression online

## Innovation in Enforcement Litigations against the Foreign Sovereign: Jurisdictions, Cause of Action, and Measures of Constrains

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The development of the law on foreign sovereign immunity has resulted its shift from absolute to restrictive sovereign immunity [1]. Over the period, the desired convergence has not been achieved among the international instruments and the domestic legislations [2]. Therefore, the absence of uniformity and coherence, certain questions regarding the foreign sovereign immunity from execution are still in gray area of law. Such as the forums, the types of litigations, the forms of measures of constrains (MoC). Regardless of the nature, the courts have taken liberal approach to open its door for litigations and introduced new exceptions to the rule of foreign sovereign immunity. They have also been contradictory in granting execution orders for the redress of the private judgment creditors [3]. The aim of this paper is to ponder into the loose ends of the legal framework of foreign sovereign immunity in terms of cause of action, form of orders requested by the judgement creditors and granted by the court.

**Results:** As the domestic jurisdictions adopted the restrictive sovereign immunity from jurisdiction in certain cases, the national courts of the states where the foreign sovereign has some assets for execution have become the popular jurisdiction for the private judgment creditors as their direct access thereto. The number of cases increases before the domestic courts as the scope of such commercial activity has expanded pursuant to judicial interpretation. With the inclining number of execution cases, the courts have been innovative in grating the MoCs against the foreign sovereign assets. Three determining factors that control the nature of the MoCs to be granted are the specific measure that the judgment creditor asked for, the nature of the targeted assets for execution and the legal system of the jurisdiction where the enforcement is sought to.

**Conclusions:** This paper synthesizes the nature of jurisdictions, the types of litigations commonly brought by the private judgment creditors and the kinds of orders granted by the courts for execution of judgment or award against foreign sovereign. The finding illustrates the elasticity of the law on foreign sovereign immunity which results at the the innovative orders of the courts for the execution of the judgments.

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*Keywords: foreign sovereign, measures of constrains, absolute sovereign immunity, restrcitive sovereign immunity, national jurisdictions*

## Future of the International Trade Regime in Light of the Trump Era

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**Introduction:** The USA has always been one of the most stalwart proponents of the multilateral trade system created by the GATT, and later, the WTO. However, with the election of President Trump, the country has taken a diametrically opposed approach, the so-called “America First” trade policy. This focuses on promoting perceived national interests above all else, and treating international trade as a zero sum game [1]. This policy not only ignores the established norms of international trade, but actively attempts to subvert and dismantle it. A clear example of this can be seen in the USA deciding to block all Appellate Body nominees in the WTO [2]. Furthermore, it also engaged in more direct “attacks” by unilaterally imposing import tariffs (citing national security) on numerous goods, such as steel, aluminum and iron products, which affected many countries like Canada, Japan, Mexico, several of which were traditionally some of the closest allies of the USA [3].

**Aims and Methods:** Given the various issues already facing the WTO even before the ascension of President Trump’s administration (such as the undead state of the stalled Doha Round) [4], it would be pertinent to examine whether this “undermining” by one of the former chief pillars of the WTO system will have lasting consequences on the existence and functioning of the WTO. To sufficiently determine this, a wide variety of subjects must be examined: the many domestic (such as various laws) and international steps (“trade bullying”, etc.) taken by the USA to damage the WTO, and what impacts these had on the continued functioning of the institution from an international trade law perspective.

**Results and Conclusions:** Given the multi-pronged attacks, and the results of the last WTO Ministerial Conference in Buenos Aires, it can be determined that while the WTO as a body might survive, its importance has been critically undermined in recent years. With the USA setting a “bad example” for other countries, others might follow a similar approach of trying to subvert and ignore the WTO system. Furthermore, even if a theoretical Biden administration reverts to the pre-Trump trade policy, the knowledge that the USA is just one election away from completely pivoting on the WTO, would have damaging consequences on the institution’s prestige and long-term viability regardless.

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*Keywords:* trade, WTO, Trump, tariff

## China Competes with the WTO Anti-Subsidies Provisions Through its State Owned Enterprises Sector

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**Introduction:** Subsidy is an optimal example for government intervention to ensure the economic equilibriums and to compensate the flaws of economic system. However, the World Trade Organization (WTO) Agreement on Subsidies and Countervailing Measures (ASCM) subjects any financial aid that is granted selectively by the government or any public body to an economic sector to stringent rules, and bans both the export subsidies and local content subsidies. China, within its accession agreement to the WTO, thoroughly signed this agreement.[1] In December 2017, the WTO hold its 11th Ministerial Conference in which the United State, European Union and Japan agreed to consolidate their efforts to confront the Chinese Economic Model with regard to Subsidies provided to/by SOEs Sectors, due to their significant negative impacts on international trade. On the other hand, China denied that claim, and stated that the fiscal support or inputs provided to/by an SOE could not be considered a subsidy within the meaning of the ASCM, since only financial contributions by “governments or public bodies”, not SOEs, met the definition, and then be subject to the Agreement.[2]

The essential question this paper aims to answer is that “*Is the financial support provided to/through SOEs sectors considered a subsidy?*”. In order for the subsidy to exist according to the ASCM, four elements must be fulfilled, such as a)financial contributions b)by governments or public bodies, c)confirmed a benefits, and d) Specificity.[3] Moreover, the data has been collected and anatomized through the analytical method of legal research.

**Results:** After an insight analyzing of the legal context and case laws, it can be said that, the Appellate Body stated that “A public body an entity that possesses, exercises or is vested with governmental authority”. This decision has sorted out some of the disputes in question, but it is not so accurate by adding the conjunction “OR” which gives the meaning of choice. Thence, “possess or is vested in a governmental authority” without “exercising” it does not meet the aim of the prohibition of the ASCM.

**Conclusions:** Although three of the above-mentioned elements are met, there is no single standard for determining whether or not the SOEs deems a public body, and then the aid confirmed by which is a subsidy. The assessment should be on the case-by-case bases. Since the government itself, sometimes, carries out an economic activity without using the public authority, and stands on an equal footing with other companies in a fair competition, but some actions under the table, and not included in subsidies notification can be conducted, but cannot be traced.

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*Keywords: the Agreement on subsidies and countervailing Measures, State-Owned Enterprises, Public Body*

## **Az Europol és az Eurojust szerepe a közös nyomozócsoportokban**

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Az előadás az Európai Unió tagállamai által folytatott büntető igazságügyi együttműködés egyik eljárásjogi eszközét, a közös nyomozócsoportot vizsgálja. A közös nyomozócsoport a tagállamok illetékes bűnüldöző hatóságai által létrehozható transznacionális csoport, amelynek célja a transznacionális bűnözés elleni küzdelem megkönnyítése, amennyiben több tagállam érintett a meghatározott bűncselekmény miatt folytatott büntetőeljárásban.

**Eredmények:** Az előadás először röviden ismerteti a jogintézmény létrehozásának körülményeit és kezdeti gyakorlatát, majd pedig bemutatja a hozzáadott értéket, amelyet képvisel. Ezt követően pedig kitér az Europol és az Eurojust szerepére a közös nyomozócsoportok tekintetében.

**Következtetések:** E két uniós ügynökség nélkül közel sem lenne olyan hatékony a jogintézmény, mint amelyet tapasztalhatunk. Eme tézis szemléltetése céljából az előadás bemutatja az Europol és az Eurojust tevékenységeit, amelyek előmozdítják a nyomozócsoport keretében folytatott együttműködés, ezt követően pedig gyakorlati példákkal is szemlélteti a nyomozócsoportok hatékonyságát. Végül a parndorfi ügy vizsgálatán keresztül az előadás rámutat a jogintézménnyel kapcsolatban felhozható egyes kritikákra és megoldási javaslatokkal is él.

*Kulcsszavak: Európai Unió, büntető igazságügyi együttműködés, közös nyomozócsoport, europol, eurojust*

**Geopolitika**



**Geopolitics**



## **A cári Oroszország és Korea kapcsolatrendszere 1860 és 1904 között**

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A 21. század békés nemzetközi kapcsolatai számára a Koreai-félsziget jelenti az egyik legfenyegetőbb kihívást. A félszigeten elhelyezkedő északi- és déli országrész között a mai napig hadiállapot áll fenn, Észak-Korea pedig nukleáris kapacitásainak fejlesztésében látja saját biztonságának zálogát, nem törődve a nemzetközi közvélemény almarasztalásával. Az észak-koreai rezsim túlélésében döntő szerepet játszik két északi szomszédja, a Kínai Népköztársaság, illetve Oroszország.

Az orosz-koreai kapcsolatok másfél évszázados múltra nyúlnak vissza és bár a Korea számára sem régen, sem ma nem az orosz partnerség jelentette a legbiztosabb támaszt, az Oroszországnak a koreai-félszigetre gyakorolt befolyásával mindig számolni kellett. A tanulmány célja annak bemutatása, hogy a koreai politikai vezetést milyen megfontolások vezették az orosz támogatás igénybevételének kérdésében a jelzett időszakban, illetve a cári birodalomnak milyen eszközei voltak Koreát érintő céljainak elérésében, különös tekintettel arra, hogy bár a nemzetközi politika szereplői közötti hatalmi egyensúly megváltozott az elmúlt másfél évszázadban, a geopolitikai körülmények változatlanok maradtak.

*Kulcsszavak: cári Oroszország, Korea, külpolitikai, geopolitika*

## Az USA nemzetbiztonsági stratégiáinak kontinuitásai és diszkontinuitásai az 1990-2017 időszakban

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Vita tárgya a szakirodalomban, hogy az USA geopolitikáját ki, vagy mi határozza meg: az elnök, a pártpolitika vagy a szükségszerűség. A világ vezető hatalmáról lévén szó, ez a kérdés nem közömbös. Kihívást a kutatás módszertana szokott jelenteni: ha adatokból indulunk ki, akkor kérdéses marad, hogy ugyanazt vesszük-e számításba és ugyanolyan szempontrendszer szerint, mint ahogy a nagyhatalmi geopolitika stratégiái teszik. Ráadásul adatokból szándékokra, érdekekre következtetni ugyancsak vitatható volna. Ha eseményekből akarnánk kiindulni, akkor legjobb esetben is arra jutunk, mint Dombrowski és Reich (2017), akik azt állapították meg, hogy az elnök személye vélhetően nem számít, de ez csak hosszú távon, utólag lesz majd egyértelműen kimondható [1]. Ezt a problematikát hidalja át kutatásom, amelyben az 1990 óta máig (2020 őszig) megjelent összesen 15 amerikai nemzetbiztonsági stratégia (National Security Strategy, NSS) tartalomelemzését végeztem el, a világrend és a geopolitikai kódok szakirodalma adta szempontok alapján. Az elemzés során a 15 dokumentum releváns tartalmait a kiválasztott szempontok szerint és a dokumentum évszáma szerint besorolva idősoros adatbázis készült. Az így azonosított kontinuitásokat és diszkontinuitásokat az elnökök személyével és pártállásával összevetve vált láthatóvá, hogy mi formálta az USA geopolitikáját, és hogyan tette. Minthogy a vizsgált 30 éves időszakban 5 elnök regnált, mindegyik elnök adott ki stratégiát, és 4 republikánus és 4 demokrata ciklus zajlott le ebben az időszakban, vizsgálható, hogy ebben az időszakban a geopolitika elnökfüggő-e, pártfüggő-e.

**Eredmények:** Időrendben elsőként a legitimáció 20 év kontinuitás után mutat törést az NSS 2010-ben. A hatalom nemzetközi megoszlása az NSS 2010 és NSS 2015 szerint változik meg. A vállalatok és az amerikai állam közötti érdekegyezés alapú együttműködés kontinuitásának megtörését az NSS 2017 dokumentálja. Az erőpozíció egyes dimenzióira vonatkozó stratégia kontinuuus a teljes vizsgált időszak során.

**Következtetések:** 1990 és 2017 között az USA geopolitikáját a hatalom nemzetközi megoszlása, és az amerikai állam és cégek közötti érdekegyezés alakulása határozta meg, nem az elnök személye, vagy a pártpolitika. A kutatás eredménye módszertani szempontból felveti, hogy a relatív erőpozíciók vizsgálatában nem csupán a számszerűsíthető tényezők (GDP, haderő) a mérlegelendők, hanem az érintett állam stratégiai függései, illetve a függések nemzetközi háló-jában elfoglalt helye is.

Irodalomjegyzék:

[1] Dombrowski P, Reich S. Does Donald Trump have a Grand Strategy? *International Affairs*, 2017; 93:5: 1013–37

Támogatás: Pallas Athéné Alapítványok

Kulcsszavak: világrend, geopolitikai kód, USA, legitimáció, hatalom

## The reflection of the Wilhelm Camphausen's lithography: "Episode aus der Schlacht am Berge Harsany" in the mirror of the German geopolitics at the end of the nineteenth century

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In 1687 the united Christian army defeated the Ottoman troops at Nagyharsány (Hungary) and prohibited them to reclaim Buda (Hungary). This battle has become widespread as "Second Battle of Mohács" or "Battle of Nagyharsány" in comparison with the Battle of Mohács 1526 to highlight the similarities between the two battles.

The mentioned battle is not just having strong connections to the the Battle of Mohács (1526) but also the symbol of other ages political and geopolitical events. Wilhelm Camphausen's lithography reflected the Second Battle of Mohács (1687) and it embodied not just the victorious battle at Nagyharsány (Hungary) but also showed the German political and geopolitical actions at the end of the 19<sup>th</sup> century. The geopolitical roots of his artwork are coming from the Franco-Prussian War (1870-1871).

At first, I have analysed the biography of Wilhelm Camphausen (1818-1885) and his artwork. His artworks are fitting into the romantic and historical art style, besides all these things his life was appointed by the German geopolitical ambitions. In the second part of my research, I observed the portrayed landscape and its attributes of the "Episode aus der Schlacht am Berge Harsany". So far, the author is about to claim that the primary sources and the first-hand artworks about the landscape of the Second Battle of Mohács (1687) affected the forms, figures and the symbols of a portray on Camphausen's picture. Camphausen has depicted few of the and symbolical places of the old battlefield in his engraving but in different compositions. The similarities and differences are visible between the depicted battle scenes from the 17th and 19th centuries pictures. In my study I have highlighted the symbols of Camphausen's lithography and I would like to present the biographical, historical and geopolitical reasons that were affecting on Camphausen's opinion and artwork about the Second Battle of Mohács (1687).

*Keywords: Second Battle of Mohács (1687), symbolical places, geopolitics, Wilhelm Camphausen, Franco-Prussian War (1870-1871), Germany, lithography*

## **The Ice Silk Road: Rise of a New Polar Power?**

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As an area rich in unexplored resources, the North Pole is assuming an increasingly important geoeconomic and geopolitical role among Arctic and non-Arctic states, China is among the interested non-Arctic states. Mostly thanks to this, new trade routes have emerged in the region, which saves energy and time as a considerable security and geopolitical aspect. China has been working on building its regional ambitions for several years and released china's Arctic Policy in early 2018, according to which the country would like to integrate this region into the New Silk Road Project, too. As China has a far weaker power position in the region than America or Russia, it will need cooperation and economic investment to enforce its interests. However, from the Chinese government's perspective, the polar regions belong to the common heritage of humankind which means that all states should have the right to participate in, and shape, their future global governance. This paper analyzes China's polar strategy, currently in the stage of doctrine formation and implementation, as a framework for understanding China's global ambitions. It also examines the extent to which existing polar regimes will be able to cope with the changing balance of power and other new pressures. Arctic areas can be game changer for global connectivity which can also have an impact on Central and Eastern European Countries including Hungary.

*Keywords: Arctic, China, North Pole, Ice Silk Road, Russia, United States*

## **An assessment of the trade agreement between the European Union and MERCOSUR**

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The present paper gives an overview of the Association Agreement between the European Union and Mercosur (Mercado Común del Sur, the full members of which include Argentina, Brazil, Paraguay and Uruguay), which was concluded in 2019, after a negotiation process of nearly 20 years. With regard to the importance of the Association Agreement, it is important to note that MERCOSUR is the most significant regional integration among the partners of the EU, and their cooperation can be regarded as the first classic example of interregionalism. The primary objective of the agreement is to establish trade liberalisation on most products between the two regions. In addition, it comprises chapters related to political cooperation as well as sustainable development. The study outlines the negotiation process leading to the conclusion of the talks, introduces the main provisions of the agreement and summarises the main steps leading to its taking effect.

**Results:** Mercosur is the most important trade and investment partner of the EU - the value of their bilateral trade in goods reached 88 billion euros, while the value of the bilateral trade in services exceeded 34 billion euros. The number of consumers of the two blocks together exceeds 773 million. In the framework of the agreement, customs tariffs will be abolished for 91 per cent of the goods, several barriers to trade will be dismantled, whereas food safety regulations will become more rigorous.

**Conclusions:** The potential advantages of a mutually beneficial EU-MERCOSUR agreement would result in the dismantling of several market protection measures that will enable European exporters to access the Mercosur countries' markets more efficiently. At the same time, agricultural exports are expected to rise from Mercosur countries, that will most certainly impact the sensitive EU agricultural sector.

*Keywords: free trade, MERCOSUR, Association Agreement, European Union, negotiation process*

## **Politológia II.**

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**Political science II.**

## **Perception of the European Union in Croatia: Attitudes and Expectations**

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Being a member state of the European Union carries great obligations, but also responsibilities. These obligations and responsibilities do not only apply to the political leadership of an individual member state, but also to its citizens who perceive the European Union with numerous hopes and fears. These hopes and fears are appearing from the very beginning, ie from applying for membership until the moment when a certain country is a member of one of the largest political and economic unions in the world – The European Union. Such a situation befell the Republic of Croatia and its citizens at the beginning of 2003, when the Republic of Croatia applied for full membership in the European Union. From that moment until today, the attitudes and expectations of the citizens of the Republic of Croatia towards the European Union have changed depending on foreign policy influences. In the meantime, numerous topics and discussions have emerged as to whether the Republic of Croatia should become a member of the European Union and what the consequences of joining the Union will be. At the beginning of 2012 and the holding of a referendum on accession to the European Union, almost two thirds of voters clearly voted for accession (66,27%), which indicates the pro-European orientation of the citizens of the Republic of Croatia. However, such an attitude does not exclude the existence of fears and skepticism towards the European Union. In this paper, a part of the research results will be presented, which deals with the expectations and attitudes of the citizens of the Republic of Croatia upon accession to the European Union and the extent to which these expectations and attitudes have changed over time. The research was conducted during the first year of Croatia's membership in the European Union. The research sample of 4,000 respondents was conducted in four cycles (July 2013, November 2013, March 2014, July 2014) and collected the most important answers related to this issue. The research shows how the citizens of the Republic of Croatia perceive the European Union, what they fear the most, and what they hope for the most when joining the European Union, as well as to express some of their views on topics that were frequent in public debates Croatia to join the European Union or not?

*Keywords: European Union, Croatia, perception, image*

## Summit diplomacy at the interregional level: Evidence from the relationship between the European Union and Latin America

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Summitry is a contested but irreversible development in modern diplomatic practice [1]. Recurrent meetings between political leaders aim to strengthen high level dialogue, foster the creation of common projects and build trust relationships in a context where states recognize that isolated responses are insufficient to face upcoming international challenges. Cooperative action, not only between states but also between regions, is developed and underpinned by the summitry practice [2]. Joint declarations, as outcomes of summits, reflect the evolution of these diplomatic relations as well as the changes in its objectives and commitments. Thus, the aim of this research is to provide a detailed analysis of the summit diplomacy dialogue from the case of the relationship between the European Union and Latin America. This case is relevant since this biregional relationship is characterized by relying on a set of shared values and common visions [3] that have evolved throughout the years providing evidence of how an interregional relation transforms. To this end, a qualitative thematic analysis is carried out by collecting and examining official declarations of the eight biregional summits between the EU and Latin America in order to identify common patterns and changes in the aims and compromises agreed by both regions.

**Results:** The analysis of summits declarations reveals that the rhetoric regarding the EU-LA relationship has changed throughout 20 years of strategic partnership from vague statements to more concrete commitments that have led to specific action programs. Moreover, the biregional agenda has evolved to include more topics related to gender and sustainable development. The so-called common values remain to be the cornerstone of the biregional relationship although the meaning and practice of these values may differ between both regions.

**Conclusions:** The emergence of complex economic, political, social, and even health crises brings to light the fact that cooperative action, not only between states but also between regions, has become imperative. In this context, summit diplomacy is an important practice that fosters the creation of common projects that strengthen those relationships. Yet their continuation relies on how the common dialogue evolves and how the level of commitment changes throughout the years. An analysis of declarations provides key insights on these transitions and its implications.

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*Keywords:* Summit diplomacy, interregionalism, European Union, Latin America



## **Examining Southeast Asian-Australian Relations Through ASEAN**

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**Introduction and objective:** Australia and ASEAN's (Association of Southeast Asian Nations) relationship dates back to 1974, when Australia became the association's first dialogue partner. The relations have deepened over time and comprise a wide scope of cooperation and engagement. In recent years, there have been arguments in Australia that the country should seek to become a member of ASEAN. Other observers, however, maintain that Australia's national interest is best served by the current level of relations. My presentation's objective is to assess the current ASEAN-Australia relations and whether Australia should aim to become a member of ASEAN.

**Method:** I will first describe the beginnings of ASEAN-Australia relations, then examine the current economic, trade, sociocultural, political and security ties. Next, I will discuss the arguments for and against Australian membership. The arguments in favour posit that membership would be a major step forward in Australia's Asian engagement, and that the changing geopolitics of the region means Australia and ASEAN will inevitably have to rely more on each other in the future. I will also examine the possible attitudes of ASEAN towards Australian membership. The arguments against closer ASEAN-Australia ties state that due to geographical and cultural differences, ASEAN would reject Australia's application for membership; the time has not come yet for Australia to join; and membership in ASEAN would constrain certain important aspects of Australian foreign policy.

**Conclusions:** In the final section of my presentation, I will assess the arguments and explain why it seems unlikely that Australia will seek to become a member of ASEAN in the foreseeable future.

*Keywords: Australia, ASEAN, trade, security, sociocultural relations*

## Settlement development policy and its results from the perspective of the phenomenon of commuting in Szabolcs-Szatmár county between 1960 and 1980

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Commuters in Szabolcs-Szatmár County cannot be defined by only the infamous ‘*black train passengers*’ (long-distance commuters), but a huge mass of commuters (short-distance commuters) within county also contributed significantly to the high numbers of the commuters in the Kádár era according to statistics. Nothing proves this better than the fact that commuters had already reached 636,000 people in 1960 and 993,000 people at the time of the 1970 census nationally.[1] The number of people involved in commuting was slightly increased during the decades: according to data, 80% of the employees (15,000 people) in 1960, 89,4% (38,710) in 1970 and 90% (66,268) in 1980 were counted as commuters. [2] Although the commuter’s number was decreased at the dawn of the change of regime (92% of commuters, 63094 people), this social group was still overrepresented. [3]

Despite the strong presence of commuting within the county, in this presentation I will shed light to different aspects of this social problem. The analysis of the settlement development policy of the era is an integral part of approaching this phenomenon in my study. Among other things, one of the essential goals of the county settlement development policy was to strengthen the population retention capacity of the villages and the full social emancipation of the village population. The main objective of political action in this area was to convince the rural population that the path to social uplift was not limited to emigration. [4]

The aim of my presentation is to investigate the historical trends of the Hungarian settlement development policy in the period between 1945 and 1990, to explore the county relations of spatial planning as well as to show the growing trend of the number of commuters within the county. Further examination of these trends is particularly important for the period between the 1960s and 1980s. Although the political and social changes had started in the 1960s, it had concrete results in the 1970s, which aims were to solve difficulties arising from the specific way of life of commuters by the state as well as company employers.

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*Keywords: short-distance commuter, settlement development, policy, spatial planning*

## Populism in the background of the autonomous ambitions of Catalonia

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**Introduction:** When the Catalan crisis came into view again in 2008, catalans (along with spanish people) faced severe economic decay, a real estate crisis, and unemployment. The search for a way out of the crisis, led voters toward nationalist-populist parties offering a simple solution: they named the spanish government and the spanish elite as the cause of all the trouble. They could not put the whole Catalan society behind them, but with simple slogans, they mobilized significant masses in spectacular street movements.

In Spain, after the economic crisis, there was a succession of anti-elite, anti-capitalist movements, demanding direct participatory democracy and changes in the bipartisan (PP-PSOE) system, which, in the period 2011-2015, culminated in the so-called 15-M Movements, or demonstrations of the "Outraged" (Indignados).

**Aim:** To examine the influential role of populist rhetoric in the case of the catalan separatism.

**Results:** Anti-elite movements are closely linked to the rise of the catalan separatism, precisely because Catalan nationalist-populist parties have adopted these slogans. They steered a bottom-up initiative towards their own policy goals.

The populist characteristics of the catalan separatism are as follows: - The urgency of a direct democracy, in which a special moment could change everything in the right direction (eg.: The 2017 referendum), - We and they approach, where ours means only those Catalans who support secession, virtually ignoring the population of Catalonia for approx. 50% who oppose the secession, - Emphasize the opposition to the Spanish elite, which is exploiting the Catalan people, One of the rhetorical contradictions of Catalan nationalist-populist ideology is that they react with Catalan nationalism against the repression of Spanish nationalism that befalls them. They created simple slogans and enemies for the complex, interdependent relationships of the effects of the economic crisis, while not presenting a long-term political, social, economic plan for exactly how it would be if Catalonia broke away from Spain.

## Assessing Chinese influence in the Western Balkans

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China's grand vision, the Belt and Road Initiative (BRI) was announced in 2013 by Xi Jinping in Astana. According to a Morgan Stanley estimate, by 2027 China may invest USD 1.2 - 1.3 trillion in – mainly transport and energy – BRI projects. [1] China has built closer ties with Central and Eastern European countries via the 17+1 formation. The Western Balkan countries are part of this formation, and Chinese companies are often participating in infrastructure development projects financially supported by Chinese banks. [2] In the presentation I focus on the assessment of the growing Chinese presence in the region by various actors.

**Results:** Examining the statements of politicians, articles and official documents issued by governments and international organizations (i.e. EU, IMF) it can be stated that although the governments of the Western Balkan countries usually welcome the Chinese presence, international and non-governmental organizations, the European Union and the USA are often criticizing the phenomenon. High-ranking officials of the United States accusing China of using the so-called debt-trap diplomacy to seize strategic assets. The European Union often criticize the dirty investments (i.e. coal power plants), and the sustainability of the Chinese backed projects. On the other hand, China communicates that it tries to maintain a win-win situation and respects the sovereignty of these countries.

**Conclusions:** While the Western Balkan countries can benefit from Chinese backed investments by developing their infrastructure, it comes at a price. Although the Western actors fear that the Chinese use these investments to expand their political influence in the region, in the scientific literature there is no consensus if this claim is valid. Some scholars argue that China is increasing its the political influence in the region using “economic carrots and promises by gaining soft power” [3] however, others warn of the pitfalls of the ‘Opportunity’ and ‘Threat’ paradigms [4]. I argue that both China and the Western actors focus on issues which suit their narratives about world order while the governments of the Western Balkan countries try to maintain a balanced stance between China and the West.

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*Keywords:* China, Western Balkans, Geopolitics, BRI

# **Üzleti tudományok**

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**Business**

## The Impact of Social Media Platforms on Consumer Decision-making Process

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The advent of the technological revolution in communication and smartphones has brought the convenience of communicating with each other via social media networking tools [1]. This study examines the impact of social media platforms on the consumer decision-making process, by providing a better understanding of the main stages of the consumer's decision-making process, and its impact on promoting new products and services. The goal of this paper is to provide a comprehensive literature review to identify and review the main factors that influence the consumer's decision-making journey in order to engage him/her to buy a product or service. The paper starts with a comparison between the traditional and social media models of marketing, also it highlights and discusses many of the findings of researches from various fields and industries to figure out the factors that lead consumers to make and boost the decision for buying a specific product or service.

**Results:** The findings indicate that social media has facilitated, improved communication stream among users, and delivered beneficial information to enormous internet clients. Moreover, it has a positive influence on providing and supporting consumers' decision-making processes and enhancing their choices by providing honest information, enhance the image of the company, product recognition, and offering the best approach for delivering and getting feedback about the product [2]

**Conclusions:** This paper provides a better understanding of how social media influencing consumer's behavior. As a result, social media created an innovative prevailing way that positively influenced people's behavior in engaging in social interactive activities and share information about products and services over the internet. Marketers and companies need to put more effort, time, money and focus on targeting customers through different levels of the decision-making process. Future research should investigate the impact of features such as cultural background and demographic characteristics (age, sex, education level, income level) on the use of social media that may impact the decision-making process by consumers. Further, research can be done regarding the effect of social media on the exact phases of the consumer's decision-making process.

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*Keywords:* Social media model; Consumer decision-making; Traditional model; Digital marketing.

## HRM practices at the University of Portugal

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Human resources are the main factors for every organization to perform their goals and strategy effectively and efficiently. Historical changes helped HRM to improve, change, and to accept it as the main part of the organizations. Today, top managers accept that Human Resource Management is playing an important role in the development and sustainable growth of the organizations, and with the help of improved HR departments, they can achieve their missions and strategic goals (Mammadova, 2019). The main purpose of this study is to analyze and evaluate the practices of the HR Department of a real University which is located in Portugal in terms of a universalistic perspective.

Data and information for this case study were obtained from the University of Minho in 2014. A face-to-face interview was conducted with the Director of the HR Department. The conducted interview consisted of 18 questions concerning the University's HRM policies and practices and, was tape-recorded to analyze and evaluate the obtained information. The interview was listened to, transcribed, and analyzed carefully. As a result, it was concluded that the HR Department of the University is responsible for the administrative part; it does not a strategic partner of the University. It was also found that activities of the HR Department do not include or half include seven best practices presented by Pfeffer (1998).

Despite a great interest of human resource management in Portugal, there is scarce literature on Human Resource management at Higher Educational Institutions. This study will contribute to the literature and researcher who are interested in human resource management at the universities. At the end of the study, recommendations were given.

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*Keywords: Human resource management, Higher Educational Institutions, Universities, Portugal*

## Impact of Technology on Organisational Structure: A Contingency Theory Approach

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**Introduction:** This paper is focused on the implications of technology on the organizational structures and designs. This paper also emphasizes on the importance of exploring a fit between the technology which is being implemented and the existing organizational structure. This paper also talked about the contribution of different organizational theorists related to the school of contingency theory however the focal point of the paper was determinism in the context of technology.

**Conclusions:** In the end, the paper also talked about other environmental factors that forces organisations to develop innovation capacity and implement new technologies.

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**Keywords:** Technology, Contingency Theory, Organisational Theory



## The Effect of ESG Ratings on Risk Premium of Corporate Bonds

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**Introduction:** This paper is examining the risk premium difference of corporate bonds between the best and worst performing corporations regarding responsibility on the environment, society or its stakeholders. Numerous studies have found statistical evidence that investors are able to realize excess return by investing in corporations which are operating responsibly but this study is focusing on one of the stakeholders of the company, its creditors.[1, 2] In this study we measured corporate responsibility with the ESG score, which is an acronym for Environmental (E), Social (S) and Governance (G).

**Objective:** The aim of this research is to prove that the effect of responsible corporate operations have already spilled over from equity market to the fixed income market and it has started to move the yield curves of corporate bonds as well. It means, that even the bondholders (creditors) have started to consider ESG during their investment decisions and it affects their expectations as well, despite of the fact that during a company bankruptcy process they are paid first before the stockholders.

**Method:** We compared the bond prices and hence the cubic-spline yield curves of corporate issuers of the Refinitiv's database along their ESG, E, S and G scores and Moody's credit ratings from 01/05/2015 to 07/31/2020. First, we filtered the curves of the Refinitiv universe along tenor structure, number of active bonds, principal and availability. After that, we compared the top and bottom 10% of curves of corporations regarding their ESG, E, S and G scores on the European, US and Japanese market. Regarding the US market, we compared the top and bottom ESG performers in the same credit categories as well to exclude the noise coming from the different credit ratings.

**Results:** The better the credit rating category the stronger the risk mitigating effect of ESG on the US market. Creditors constantly found riskier by 20-47 bp those bonds whose issuers are operating less responsible. The weaker the credit rating category the creditors found more riskier to invest in responsibility projects instead of financial performance. The trend is fluctuating on the European market and the revers on the Japanese market. The delay on the fixed income market compared to the stock market can be explained by the spillover effect and the less ESG risk awareness due to bankruptcy payment hierarchy.

**Conclusions:** The effect of ESG have already reached the fixed income market. Investors in the US found less risky those corporations which are operating responsibly but a company first should focus on its financial performance (better credit rating) and after turn part of its attention to non-financial issues.

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## Internal CSR as a tool of increasing employee satisfaction - focusing on up-scale hotels in Balaton region

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This study analyses the internal CSR (corporate social responsibility) activities and their role in increasing employee satisfaction among employees working in four- and five-star hotels in the Balaton region. Internal CSR pays special attention to employees [1] who have significant role also in the service sector, such as tourism and the lodging industry [2]. This is mainly due to the fact that recruitment and retention of skilled employees is a key element of the service companies' success [3] [4].

**Results:** According to a survey based on the perception of the employees working in four and five-star hotels in the Balaton region it can be stated that there is a positive relationship between internal CSR and employee satisfaction. However, examining the characteristics of hotels, it can be concluded that the application of internal CSR is not affected by the size and ownership of the hotel.

**Conclusions:** Based on the results of the research, it can be stated that the application of internal CSR is suitable for increase employee satisfaction. Consequently it is worth to build into the daily operation and the corporate strategy of the hotel companies.

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**Keywords:** corporate social responsibility, internal CSR, employee satisfaction, tourism, hotel industry

## Makrotrendek az élelmiszeripari fejlesztésekben

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Az élelmiszeripari fejlesztések területén napjainkban jellemzően két uralkodó megatrend van jelen: a globális felmelegedés és a táplálkozással összefüggő egészségügyi problémák (civilizációs betegségek, túlsúly, éhezés, elöregedő társadalom). Ezek olyan nagy hatással vannak a fogyasztói magatartásra, hogy az olyan tradicionális igények, mint a termékek biztonságos fogyaszthatósága, ára és íze, továbbá, hogy egy élelmiszer pusztán a fiziológiai szükségleteket elégítse ki, már egyfajta alapvető elvárássá alakult. Ezen felül olyan új fogyasztói preferenciák jelennek meg, melyek a társadalmunkra jelenleg leginkább hatással bíró körülmények kezelésére keresik a megoldásokat. Manapság szinte naponta új diéták jelennek meg, és különböző táplálkozási irányzatok törnek be a köztudatba, egyre inkább előtérbe kerülnek a speciális igények. Emellett az emberek jelentős hányada szenved valamilyen, a táplálkozással összefüggő betegséggel, allergiával vagy intoleranciával. Egyre többet lehet hallani bio, funkcionális, organikus, mentes, vega, vegán, fenntartható és hasonló új táplálkozási trendekhez kapcsolódó kifejezéseket. A kutatás során fő célkitűzésemnek tekintetem, hogy hazai és nemzetközi szakirodalmak, valamint szakértői interjúk segítségével feltárjam azokat a problémákat és motivációkat, amelyek mozgatórugói napjaink aktuális táplálkozási trendjeinek, valamint a hozzájuk kapcsolódó válaszokat az élelmiszeripari fejlesztések területén.

**Eredmények:** A vállalatok folyamatos nyomás alatt állnak. A nemzetközi tendenciák azt mutatják, hogy a modern fogyasztói elvárások jelentősen átalakítják az élelmiszergyártó ipart, vagyis a fenntarthatóság, egészség, innováció alakítja majd ezt a területet a következő években.

**Következtetések:** Ezekre az új trendekre és társadalmi tényezőkre válaszul jelennek meg a boltok polcain az új igényeknek megfelelően gyártott élelmiszeripari termékek is, melyek a célpiactól függően az egészséges táplálkozás, a fenntarthatóság, vagy egyéb kritérium jegyében kerülnek a boltok polcaira.

*Támogatás:* Az előadás az Új Nemzeti Kiválóság Program keretében meghirdetett Nemzeti Felsőoktatási Kiválóság Ösztöndíj, Felsőoktatási Doktori Hallgatói, Doktorjelölti Kutatói Ösztöndíj (ÚNKP-20-3-I-DE-404) támogatásával valósult meg.

*Kulcsszavak:* élelmiszeripar, makrotrendek, táplálkozás, táplálkozási trendek, fogyasztói igény

## Folyamatmenedzsment szerepe a labdarúgó kluboknál

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**Bevezetés:** A folyamat alapú vállalatvezetés jelentősége az üzleti / intézményi gyakorlatban egyre nagyobb szerepet játszik. A jól definiált és megszervezett szervezeti folyamatok megteremtik a hatékony működés lehetőségét, ezért a szervezetek alapvető célja a folyamatok lehatárolása és szabályozása, valamint ezeknek a fenntartása. Folyamatok minden típusú szervezet működésében megjelennek, mert a célokat folyamatok / tevékenységek láncolatával tudják megvalósítani. A kutatásom során vizsgált labdarúgó klubok / egyesületek működésében is megjelennek a folyamatok, annak ellenére, hogy nem pl. termelő vagy szolgáltató tevékenységet végeznek. A különböző osztályokban (NB1, NB2, NB3) szereplő klubok / egyesületek más-más szabályzásnak kell, hogy megfeleljenek.

**Célkitűzés:** A kutatásom célja megvizsgálni, hogy a labdarúgó klubok / egyesületek működésében milyen specialitások jellenek meg a normál szervezeti működéshez képest és ezek végrehajtását vizsgálom folyamat alapon a különböző osztályok csapatainál.

**Módszer:** A kutatásom során a magyar labdarúgó bajnokság első három osztályának egy-egy labdarúgócsapatát vizsgálom meg interjúk készítésével.

**Eredmények:** A kutatásom még folyamatban van, így eredményeket még nem tudok bemutatni.

**Következtetések:** A kutatásom még folyamatban van, így következtetéseket még nem tudok bemutatni.

*Támogatás:* Az előadás az Új Nemzeti Kiválóság Program keretében meghirdetett Nemzeti Felsőoktatási Kiválóság Ösztöndíj – Felsőoktatási Doktori Hallgatói, Doktorjelölti Kutatói Ösztöndíj (ÚNKP-20-3-II-DE-402) támogatásával valósult meg.

*Kulcsszavak:* folyamat, folyamatmenedzsment, szabályozás, labdarúgás

## **Gazdasági növekedési modellek és hatásai a nyugdíjcélú megtakarításokra**

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Az Európai Unió tagállamait veszélyeztető társadalmi változások egyik legjelentősebbike a népesség nagyfokú öregedése, és ennek jelenlegi és várható hatása a gazdaságokra és az állampolgárok nyugdíjbiztonságára. Számtalan kutatás bizonyítja, hogy az állami nyugdíj nem lesz elegendő mértékű ahhoz, hogy a nyugdíjas korú kiadásokat teljes mértékben fedezze. Előreláthatólag a nyugdíjszínvonal megfelelő szinten való tartásához az állami nyugdíj mellett gondoskodni szükséges valamilyen nyugdíj célú megtakarításról. Az előadás és a hozzá kapcsolódó tanulmány három részből áll. Első része az Európai Unió népességének jelenlegi és jövőbeni alakulását mutatja be demográfiai és statisztikai adatok alapján, és ennek gazdasági hatásait az állami nyugdíjak alakulására. A második rész a pénzügyi megtakarítások formáit és lehetőségeit ismerteti, különös tekintettel a nyugdíj-megtakarítások lehetőségeire. A harmadik része az „Öngondoskodás szerepe életünkben” című kutatási projekt elméleti alapjait és hozzá kapcsolódó kérdőíves viselkedés gazdaságtani kutatás eredményeit mutatja be.

*Kulcsszavak: nyugdíjmodellezés, nyugdíjbiztonság, pénzügyi befektetések, nyugdíj megtakarítás, viselkedés gazdaságtan*

**Környezettudományok**

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**Environmental sciences**

## Indoor Air Pollution Assessment in Residential House in Damascus - Syria

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There is no doubt that exposure to air pollutants have several harmful effects on human health [1]. In this study 4 indoor and 1 outdoor measuring campaigns were carried out over the period from July to the middle of September 2019 in order to determine PM<sub>2.5</sub> and CO<sub>2</sub> concentrations by using IQ AirVisual pro air quality monitor in a residential flat, located in Damascus city (the capital of Syrian Arab Republic). There are several restaurants, shops, and bars surrounding the measuring site which represent the main emission sources such as diesel generators which are used, when there is no electricity, and chimneys. This pilot study was one of the first investigation in Syria in indoor environment, were only very limited air quality studies are available, and most of them cover the outdoor air pollution [2,3,4,5].

**Results:** Based on our measurements, outdoor PM<sub>2.5</sub> concentrations were generally higher, than indoor concentrations, probably due to the air conditioning system operated during summer inside the flat. Differences among each indoor environment are due to different human activities during the day in each room. Indoor CO<sub>2</sub> concentrations – especially in the bedroom – were found to be higher than in outdoor environment.

**Conclusions:** Our measurements were carried out just for a short period, and we used a low-cost sensor. Due to the absence of outdoor air quality monitoring stations and limited meteorological measurements in Syria, we could not compare our results with reference values. For a more detailed description of air quality, long-term measurements would be necessary in different conditions. At the same time, this measuring campaign provided more useful information about air quality in this special environment and for further researches.

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**Keywords:** PM<sub>2.5</sub>, CO<sub>2</sub>, Damascus, indoor air pollution

## The winner takes it all: the effect of a new invader of Hungarian grasslands, *Sporobolus cryptandrus* on natural vegetation

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Invasive species cause severe ecological damages and their impact costs national economies billions of dollars every year. Instead of the expensive eradication and subsequent habitat restoration, prevention may be a more cost-effective solution, however, a crucial step before preventive measures is to assess the threat a newly colonizing non-native species may pose. In this study we evaluated native and non-native stands of a potentially invasive grass, *Sporobolus cryptandrus*. Our aim was to reveal how its increasing cover affects the functional diversity and ecosystem service provisioning capacities of plant communities. We surveyed grassland patches in the Kiskunság, Hungary and in Montana, USA simultaneously, recording all vascular plant species and their relative abundances in 50 randomly placed quadrats in each 9 locations. In order to compare the plant communities of the two continents, we used a trait-based approach.

**Results:** Increasing *Sporobolus* cover resulted in lower functional diversity, and reduced average specific leaf area and flowering period in Hungary but did not have these effects in the native stands. *Sporobolus* also negatively affected the cover of native perennials in Hungary, creating more space for annuals.

**Conclusions:** We conclude that the spread of *Sporobolus*, away from its native range, leads to the impoverishment of host communities and compromises the biomass and pollen provisioning capacity of the vegetation to higher trophic levels. Tackling the spread of this new invader should therefore be a priority task.

*Acknowledgements:* This investigation was supported by the ÚNKP-19-2-SZTE-47 New National Excellence Program of the Ministry for Innovation and Technology.

*Keywords:* biological invasion, sandy drylands, risk analysis, plant trait



## Tracing Arpadian age village borders by field reambulation near Nagybárkány and Kisbárkány, Nógrád County, NE Hungary

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The history of the two small villages, Kisbárkány and Nagybárkány lying among the valleys of the Eastern Cserhát goes back to the Arpadian age. In the charters, the two villages were mentioned by one name, Bárkány, although they are situated more than two kilometers from each other. The first mentions of Bárkány and the descriptions of its borders originate from the 13th century. Since then the geographical names, mentioned in the charters, have been forgotten, the names of the hills and creeks have been changed, the ruins of the castles have been covered by forest, and some of the medieval villages do not exist anymore either. However, the borders of the estates and settlements seem to be more important than letting them be forgotten. Due to the fact that the *habitants* and *possessors* of the area have always paid attention to the sustaining and renewal of the border marks, based on the present boundary of the settlements, the perambulation found in the medieval charters can be traced back, and relicts of the vanished settlements can be explored. This study shows how the geographical names and settlement boundaries of this area have been changed through the centuries, and where the former village of Almás – whose name is enshrined today only in some geographical names on the maps – could be situated. Research was based not only on the exploration of archives – especially data of medieval charters and old maps –, but there has been great emphasis on fieldwork as well. Some of the landforms mentioned in the charters, like *mons*, *monticulus* or *vallis* still exist today, though *fluvius*, *rivus* or *rivulus* which might have changed its bed or even dried out long time ago, the systematic personal reambulation in the field, however, can in both cases help us to find the old places we seek for.

*Keywords: medieval village borders, charters, maps, reambulation, Nagybárkány*

## Hydrogeology as an efficient tool for evaluating natural radionuclide content of drinking water

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Nowadays, the intensifying effects of the global climate change have triggered increasing use of groundwater resources all around the world. Ensuring the availability of adequate quality and quantity of drinking water is becoming an increasing challenge. Groundwater resources are less exposed to anthropogenic pollutants than surface waters. However, during the rock-water interaction, water can acquire properties that degrade its quality, for example it can contain dissolved heavy metals or radionuclides which released from the surrounding rocks. The adverse effects of radionuclides entering the human body through the consumption of drinking water have begun to be studied only in the last few decades. The results of that studies initiated those regulations that are in force in the European Union (and in Hungary) today. Under the regulations, waterworks in Hungary monitor the tritium, radon, gross alpha and gross beta activities of the drinking water. As one of the measured activity values is above the limit, the water consumption can cause harmful effects in the long run. Gross alpha activities exceed the 0.1 Bq L<sup>-1</sup> limiting value were measured in the southern foreland of Lake Velence and in case of a river-bank filtered water base. Water samples were collected from groundwater as well as from surface water bodies. Using nuclide-specific measurements, <sup>234</sup>U, <sup>238</sup>U, <sup>226</sup>Ra and <sup>222</sup>Rn activities were determined. To understand the groundwater flow system in the research area, hydrogeological methods were used (pressure-elevation profiles, tomographic potential maps, hydraulic cross section) and conceptual models were made to explain the high activity values.

**Results:** In the first study, uranium was identified as the cause of the previously measured high gross alpha activity in drinking water. The elevated uranium activity values [max. 753 mBq L<sup>-1</sup>] nicely correspond with recharge areas (which are identified by using pressure-elevation profiles) which are characterized by oxidising conditions under which uranium can be dissolved in groundwater. As for the other case study, uranium was measured in significant concentrations [max. 202 mBq L<sup>-1</sup>] which can be explained by the oxidising conditions we measured. Our research revealed the transient nature of riverbank filtered drinking water supply systems. The results showed that the monitoring system of the radionuclides has to be improved.

**Conclusions:** Our research has highlighted the importance of the nuclide-specific measurements and the evaluation of radiochemical results from a hydrogeological point of view in developing a safe drinking water supply strategy.

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*Keywords:* safe drinking water supply, radionuclides, gravity-driven groundwater flow systems

## Modelling the distribution changes of two *Cordulegaster* species under future climatic conditions

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The two dragonfly species *Cordulegaster heros* and *Cordulegaster bidentata* are classified as “near threatened” according to the IUCN Red List and are strictly protected in Hungary. By modeling the potential occurrence conditions of these species, with the help of SDM (Species Distribution Modeling) we get a more accurate picture of the most suitable areas for the species, thus facilitating the planning and implementation of monitoring projects. The use of occurrence models based on various biotic and abiotic background variables is an increasingly common method in conservation biology today. Occurrence models are based on firstly using statistical procedures to evaluate which macrohabitat variables determine the presence or absence of a given species. Then it calculates which areas have similar properties based on the similarity of the values calculated by the algorithms. In this way, we can project on map the areas that can be considered the most suitable, thus gaining an idea of the potential occurrence conditions of the species for the present and also for future climatic conditions. Our aims are to determine a) which climatic variables affect these species the most, b) where would be suitable areas for the species, and c) how climate change affects the suitable areas of these species. The pseudo absence generation made by BIOMOD 2 package, with 5 repetition for both occurrence dataset and 5000 randomly selected pseudo absence points in each. For the modelling we ran 10 repetitions for each pseudo absence data set and 3 permutation for all to estimate variable importance. For the model evaluation we used ‘ROC’ with a 0.7 threshold. For the modelling of future predictions we selected 3 circular models with GCM CompareR tool, and different 2 scenario. For the present and future projections we used the consensus of the models which were selected by the ROC value.

**Results:** We determined which climatic and abiotic background variables effects the most of the species, then we projected the most suitable areas to map. We calculated how the future climatic changes effect on the suitable areas the two strictly protected dragonfly species.

*Keywords:* SDM, dragonflies, BIOMOD

## Arsenic in irrigation water and its uptake in vegetables

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Arsenic is a geogenic contaminant in groundwater and soil around the world. Background As concentration in the ground water of many countries exceeds the WHO standard of 10  $\mu\text{g L}^{-1}$ . Arsenic is up taken by the plants from the soil and is bio-accumulating thereby impacting the entire food chain. Human arsenic exposure is mainly through drinking water and food. Excessive arsenic in food and water causes adverse health effects, ranging from dermal lesions to cancer, depending upon the dosage, exposure period, age, and the nutritional aspects of the population [1]. Arsenic contaminated ground water is used in many countries for irrigation, but the subsequent As uptake by vegetables and associated health risk is poorly understood. An experiment was thus set-up to understand the uptake of arsenic and plant biomass production in three different plants: bean (*Phaseolus vulgaris* L.), tomato (*Solanum lycopersicum* L.), and pea (*Pisum sativum*). The plants were grown in a pot-soil system in an open greenhouse in two soil types: sand [top soil: 0-30 cm, Órbottyán (47°40'N, 19°14'E)] and silt [top soil: 0-60 cm, Hatvan (47°67' N, 19°64' E)]. Arsenic was added in the form of sodium arsenate at concentrations of 0.05 and 0.2  $\text{mg L}^{-1}$  to the irrigation water. The arsenic concentration of plants parts (root, shoot and fruit) was investigated. The dried plant samples were homogenized and subjected to microwave assisted acidic digestion and the arsenic concentrations were measured by inductively coupled plasma mass spectrometer (ICP-MS).

**Results:** The As content of the plant parts was found to increase with the increase in As concentration in the irrigation water. The highest As concentrations were found in the roots, while the edible parts contained the least As in all cases. As accumulation trend in edible part of vegetables was: pea<bean<tomato. All vegetables grown in sandy soil had the maximum As accumulation, and negative biomass production. Silt soil was good for growing vegetables in As rich environment and at an As limit of 0.05  $\text{mg L}^{-1}$  in the irrigation water. Bean and pea were found to be best suited for growth in As rich environments while tomato was sensitive. Maximum biomass production in edible parts of all plants occurred at 0.05  $\text{mg L}^{-1}$  As treatment.

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**Keywords:** arsenic, vegetables, irrigation, biomass

## The Assessment of Energy Efficiency and Thermal Analysis on Residential Sector

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Building energy simulations is an important part of a decision making process as it helps designers to evaluate the energy and comfort impact of different building design options. This paper assess the thermal and visual comfort as well as energy performance of a residential building in New- Minia, Egypt, assessing c Predicted Mean Vote (PMV), Carbon dioxide level (CO<sub>2</sub>), and Daylight Factor (DF) using IDA Indoor Climate and Energy (IDA ICE) simulation software.

**Results:** For the investigated area, the optimal orientation for this building is the North façade [1]. The total delivered energy of the building annually was 166447 kWh and requires around 218 kWh/m<sup>2</sup>. The majority of energy accounted to cooling demand by 111501 Kwh (67% of total energy demand) while the heating represented by 17.9% of total energy demand %, as the investigated study area located in a hot and dry climate. Lighting, domestic hot water, equipment and tenant accounted to 15 % of the total energy consumption.

ISO 7730 proposed three categories of PMV, category B in the interval [-0.5, +0.5] presents the average level of applicability. The average number of annual hours of PMV, category B for the whole building was calculated using an area weighted averaging equation [2], was 7781 h. European Standard CEN-EN 13779:2007, recommend keeping concentration level of CO<sub>2</sub> below 1000 ppm. The average annual hours with CO<sub>2</sub> concentration level above 1000 ppm accounted to 2248 h. Daylighting provision in buildings is an essential parameter in indoor environmental investigation. The setting value of Daylight Factor for Minia city is 2.1. The daylight analysis show that 78.7 % of the floor area, daylight factor was below 2.1, while the remaining 21.3% was higher than 2.1.

**Conclusions:** It can be concluded that the analysis results will be useful for modelers to determine the optima level of energy performance and thermal comfort of a residential building.

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*Keywords:* Energy Performance, Residential Building, IDA-ICE, thermal and visual comfort

## Jóddal adagolt öntözővíz hatása répa-, paradicsom- és káposztanövények terméshozamára és elemösszetételére

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A jóddal esszenciális elem az emberi szervezetben, mivel kulcsszerepet játszik a pajzsmirigy által termelt T4 és T3 hormonok szintézisében. Elégtelen jódbevitel esetén golyva, kreténizmus és mentális retardáció alakulhat ki, melyeket összefoglaló néven jódhányos-rendellenességeknek nevezünk. A WHO által ajánlott napi jódbevitel korcsoporttól függően 90 és 250 µg között változik [1], azonban világszerte kb. 2,2 milliárd embernél a jódbevitel elégtelen [2]. Napjainkban széles körben kutatott terület a jóddal élelmiszernövényekben történő dúsítása (biofortifikáció) műtrágyák, illetve különböző öntözési technológiák alkalmazásán keresztül. A növények az ehettő részeikben képesek a jódot akkumulálni, így ezek elfogyasztásával orvosolhatók lehetnek a jódhányos által okozott megbetegedések [3]. Kutatásunkban két különböző talajon (homok, vályog) nevelt répa-, paradicsom- és káposztanövény terméshozamát és elemfelvételét vizsgáltuk, mely során a jódot 0,1 és 0,5 mg I/L koncentrációkban adagoltuk az öntözővízhez. A különböző növényi részek (gyökér, hajtás, ehettő rész) száraz tömegének meghatározását követően, a jóddal és tápelem (B, Mg, P, Mn, Fe, Cu, Zn) koncentrációk mérését mikrohullámú savas roncsolást követően induktív csatolású plazma tömegspektrométer alkalmazásával végeztük el.

**Eredmények:** Kutatásunk során megállapítottuk, hogy 0,5 mg/L jóddal koncentrációjú öntözővíz alkalmazása mellett a paradicsom ehettő részének tömege 13 és 18%-kal, a répának 10 és 19%-kal csökkent, míg a káposztalevelek száraz tömege a kísérletek során 9 és 15%-kal növekedett homok, illetve vályog talajokon. 0,5 mg/L jóddal koncentráció alkalmazása mellett a paradicsom, káposzta és répa növények ehettő részeinek jóddal koncentrációi homoktalajon 3,6 mg/kg, 10 mg/kg és 3,5 mg/kg, míg vályog talajon nevelt növények esetén 3,2 mg/kg, 3,7 mg/kg és 3,0 mg/kg voltak.

**Következtetések:** Megállapítottuk, hogy a két különböző talajtípus közül a homok bizonyult a leghatékonyabb termőközegnek, valamint a vizsgált növények vonatkozásában a káposztában sikerült a legnagyobb mértékű jóddal akkumulációt elérni. 0,5 mg/L öntözővízbeli jóddal koncentráció alkalmazásával 16 dkg káposzta, 67 dkg paradicsom és 42 dkg répa ehettő részének elfogyasztása fedezné egy átlagos felnőtt ember napi jódbevitelét (200 µg I/nap).

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Kulcsszavak: jóddal, répa, paradicsom, káposzta, biofortifikáció

## 12 év zsugorítmánygyártási porleválasztás környezetvédelmi tapasztalatai

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A zsugorítmánygyártás az integrált vas- és acélgártás egyik kezdeti szakasza. Az üzembe érkező ásványelegyből tűzi úton a nyersvasgyártás egyik fő alapanyagát, a zsugorítmányt állítják elő. A termelés porfelszabadulással jár. A port elszívják, majd méret szerint elkülönítik és leválasztják, például multiciklonban és elektrofilterben. A leválasztott porokat visszavezetik a termelésbe (recirkuláció), hozzákeverik a beérkező primer anyagokhoz. Előadásunk az első, előzetes környezetásványtani összegzése egy hazai nagyvállalat 2008-tól 2020-ig működő környezetvédelmi elektrofilter beruházása hatékonyságának. A különböző üzemmódokban (elektrofilterrel, ill. anélkül) vett porminták összetételének meghatározása röntgenpordiffrakciós (XRPD) és oldási vizsgálatokon alapulnak.

**Eredmények:** A *durva frakciójú port* mindkét üzemmód esetében a multiciklon választja le. A por fő összetevőit az elektrofilter működése során vas-oxidok [hematit ( $\text{Fe}_2\text{O}_3^{\text{trig.}}$ ), magnetit ( $\text{FeFe}_2\text{O}_4^{\text{köbös}}$ )] és dolomit ( $\text{CaMg}(\text{CO}_3)_2^{\text{trig.}}$ ) alkotják, de más ásványok, pl. kvarc ( $\text{SiO}_2^{\text{trig.}}$ ), kalcit ( $\text{CaCO}_3^{\text{trig.}}$ ) és szilvin ( $\text{KCl}^{\text{köbös}}$ ) is jelen vannak. Az elektrosztatikus porleválasztás nélküli üzemmódban a multiciklonból vett mintában a termelés számára újrahasznosítás szempontjából értékes ásványok (vas-oxidok) mennyisége lecsökken. A csökkenést a két karbonátásvány arányának növekedése ellensúlyozza. Kiemelendő, hogy a kloridtartalom – ami a K, Na és Pb hordozója a recirkulált rendszerben [1] – kimutatási határérték alatti.

Az elektrofilter által leválasztott finom frakciójú porok fő alkotói kloridok [szilvin ( $\text{KCl}^{\text{köbös}}$ ), halit ( $\text{NaCl}^{\text{köbös}}$ )] (~ 50-70%) és vas-oxidok (~ 20-45%). Elektrosztatikus porleválasztás nélküli üzemmódban az üzemből távozó porokat közvetlenül még nem vizsgáltuk, azonban a multiciklonok körül összegyűjtött finom porminták jó időbeli átlagnak minősülnek. Összetételük és az ásványok arányai hasonlítanak az elektrofilteres pormintákéhoz, de a kloridok mennyisége nagymértékben lecsökken.

**Következtetések:** Az elektrosztatikus porleválasztó az elmúlt 12 évben többes szerepet töltött be: 1) abszolút mennyiségben nagyságrenddel csökkentette a környezetbe jutó finom frakciójú port; 2) biztosította a vas-oxidok visszajuttatását a termelésbe; 3) a lecsökkentett abszolút pormennyiségen belül is csökkentette a szabadba kikerülő ólom és klorid relatív mennyiségét, visszatartva e komponenseket az üzemi folyamatban. Utóbbi nem várt többletelőnynek tekinthető a tervezés során elvárt környezetvédelmi előnyökhöz képest.

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Kulcsszavak: környezetvédelem, vaskohászat, porleválasztás, ólomvisszatartás, elektrofilter

## Silózási eljárásnak alávetett, zöld, fiatal fűzfabiomassza felhasználása biogáz fermentorokban

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**Bevezető:** A fosszilis energiahordozók túlzott használata és az ezzel is előidézett globális klímaváltozás jelen korunk egyik leküzdésre váró kihívása, a biogáz és más megújuló energiahordozók jelenleginél szélesebb körű alkalmazása a megoldás része lehet. A számos előnnyel bíró biogáz előállítás leggyakrabban valamilyen növényi szubsztrátból (főleg kukoricasilóból) történik. Egyre nagyobb igény van az úgy nevezett Második Generációs Növényi szubsztrátokra (MGN), melyek alacsony termelési költség mellett magas biomassa-hozamot produkálnak, és termelésük nem igényel értékes mezőgazdasági termőterületet. A rövid vetésfordulójú, Zöld, Fűzfa Biomassa (ZFB) egy ígéretes MGN lehet, mivel eleget tesz az imént említett összes feltételnek, de az egész éves felhasználhatósághoz szükségünk volt egy tartósítási eljárás kidolgozására is, amire mi a silózást választottuk.

**Célkitűzés:** A célunk az volt, hogy kidolgozzunk egy silózási eljárást a ZFB tartósítására. Szerettük volt bizonyítani, hogy a silózás jótékony hatással van az anaerob fermentációra és, hogy a ZFB alkalmas lehet az első generációs ciroksiló-biomassa kiváltására is.

**Módszerek:** A félévig növesztett ZFB-t különböző tejsavbaktérium kultúrákkal kezeltük, majd anaerob körülmények között tároltuk a szakirodalmi ajánlásoknak megfelelően 60 napig [1], ami alatt hat alkalommal vettünk mintát analitikai vizsgálatokhoz (pH, szerves sav-összetétel, (szerves) szárazanyag-tartalom meghatározás). A silózást követően batch fermentorokat állítottunk össze mind a silózott és friss ZFB-ből, illetve ciroksilóból és 40 napon keresztül mértünk a termelődő metán mennyiségét gázkromatográf segítségével, megvizsgáltuk a metántermelés sebességét is.

**Eredmények:** A termelődött tejsav mennyiségéből megállapítható, hogy a ZFB silózással kiválóan tartósítható. A silózott biomassa metánhozama meghaladta (8-15%) a silózatlant. A szerves sav-összetétel alapján azt is megállapítottuk, hogy a silózás időtartama 35 napra is csökkenthető, az ekkor mért legmagasabb tejsav-koncentráció (esetenként >40 g/l) alapján a ZFB figyelemre méltó metánhozamot produkált (150 l/ g szerves szárazanyag).

**Következtetések:** A silózatlan ZFB jó metánhozam eredményeket produkált, így kijelenthető alkalmas lehet ciroksiló vagy kukoricasiló kiváltására. Az általunk kidolgozott silózási eljárás tartósításra kiválóan alkalmas és jótékonyan hatással van annak anaerob fermentációjára is, ami tetten érhető a termelődő metán mennyiségében és a termelés gyorsabb ütemében is.

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**Kulcsszavak:** biomassa, biogáz, második generációs szubsztrátok, fűzfa, anaerob fermentáció



# **Alkotmányjog és közigazgatási jog**



# **Constitutional and administrative law**

## The possibilities of i-voting in Hungary

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As ICT devices are spreading in every aspect of life it also affects how a democracy and a state works. The public administration must assess the possibilities that these technologies provide. One of these aspects is the voting process. E-democracy and i-voting are known institutions and the aim of the research is to systematize them and to examine the preparedness (legal, social and infrastructural) of Hungary using the Estonian i-voting model and also to seek a connection between the availability of e-democracy and participation.

The research took place with a case study on the Estonian i-voting system (legal and practical) for which a questionnaire was used (n=206) with both qualitative and quantitative methods.

**Results:** The case study showed that the Estonian model works with a digitalized version of methods also used in the Hungarian letter-voting. I also found that there are no constitutional barriers of i-voting in Hungary. The social aspect of the preparedness resulted mostly in questions for further research but I found that the trust in the political system and data-protection are the two key-elements for the citizens.

As for the participation I found that while in Europe there is a decreasing trend in voting participation the voter's ratio is stable in Estonia.

**Conclusions:** The main conclusion is that representative researches and a comprehensive revision of the currently available e-public administration is required before even piloting a possible i-voting system. The constituents also need to be assured that their data is safe and their votes are private and counted; with these in mind an ICT-based voting system may put an end to the decreasing trend in participation.

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*Keywords: i-voting, e-democracy, ICT, voting, public administration, Estonia*

## “The Composition of German Federal Constitutional Court: Selection and Appointment Procedure”

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The composition of German Federal Constitutional Court is not consistent to the international norm, especially in the appointment of the judges of the Federal Constitutional Court as the judges are nominated by the legislature and approved by the executive.(1) (2)However, the German Federal Constitutional Court is still famous under the literature, exception in the appointment procedure.(3)Thus, the aim of this research is to discover how the court can stand independently regardless of the appointment process which is deviated to the international legal norm.(4) In this case, the judiciary should take part in the appointment process as it is a duty of it under the principle of separation of powers.(5) However, Germany practices federalism represented by the Bundesrat and democracy led by the Bundestag, and those two organs conduct to select the justices of the Federal Constitutional Court. The methodologies I use for this work are the qualitative approach and textual analysis.

**Results:** The results remain with the exploring of how the role of judiciary can be independent from the undue influences of the other branches and when. Then, there is significant point to know the German way of practicing the principle of separation of powers.

**Conclusions:** In conclusion, the selection of judges of the Federal Constitutional Court is under the management of the Bundestag and Bundesrat (the legislature) and the Federal President shall appoint them. Therefore, this is incompatible with the international legal norm of selection of judges mentioned in the Universal Declaration of the Independence of Justice.

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- [2] Act on the Federal Constitutional Court, 1951, Article 10.
- [3] Vanberg G: *Establishing Judicial Independence in West Germany: The Impact of Opinion Leadership and the Separation of Powers* 2000; 334:32-3.
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*Keywords:* Selection and Appointment of Judges, Federalism, Democracy, German Federal Constitutional Court, Judicial Independence.

## Age discrimination - A brief overview of the regulatory background in the European and Hungarian employment legislation

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Age discrimination is widespread within the European Union. Moreover, age is a characteristic that, if we are fortunate, will come to each of us [1]. In my PhD research, I undertake to study precisely this area, the first step of which is the laying of regulatory cornerstones.

In order to establish my research, I plan to overview the theoretical and regulatory background. The rules and principles of equal employment can be found mainly at the supranational level, but at the same time, naturally, I do not ignore the domestic legislative products in the course of the research. At the international level, I would like to place the greatest emphasis on the European Union regulation, highlighting the relevant provisions of the Treaties and the Charter of Fundamental Rights. However, the main focus of the investigation is a comprehensive analysis of the protection provided by Directive 2000/78/EC (hereinafter: the Directive) and the special exemption clause, as the line on which the assessment of equal treatment stands or falls can be drawn along there. However, the exact level of protection provided by EU law depends primarily on the proportionality test applied by the Court of Justice of the European Union, so the backbone of the research at a later stage will be the analysis of the existing case law.

The domestic regulation following the EU guidelines is of a tripartite nature, in which the framework of fundamental rights protection is designated by the Fundamental Law, the general code of conduct in employment is set out in Act I of 2012 on the Labour Code but the detailed rules can be found in Act CXXV of 2003 on Equal Treatment and the Promotion of Equal Opportunities.

The main hypothesis of the research in the light of the EU and domestic case law is whether the Directive provides adequate protection against age discrimination, in other words, whether the special exemption system and the proportionality test applied in this context are effective, enabling a coherent interpretation of the law on the swampy ground of age discrimination.

As I am entirely at the beginning of my research, the main questions can be answered only subsequently, still, in my opinion an essential precondition is to outline a stable regulatory background that prepares the case law and helps to clarify the existing hypothesis or even set up additional ones.

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*Keywords: age discrimination, regulatory background, labour law*

## The Principle of Official Proceedings in the Practice of the Constitutional Court and the Kuria

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Principle of official proceedings is a main principle of the inquisitorial system. Generally speaking, enforcement of the principals is always a relevant question in every branch of law, because principles express the specifics of the procedure and serve as guidelines in application of law. These principles are never absolute, but always have relative value, because they express of the current social and legal policy perception. Based on this idea, examining the role of principles in criminal proceedings has a constant relevance to make criminal proceedings and the decision-making process more comprehensible. In this way, the mechanisms, effects and possible errors in practice become visible, which, if we are aware of them, makes the whole procedure more predictable and this is essential for legal certainty and the success of the procedure.

**Aim:** One of the biggest changes in the new Act of Criminal Procedure (Act XC of 2017) - at the level of principles - is undoubtedly the relegation of officiality to the background. The new rules of criminal procedure often turn to opportunism instead of official proceedings, and this raises many issues and topics that need to be examined in order to make visible the real effects of change on justice. Based on this, the aim of the present study is to explore how the principle of ex officio has changed over the years, especially in the practice of the Constitutional Court and the Kuria, and how the practice of the two bodies may have affected each other and the application of law.

**Method, Results and Conclusions:** Examining a change in principle is always a relevant and current issue, and it is especially true of the aforementioned novelties in the new Act of Criminal Procedure. First of all, to evaluate the results of the present research, it is important to see the way taken by the principle. This is followed by an analysis of the decisions of the Constitutional Court and the Kuria, a comparison of the practice of the two bodies and drawing of conclusions based on the results.

## Security Council competence to overthrow the established government because of gross violation of human rights

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The international community has always suffered from violating peace by sovereignty and the way the international community is thought to solve this problem is the Security Council. During its life, the Security Council witnessed the gross violations of human rights by governments. Given the position of the security council in the Charter of the United Nations and given to the limits of competence of security council in the Charter, the critical issue is possibility of inferring the overthrowing of the established government due to gross human rights violations. The UN Charter provides a few explicit powers for the Security Council to enable this organ to exercise its authority to maintain international peace and security. These powers are set out in Articles 41 and 42. Articles 41 and 42 of the Charter do not state any restrictions on the exercise of powers of the security council. Indeed, the only explicit UN Charter limitation on Council action is in article 24(2), which states that 'the Security Council shall act in accordance with the Purposes and Principles of the United Nations. That is, preamble and Articles 1 and 2 of the Charter. On the other hand, none of the articles of the Charter explicitly allow the Security Council to overthrow the established government and even article 2 states that it is not allowed to interfere in the inherent internal affairs of the members. With this regards, the main question is how security council can deal with the situation where all non-coercive measures have been taken by the Security Council but the relevant government does not stop the repression and human rights violation of its citizens.

**Method:** The method used in this research will be legal dogmatic. The sources used in this research will be positive rules of international law, i.e. the treaty, custom and general principles.

**Results:** The values formulated by the Charter of the Nations are being reproduced and updated under the increasing influence of human rights considerations. Thus, the Charter of the United Nations has the capacity to interpret, in which the Security Council can new competence in order to maintain international peace and security.

**Conclusions:** The implicit powers of the Security Council could be used as solution. According to the conditions of recourse to implicit powers set forth in international law, it seems that the security council enjoys the competence to overthrow the established government in order to end gross violation of human rights.

*Keywords: Security Council, peace, human rights, government*

## E-legislation improvements in Hungary

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The presentation aims to provide a few aspects of the new phenomenon of e-legislation. The concept of e-legislation is based on the use of information communication technology tools. The research was carried out in connection with the improvements which took place in Hungary. In our country, e-legislation is being introduced within the framework of the Integrated Legislation System (ILS), which intends to cover not only the process of making of statutes, but also of decrees. ILS consists of five subsystems and one module, which have their own functions in order to support the procedure of rulemaking from the first draft to the promulgation in the Hungarian Official Journal. Although these subsystems can be separated, but their interoperability is also a mission which should be ensured and reached. ILS creates a totally closed system with unified mechanism of data storage and data representation, as well as it standardizes the structured storage of all types of laws from the viewpoint of data structure. By defining the requirement of 'Better regulation', the answer is sought for how efficient, practical and less bureaucratic rules can be made. The concept of high-quality legislation can be analysed from a horizontal and a vertical point of view, although both aspects have the same goal: alleviating administrative burdens.

**Conclusions:** By fully realising and introducing the Integrated Legislation System in Hungary, the state can make a significant step to more transparent rulemaking procedures for the sake of the quality of legislation.

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*Keywords:* legislation, e-legislation, Integrated Legislation System, Better Regulation

## Civil és nemzetiségi civil szervezetek részvétele a hazai és lengyel hatósági eljárások folyamatában

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A tanulmány és a hozzá kapcsolódó előadás a magyarországi és lengyel közigazgatási hatósági eljárás szabályainak elemzését tűzte ki célul a (nemzetiségi) civil szervezetek, kiemelten a lengyel nemzetiséghez tartozó civil szervezetek ügyféli jogállásával kapcsolatban, annak érdekében, hogy következtetéseket és javaslatokat lehessen kidolgozni a hatósági eljárásban megvalósuló civil szervezeti részvétel fejlesztésére, elősegítésére. E szervezetek jelenléte – különös tekintettel az ellenérdekű és/vagy nagyszámú ügyfelek jelenléte mellett zajló ügyekben – nagyban hozzájárulhat a hatósági eljárás átláthatóságának növeléséhez, a hatósági eljárás tényleges céljainak eléréséhez és egy adekvát társadalmi kontroll gyakorlásának. A magyar és a lengyelországi tapasztalatok komparatív összehasonlítását a hasonló időben megindult, az Európai Unió szupranacionális jogrendjéhez való csatlakozás illetve a harmonizációs folyamatok és a hasonló jogszabályi és társadalmi körülmények teszik lehetővé.

**Eredmények:** A kutatás keretében összehasonlításra kerül a magyar és lengyelországi hatósági eljárásra vonatkozó követelményrendszer a vizsgált tárgykörben, a civil szervezetek ügyféli jogállásának vonatkozásában. Ezen túl elvégzésre kerül egy olyan többelemű empirikus kutatás, amelynek eredményei a hatósági eljárásban résztvevő civil szervezetek magatartását és eredményeit elemzi a kiválasztott hatósági jogalkalmazási területeken. A kutatás keretében emellett mélyinterjú elemzés is lefolytatásra került, amely a hatósági jogalkalmazás területén aktív civil és nemzetiségi civil szervezetek motivációit és eredményeit vizsgálta. A tanulmányban és az előadásban ezek az eredmények kerülnek bemutatásra.

**Következtetések:** Az előadáshoz kapcsolódó kutatás eredményei alapján egyes, jól lehatárolható hatósági jogalkalmazási területeken elemi szerepe van annak, hogy egy-egy érdek vagy jogvédelemmel foglalkozó civil szervezet magára vállalja a kezdeményező szerepet és segítséget nyújt az általa folytatott tevékenységi körön belül az állampolgárok szélesebb körének vagy képvisel egy, a létesítő okiratában is vállalt közérdeket a hatósági eljárások keretein belül is. A jogi szabályozásnak – tekintettel a hatósági eljárásjog viszonylagos merev követelményeire – azonban kitüntetett szerepe van abban, hogy ezek a szervezetek milyen minőségben és milyen jogokkal felruházva tölthetik be ezt a szerepet. A magyar és lengyel jogi rendszert elemezve számos hasonlóság mutatkozik a hatósági eljárás keretszabályait megfigyelve, azonban jól érzékelhető különbségek is megragadhatóak a szabályozás jellege és a biztosított (ügyféli) jogosultságok terén.

*Támogatás:* Az előadáshoz kapcsolódó kutatás megvalósítását a Wacław Felczak Alapítvány, „Jagelló” megnevezésű ösztöndíjával támogatta.

*Kulcsszavak:* hatósági eljárás, civil szervezetek, átláthatóság, ügyféli jogállás



## Meddig "él" a személyes adatok védelme?

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A pályamunka az elhunyt személyek személyes adatainak védelmével, életük során, valamint halálukkal kapcsolatban felmerült és rögzített adatok kezelésével, a személyes adatokkal való visszaélések megelőzésének szabályozásával foglalkozik. A dolgozat célja a jelenlegi, többszintű jogi szabályozásban felmerülő joghézagok, pontatlanságok feltárása, elemzése, annak érdekében, hogy az adatkezelési- és feldolgozási folyamat szereplőinek helyét, jogait és kötelezettségait letisztult jogi követelményrendszer szerint lehessen vizsgálni. A dolgozat további célkitűzése egy olyan katalógus kialakítása, amely értelmezhetővé teszi, hogy az elhunyt személy hozzátartozói és az egyéb jogosultak miként rendelkezhetnek az adatok kezelésével kapcsolatban, a kegyeleti jog keretein belül.

A téma jelentősége és aktualitása a mai korban felmerülő, a személyes adatok fokozott védelmét célzó igényre vezethető vissza.

A dolgozat a témakörrel összefüggő hazai és európai uniós jogi normák, szakirodalmi álláspontok[1], más országokban alkalmazott jogi megoldások alapján elemzi a vizsgált kérdéskört. Munka a téma elméleti megalapozása után, az irányadó jogszabályi keret vizsgálata mellett hangsúlyt fektet szakirodalmi vonatkozásokra, a joggyakorlat[2] vizsgálatára is – a tapasztalatok alapján pedig következtetéseket és fejlesztési javaslatokat is megfogalmaz. Ezek hozzájárulhatnak ahhoz, hogy a terület jogi értelmezési horizontja gazdagodjon, amely az elhunyt személyekkel kapcsolatos adatkezelések minden szereplője, a hatósági jogalkalmazó szerv és a jogalkotó számára is fontos gondolatokon keresztül járulhat hozzá a hazai adatvédelmi szabályozás és adatkezelési gyakorlat fejlődéséhez.

**Eredmények:** A nemzetközi példák megmutatják, hogy az egyes országok eltérően értelmezik a személyes adatok létének kérdését. A magyar, és az uniós jogalkotás nem tartalmaz semmilyen utaló kifejezést arra vonatkozóan, hogy élő személyeknek lehetnek csak személyes adataik.

**Következtetések:** Mivel nincsen a szabályozásban utalás az életben létre, és látjuk, hogy egyes országokban kifejezetten kikötik ezt, feltételezhetjük, hogy a személyes adatok köre kiterjed az elhunytakra is. Ezt támasztja alá a tény, hogy a magyar jogalkotó hozott törvényi rendelkezéseket is a témában.

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*Támogatás:* Dr. Hohmann Balázs, Pécsi Tudományegyetem Állam- és Jogtudományi Kar

*Kulcsszavak:* *post-mortem privacy, adatvédelem, személyes adatok*

## Fogvatartottak egészségügyi ellátásának alapjogi kérdései

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A büntetés-végrehajtási intézetbe történő befogadással az ember jogi státusza megváltozik, egy sajátos jogviszony, ún. büntetés-végrehajtási jogviszony keletkezik, melynek egyik oldalán a büntetés-végrehajtás szervezete, a másik oldalán a fogvatartott áll. Ebben a jogviszonyban a feleket sajátos jogok és kötelezettségek illetik meg, az Alaptörvényben rögzített alapvető jogok közül van olyan, amely módosul, részben változik vagy éppen szünetel.[1] Kabódi Csaba 1994-es tanulmányában azt írta „A pönológia tudományában már több mint egy évszázada általánosan elfogadott tétel: az elítélt ember is jogok hordozója, csak abban volt nézetkülönbség, melyek ezek a jogok, s mi azok forrása”. [2] Magyarország alapvető jogként ismeri el egészséghez való jogot, az Alaptörvény XX. cikk (1) bekezdése alapján „Mindenkinek joga van a testi és lelki egészséghez.” Kutatásom célja annak vizsgálata, hogy az egészséghez való jog a fogvatartottak esetében, a büntetés-végrehajtási intézetekben hogyan érvényesül. Az alapvető jogokra és kötelezettségekre vonatkozó szabályokat törvény állapítja meg. Az egészséghez való joghoz kapcsolódó betegjogokat és kötelezettségeket az egészségügyről szóló 1997. évi CLIV. törvény tartalmazza. A vizsgálat során ezen jogok és kötelezettségek gyakorlati megvalósulásának elemzése mentén történik az alapjogok érvényesülésének elemzése. A kutatási téma jellege miatt különböző módszertani eszközök (kvantitatív, kvalitatív) alkalmazása szükséges a felmerülő kérdések átfogó vizsgálata érdekében. A témában releváns jogszabályok és jogszabálynak nem minősülő normák (pl. utasítások, feladatszabó levelek, stb.) elemzésen túl, félig strukturált interjúk felvétele is történik fogvatartottakkal és az egészségügyi személyzet tagjaival. Az eddig elvégzett elemzések alapján megállapítást nyert, hogy egyes betegjogok, pl.: az önrendelkezés joga, illetve az ellátás visszautasításának a joga másként érvényesül a büntetés-végrehajtási jogviszony keretében, mint a „külső” ellátásban, azaz módosul. A kutatás rámutat arra is, hogy korlátozódik az elítélt azon joga, hogy egészségügyi szolgáltatót, illetve orvost válasszon, ugyanis a fogvatartottak egészségi állapotának megfelelő gyógyító-megelőző ellátását elsősorban a büntetés-végrehajtási szervezet keretei között kell biztosítani.

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*Kulcsszavak:* alapjog, egészségügy, büntetés-végrehajtás, betegjogok, fogvatartott

# **Biológia és sportbiológia**



# **Biology and sportbiology**

## The relationship between anaerobic power and other physical components in soccer

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**Introduction:** The ability of a soccer player to produce various explosive actions, such as sprinting, jumping, kicking and direction changing during the entire game, influence soccer performance [1], and relies on conditional skills such as endurance, speed, strength, and their combinations. These skills develop through various ages, and are trained in different sensitive periods, their developmental periods may be overlapped, suggesting a dynamic interaction among them. Several studies have been performed to investigate the relationship between speed and aerobic endurance in children. Previous researchers also found that aerobic endurance exercise improves soccer specific performance [2], which highly relies on speed and/or anaerobic performance. Running based anaerobic tests could be more appropriate in sport games, which involve sprinting, such as the running based anaerobic sprint test RAST, which has been adopted to measure anaerobic performance [3].

**Aim:** The aim of the present study was to investigate the relationships among anaerobic power (determined by RAST) and performance indices of vertical jump, speed and endurance.

**Method:** Thirty-two youth soccer players (age =  $17.88 \pm 0.52$  years; weight =  $70.34 \pm 7.33$  kg; height =  $178 \pm 5$  cm; body mass index =  $22.14 \pm 2.01$  kg · m<sup>-2</sup>; body fat percentage =  $12.57 \pm 2.52$ ; years of practice =  $6.56 \pm 0.84$  years) performed squat and countermovement jumps (SJ, CMJ), sprints (10, 20, 30 m), Yo-Yo intermittent recovery test, and the Running Anaerobic Sprint Test (RAST).

**Results:** RAST-POWER was correlated to SJ height ( $r = 0.527$ ;  $p = 0.001$ ) and to CMJ height ( $r = 0.480$ ;  $p = 0.001$ ). Likewise, RAST-POWER was highly correlated to VO<sub>2</sub> max ( $r = 0.653$ ;  $p = 0.001$ ) and MAV ( $r = 0.647$ ;  $p = 0.001$ ) respectively. However, 10-ST and 20-ST were not significantly correlated to RAST parameter. Although, 30-ST was negatively correlated with RAST-POWER ( $r = -0.406$ ;  $p = 0.05$ ).

**Conclusions:** The ability of repeating sprints is associated with the jumping ability, 30 meters sprint performance and aerobic endurance. It appears that the best performance indices in the ability of repeating sprints are dependent on both aerobic and anaerobic system. Suggesting that developing high levels of jumping ability, aerobic exercise and maximal sprint speed beyond 30 meters distance must be included in the annual training cycle to enhance performance during repeated sprint exercise in youth soccer players.

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*Keywords: Anaerobic power, jump, sprint, endurance*

## Investigation of fever-like hyperthermia induced early cellular events

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**Introduction:** All living forms are exposed to different environmentally-imposed stressors (e.g. temperature change, osmotic pressure, UV radiation, high salinity, etc.) and pathological stressors (e.g. infection, inflammation). Cellular stress response is a vitally important biological process that helps organisms to cope with these harmful conditions. Due to its regularity, probably the most relevant heat stress is the mild, fever-ranged hyperthermia (39-40°C) thereby understanding its mechanism and the evoked stress-response is very important. When such stress occurs, mammalian cells must, on the one hand, initiate their own defense mechanisms to survive the acute heat-stress, and on the other hand, must prepare themselves for the upcoming stresses and at the same time somehow acquire long-term benefits. Generally, heat shock response is a highly conserved stress-response mechanism used by cells to protect themselves from potentially damaging insults. It often involves the upregulated expression of heat shock proteins (Hsps) to prevent damage and aggregation at the proteome level. Although, with the combination of ultrasensitive fluorescence microscopy and lipidomics, we first identified the molecular details of the so-called cellular "eustress", whereas mammalian cells develop thermo-tolerance by maintaining their membrane homeostasis, and by rearranging lipids and Hsps - it should be emphasized that all this occurs without the induction of Hsps.

**Aim:** The aim of the study is to understand the exact mechanism of the stress-sensing processes, as well as to reveal the possible membrane structure changes and the connected prompt signaling events which may lead to acquired thermo-tolerance.

**Methods:** Our previous experiments show that benzyl-alcohol (BA) is a membrane fluidizing agent that has similar effect on membrane dynamics to heat treatment. To understand the mechanism of stress tolerance related signaling events, cells were treated with different heat-doses and BA concentrations, and were investigated by fluorescent microscopy on single cell level to measure the diglyceride (Dag) and intracellular Ca<sup>2+</sup> level as well as the changes in plasmamembrane potential in the first moments of the treatment.

**Results and Conclusions:** 1.)Plasmamembrane-potential changes can be detected already in the very first moments of the heat/BA treatment. This phenomenon supports the "membrane sensor (thermometer) hypothesis" which suggests that the plasmamembrane of living cells can not only sense heat stress but also actively responds to it, and it plays an important role in initiating defense mechanisms. 2.)Stress sensing probably includes plasmamembrane-receptor activation, which can alter different downstream signaling events. Elevated diacylglycerol (Dag) level can be observed during heat/BA treatment, compared to control cells (held in 37°C incubator). 3.)Due to the fact that defense mechanisms against stress are extremely energy-demanding processes, the normal cellular functions - such as are cell cycle regulation -, are modified after acute stress exposure. We could observe the phenomenon of cell cycle arrest during mild-heat treatment that was only observed at higher temperatures so far. That means that cells stuck in the current cell cycle step, and devote more energy for stress-defense mechanisms.

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## Investigation of lipid metabolism microheterogeneity in tumors - increasing fine resolution

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**Introduction:** Cancer remains a main threat for public health and one of the leading cause of death worldwide. The ability of cancer to develop resistance to therapy is a major health problem and one of the most important research topic. It is obvious now, that the metabolic activity of tumor cells can be understood based on the overall investigation of tumor cells and the tumor microenvironment (TME). Alterations in lipid metabolism is a newly recognized hallmark of malignancy. Metabolic reprogramming has a huge effect on the cell proliferation, migration, tumor aggressiveness and metastasis formation.

**Aim:** My aim is to investigate the metabolic heterogeneity and communication between tumor cells and TME. Appropriate spatial resolution of the applied investigational technique is a prerequisite to achieve this goal. Therefore, we have developed a novel laser dissection-coupled shotgun mass spectrometry (MS) method, which enables quantitative, sensitive and semi automatic analysis of the lipidome and metabolome.

**Methods:** The major steps of our method are the following: 1) preparation of native and hematoxylin-eosin (H&E)-stained cryosections from primary human tumors or mouse tumor models, 2) co-registration of H&E-stained and autofluorescence images 3) based on the pathological evaluation of the sections, laser dissection of marked tumor regions (100-150 cells), 4) one-step microextraction of the dissected tumor regions in the presence of internal standards, 5) after evaporation, reconstitution of the extracts in the infusion solvent optimized for MS, and 6) automated, direct injection-based high performance MS analysis of the extracts.

**Results:** Up to now we were able to dissect tumor nests containing only cancer cells as well as only stromal cells with about the same size of dissection area. This remarkable improvement allowed us to reveal the marked intra-tumor cancer cell and stromal lipid metabolic heterogeneity in human lung adenocarcinoma. We quantified a large set of lipid species without substantial loss of coverage, despite the radical reduction of sample amount.

**Conclusions:** Overall this means that the influence of lipid metabolism may suggest new drug targets, so that new therapeutic opportunities.

*Acknowledgements:* This work was supported by GINOP-2.3.2-15-2016-00006. The project was promoted by the European Union, co-financed by the European Regional Development Fund.

*Keywords:* cancer, shotgun lipidomics, quantitative analysis

## Comprehensive investigation of the potential cancer “driver” role of *Gpr155* gene

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**Introduction:** GPR155 is an integral membrane protein and belongs to the superfamily of G protein-coupled receptors (GPCRs). Based on the investigation of human tumor samples, clinical researchers have lately made a proposal to use GPR155 as a prognostic marker in HCC and gastric cancer. Other studies describe the significant change of this protein in melanoma tissue and the somatic mutations of GPR155 were associated with higher mortality rate in clear cell renal carcinoma. We also investigated the data of the large human cancer genome databases (TCGA, COSMIC) to decide whether the mutational spectrum of GPR155 supports this hypothesis. In databases we found several somatic mutations, copy number gain and copy number loss of GPR155. However, neither human cancer genome databases nor the scientific literacy can prove the cancer “driver” role clearly.

**Aim:** Our research group has recently developed a somatically transgenic mouse model suitable for the examination of hepatocellular carcinoma (HCC) “drivers”. Our main aim was to reveal the role of *Gpr155* in tumorigenesis in our somatically transgenic mouse model.

**Methods:** To decide whether *Gpr155* is an oncogene we identified the potential cancer “driver” mutations of *Gpr155* protein from large human cancer genome databases and we created the homolog mutant mouse CDSs of the human ones. Then we built each CDS into a transposon plasmid construct bearing with the *Fah* selection marker gene and the mCherry marker gene coding a fluorescent marker protein. Thereafter, we delivered each transposon plasmid mixed with transposase coding helper plasmid into the tail vein of *Fah*<sup>-/-</sup> mice by using hydrodynamic injection. Five months following injection the documentation of our experiments was performed by stereomicroscopy of the transgenic livers. Levels of transgene expression were determined by RT-qPCR. To test the potential tumor suppressor role of *Gpr155* we designed 3 artificial miRNA elements against *Gpr155* mRNA and we determined their efficiency in our RNAi efficiency monitoring system in which the decrease of GFP expression is the marker of the robust silencing effect of a certain miRNA. Stable transfection of 3 miRNA coding plasmid was carried out on our special GFP expressing cell line and we measured the GFP expression of cells with fluorescent plate reader and RT-qPCR.

**Results:** Stereomicroscopic investigations of the transgenic livers suggest that liver regeneration occurred, however, we cannot find tumor formation. Both plate reader and RT-qPCR measurements show strong GFP knockdown in all samples with miRNAs.

**Conclusions:** Although we cannot prove the cancer driver role of these mutations we will continue our investigations with the formalin fixed paraffin embedded tissues to find the occurrent signs of tumor initiation. Our *in vitro* experiments show that all designed *Gpr155* miRNAs have robust silencing effect so they will be promising tools for investigation of the effect of *Gpr155* downregulation *in vivo*.

**Acknowledgements:** Supported by the ÚNKP-20-2 – New National Excellence Program of the Ministry for Innovation and Technology from the Source of the National Research, Development and Innovation Fund.

**Keywords:** *transgenic mouse model, Gpr155, tumorigenesis*

## Correlation between the fitness level and quality of life of adults

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When it comes to life expectancy without limitation predicted at birth, Hungary lags behind the world's other countries; according to 2016 WHO data, having the 57th place (67,4 yr), behind the leading Japan (74,9 yr), Switzerland (73,1), and South Korea (73,2 yr). Previous studies of health and wellbeing of the Hungarian adult population, such as the OLEF 2000 survey, primarily focused on illnesses, alcohol consumption, smoking habits, the use of health services and other health related costs. The 2002 -2006 follow-up surveys carried out by Hungarostudy also used a questionnaire format to examine the economic and social parameters leading to premature deaths in Hungary. The study of Csité and Németh (2007) examined the micro-regional inequalities of life expectancy at birth in millennial Hungary.

**Objective:** The aim of this study was to determine fitness parameters (1) defining health and performance qualities of the average domestic (2) to predict life expectancy without limitations at birth, (3) determining the connection between physiological parameters and fitness level with correlational tests.

Having mapped these parameters, and creating sufficient intervention, the desired outcomes concerning health become more achievable with the application of appropriate methods.

**Methods:** 54 subjects participated in the survey (17 male and 37 female; average age: 45.87 yr). Participation in the body-composition analysis and fitness tests was voluntary, on two advertised dates.

The following measurements were conducted with the participants:

1. Anthropometric measurements, 2. body composition analysis with an Inbody analyzer,
3. Senior Fitness Test (Rikli and Jones, 1999)

**Results:** Anthropometric data greatly diverged from the normal range in both genders. Average deviation from the normal range: bodyweight: 64.86%; BMI: 27.03%; body fat percentage: 67.56%; WH ratio: 65.67%. (The Spearman correlation study showed significant difference between nearly all parameters.) During the fitness evaluation men performed significantly worse on chair sit and reach tests, suggesting problems of the locomotor systems. (Mann-Whitney test, males: right leg: -0.29 cm; left leg: -1.11 cm; females: right leg: 7.41 cm; left leg: 8.65 cm) Results of the 6 Minute Walking Test (average 643.60m) and VO<sub>2</sub>max (average: 39.59 ml/kg/min) lagged slightly behind average values.

**Conclusions:** Overall, data show that fitness level of the studied adult population is not satisfactory. Health and physical condition is strongly related to lifestyle, eating habits, exercise routine, rest schedule, and harmful passions of the individual. These in turn influence the emergence of future risk factors such as obesity, high blood pressure, diabetes, and other joint problems (back, knee, shoulder pain).

*Keywords: adult population, health, body composition, Senior Fitness Test, VO<sub>2</sub>max*



## Investigation of chitosan-induced plant defence responses regulated by jasmonic acid

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Fungal pathogen attack can be mimicked by elicitor molecules such as chitosan ( $\beta$ -1,4-linked glucosamine; CHT). It was found that CHT is able to induce defence responses of plants, such as stomatal closure, production of reactive oxygen- (ROS) and nitrogen species (RNS), activation of the transcription of defence-related genes. At the same time, the defence responses are also dependent on external, such as presence or absence of light or internal factors too such as phytohormone signalling, but their role is not fully known upon CHT treatments. In this work, the light-dependent effects of CHT were investigated and the role of jasmonic acid (JA) was elucidated in this process.

**Results:** CHT treatment induced rapid stomatal closure, which was dependent both on the presence of light and JA. CHT induced the systemic response of plants based on the stomatal closure measurements in the distal leaves from the CHT-treated ones. CHT promoted the accumulation of the signalling molecule hydrogen peroxide in the elicitor-treated leaves which was lower in the dark. The transcript level of *Pathogenesis-related 1 (PR1)* was increased in the presence of light in the CHT-treated wild-type leaves, but it was significantly lower in JA mutant *jail* leaves. Expression of *Ethylene response factor 1 (ERF1)* increased in the distal leaves from CHT-treated ones. Interestingly, CHT-induced *PR1* expression was lower in the dark while the JA-mediated *Defensin (DEF)* expression was higher in the dark.

**Conclusions:** Our results suggest the potential light-dependent regulation of CHT-induced defence responses and the importance of environmental factors and JA in the defence responses of intact plants under fungal elicitor treatments.

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*Keywords:* chitosan, defence responses, jasmonic acid, reactive oxygen species, stoma

## Ethylene-dependent effects of Fusaric acid on the photosynthetic activity of tomato plants

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*Fusarium oxysporum* is one of the most significant ascomycete fungal plant pathogen, which results in Fusarium wilt and causes serious economic losses in various plant species, especially in tomato plants worldwide. The pathogenicity of *Fusarium* species is mediated by various mycotoxins produced by fungi, such as fusaric acid (FA). FA can disturb and inhibit the normal plant life in several ways but it needed to be explored in more detail. The phytohormone ethylene (ET) seems one of the key components in the regulation of defense responses of plants. The effects of FA on the photosynthesis, which can contribute to defense responses of plants and the role of ET in this process, is not known in full details.

**Results:** In this work, the photosynthetic activity was studied in wild-type and the ethylene receptor mutant *Never ripe (Nr)* plants after treatments with a sublethal, 0.1 mM and a cell death-inducing, 1 mM concentrations of FA. Both concentrations of FA treatments induced the emission of ET from the leaves which can contribute to mediating the defense responses of plants. Based on the analysis of the photosynthetic activity of the FA-treated plants, the maximal quantum yield of photosystem II ( $F_v/F_m$ ) significantly decreased after the 3-days-long FA treatments in the investigated genotypes but it was lower in the *Nr* leaves. Also, the effective quantum yield of PSII [Y(II)] and PSI [Y(I)] significantly decreased in the case of the higher FA concentration. At the same time, the non-photochemical energy dissipation (NPQ) significantly elevated in these plants. Moreover, the quantum yield of non-photochemical energy dissipation in PSI due to donor Y(ND) followed the same trend as Y(NPQ), while the acceptor side limitations Y(NA) decreased during 1 mM FA exposure in *Nr* plants. The higher concentration of FA elevated also the lipid peroxidation and caused the loss of membrane integrity in both genotypes.

**Conclusions:** Our results suggest that FA has a significant effect on photosynthetic activity in plants and confirmed the ethylene regulated photoprotective mechanisms in plants exposed to mycotoxin treatments.

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*Keywords:* CO<sub>2</sub> assimilation, fusaric acid, photosynthetic activity, reactive oxygen species, stoma

## Static and dynamic explosive strength of m. quadriceps femoris from a biomechanical aspect

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**Introduction:** Sport performance is merely affected by the explosive strength so modern sports science has been increasingly examining it. The available literature is limited to the static explosive strength however, we hypothesize that dynamic explosive strength may also play a major role in sports performance. The separation of static and dynamic explosive strength is not entirely clear, however, there is scientific work to suggest this [1]. In case of a presumable connection between the two abilities, then in the future the development of explosive power may become more efficient, since dynamic explosive force is more common in a competitive situation.

**Aim:** This present study is organised to explore the relationship between static and dynamic explosive strength. In a series of dynamometric quantitative measurements, we measure the rate of torque development (RTD) of knee extensors using the types of muscle contraction that occur during cyclic and acyclic sports movements.

**Method:** 20 healthy male P. E. students were measured. The following measurements were performed in a computer-controlled dynamometer (Multicont II.): 1) Maximal explosive voluntary isometric contraction at an angle of 30° and 70°. 2) Stretch-shortening cycle (SSC) at maximum effort. 3) Concentric contraction at maximum effort. For all contractions RTD was determined at the same joint angular position.

**Results:** From the data recorded by the dynamometer we found that SSC resulted in higher torque in the eccentric phase, but less in the concentric phase than fast isometric or concentric contractions. The isometric RTD was correlated to RTD measured in both concentric contraction and SSC.

**Conclusions:** The results of the study show that static explosiveness significantly determines dynamic explosiveness, regardless of what type of contraction occurs. However, the maximum isometric strength has no effect on either static nor dynamic explosiveness.

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**Keywords:** RTD, explosive strength, m. quadriceps femoris, concentric contraction, eccentric contraction

## Median raphe region CRH neurons' contribution in stress regulation

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**Introduction:** Dysfunctions of median raphe region (MRR) were associated with stress-related psychiatric disorders, due to its serotonergic content. Recently we found that the main hypothalamic regulator of stress axis, corticotropin releasing hormone (CRH) is also abundant in this area.

**Aim:** We aimed to reveal the contribution of these peptidergic cells to stress adaptation.

**Methods:** Pharmacogenetic technique was used in CRH-Cre mouse strain. Control, stimulatory or inhibitory DREADD sequence was injected into the MRR using adeno-associated virus vector. Clozapine-N-oxide was used as ligand. Parallel with changes in stress-hormone concentration anxiety- and depression-like behavior was also measured. Accuracy of injections, c-Fos activation, co-localizations, output and input brain areas were investigated by immunohistochemistry.

**Results:** Stress-induced c-Fos activation was found in MRR CRH neurons. CRH was present in GABAergic cells and got input mainly from lateral habenula, laterodorsal tegmental nucleus and nucleus incertus. The main target was the dorsal raphe, nucleus incertus and ventral tegmental area. Stimulation of CRH neurons in MRR increased corticosterone levels parallel with anxiety-like behavior in marble burying and fox odor test compared to controls. Inhibition of these cells before trauma lead to reduced cue-induced immobility, but not contextual freezing.

**Conclusions:** To summarize, stimulation of MRR CRH neurons may induce stress-hormone elevation as well as anxiety- and depression-like behavior, while their inhibition may diminish the reaction to trauma. Thus, they play a key role in regulating stress adaptation both at hormonal and behavioral level.

*Keywords: median raphe region, CRH, stress*

## EMG aktivitás változása a m. gluteus medius fáradását követően

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**Bevezetés:** Teng tanulmányában olvasható, hogy a térd valgus irányban történő elmozdulásának fokozódása az elülső keresztszalag sérüléséhez vezethet [1]. Korábbi kutatásunk során arra a következtetésre jutottunk, hogy a térdízületet feszítő izomcsoportok mellett egy csípőízületi abduktor, a m. gluteus medius (GM) is fontos szerepet játszik a térdstabilizálásban egy láb felugráskor, ugyanis korreláció figyelhető meg a leérkezéskor mutatott alacsony GM aktivitás és a térd valgus irányba történő beesése között. Az edzés során keletkezett mikrosérülés erődeficittel [2] és gyakran neurális kompenzációval párosul [3], ezért feltételezzük, hogy a csípőízületi abduktorok fáradását követően az erődeficit mellett neurális kompenzáció is megfigyelhető a GM esetében egy láb felugrások során.

**Módszerek:** Vizsgálatunkban 20 testnevelés szakos férfi hallgató vett részt. A vizsgálati személyek egy standardizált bemelegítést követően egy láb felugrást végeztek, majd felmértük a maximális csípőízületi abdukciós forgatónyomatékot. Ezt követően a vizsgálati személyek egy előre meghatározott 40 ismétlésből álló excentrikus-koncentrikus kontrakciókból felépülő csípőízületi abduktor izomcsoportot célzó edzést hajtottak végre. Az edzés után ismételt felmérésre került a maximális csípőízületi abdukciós forgatónyomaték, majd az egy láb felugrás. A vizsgálatok során mértük a m. gluteus medius, m. biceps femoris, m. vastus lateralis EMG aktivitását.

**Eredmények:** A 40 ismétlésből álló csípőízületi abduktor izomcsoportra ható intenzív edzést követően a vizsgálati személyeknél jelentős erődeficit jelentkezett. Ez az erődeficit átlagosan 19,6% ( $p=0,000292$ ) volt. A GM egységnyi forgatónyomatékra jutó EMG aktivitása az edzés előtti 134,83%-ról az edzést követően 83,79%-ra csökkent ( $p=0,012004$ ). Az edzést megelőző felugrások során a maximális GM EMG aktivitás 158% volt, az edzést követően pedig 165% az edzés előtt mért maximális csípőízületi abdukció során mért maximális GM EMG aktivitáshoz képest.

**Következtetések:** A csípőízületi abdukciós forgatónyomaték-deficitből jól látható, hogy a 40 ismétléses intenzív terhelés hatására az izomcsoport jelentősen elfáradt. Az egységnyi forgatónyomatékra jutó EMG aktivitás csökkenéséből azonban arra következtetünk, hogy az intenzív edzés hatására nem csak a harántcsíktal izomzat kimerülése okozhatta a deficitet, hanem az idegrendszer ingerületvezetésének csökkenése is. A fárasztó edzést megelőzően, valamint azt követően felmért egy láb felugrások közbeni GM EMG aktivitás nem mutatott számottevő változást, ebből arra következtetünk, hogy az edzést követő felugrások során más térdstabilizációs stratégiát alkalmaztak a vizsgált személyek az edzés előttihez képest.

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*Kulcsszavak:* csípőízületi abduktorok, m. gluteus medius, EMG, felugrás, térdízület

# **Pszichológia I.**



# **Psychology I.**

## **Attitudes towards Artificial Intelligence**

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The aim of the present study was to develop an Artificial Intelligence General Acceptance Model and to develop an applicable tool for measuring attitudes towards AI. The core of the scientific background was the Technology Acceptance Model, proposed by Davis [1], later revised and expanded by Venkatesh and Davis [2]. Although the model is broadly used regarding informational technologies, it seems viable to adapt the model into the context of AI. The reason to find an adequate scale to measure attitudes towards AI stems from the exceeding progress in robotics. Sooner or later robots will be an ordinary sight in both workplaces and at homes. Considering the upcoming changes in the digital world, I aimed to measure the level of general acceptance of AI in Hungary and to forge a tool that can be used by organizations to keep track of AI acceptance in their employees.

The research was carried out with 100 participants, all reached via online questionnaire. The collected sample stemmed from the whole population, with no direct focus on any special group. Regarding the process of analysis regression analysis was carried out to determine the shape of the proposed model, while main component analysis and factor analysis was used to test and forge the proposed tool.

**Results:** From the results it seems that people have neutral attitudes towards AI in Hungary. It is not very surprising, but raises some questions in possibly automatising organisations. The proposed model came very close to the original Technology Acceptance Model, with some interesting differences. Primarily, the greatest result is the tendency that subjective norm is directly influencing almost all other factors, meaning that at least in Hungary, people judge AI and robots mainly by biases. The developed tool, although tested acceptable is to be viewed critically and awaits future developing.

**Conclusions:** The research managed to discover the main influencer factor in AI acceptance in the Hungarian population. The result is primarily important to organizations facing future digitalizations and/or automatizations, as it shows them the best way to increase AI acceptance. Future research is also urged in this topic.

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*Keywords: Artificial Intelligence, attitudes*

## Can we ignore threats? The competition of bottom-up and top-down attentional mechanisms in a visual search task

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**Introduction:** Threatening objects are said to be prioritized by attentional mechanisms due to evolutionary advantages. In the case of goal-driven perception, however, it is not that simple. Theories of attention suggest that orientation is the result of the competition and interaction of goal-driven (top-down) and stimulus-driven (bottom-up) processes. These mechanisms can be modulated by different stimulus attributes like shape, colour or affective valence [1,2]. The signal suppression hypothesis of controlled attention capture [3] claims that before the salient stimulus could grab our attention through the bottom-up processes, its signal can be suppressed by the top-down mechanisms in favour of the goal-driven processing and better performance.

**Aim:** In the present study, our aim was to test these mechanisms while highly salient (threatening) stimuli are present, through a visual search task.

**Methods:** The task was to find an exemplar of a neutral category (e.g. butterfly or lock, i.e. target) amongst several other objects of different categories but of the same neutral valence. We manipulated whether the target was absent or present, and the distractor stimuli type (no distractor, threatening distractor and visually similar to threatening but neutral distractor). In half of the tasks there was either a threatening object (snake or gun) or a non-threatening but visually similar object (hairdryer or worm) in different but controlled distances to the target. In the other half of the trials, distractors were absent.

**Results:** In trials where target stimuli were present, we found a significant effect of the distractors in the reaction times. The only significant difference in these trials were between distractor absent and neutral conditions, and threatening and neutral distractor conditions. We found no difference between the distractor absent and threatening distractor conditions. Participants were faster in the trials where neutral but visually similar to threatening distractors were present. In those trials where targets were missing, we found no significant effect of the type of distractors.

**Conclusions:** According to our findings, it is possible that bottom-up mechanisms can be suppressed by top-down mechanisms for better task-performance. Thus, the prioritizing of threatening stimulus can somewhat be repressed. For better task performance, goal-driven top-down processes tend to play a more important role in attention regulation than stimulus driven bottom-up processes.

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**Keywords:** threatening stimuli, attention, top-down and bottom-up control, signal suppression



## Relationship among maternal-fetal attachment, emotional distress and perceived social support during pregnancy – First results of the Growing Up in Hungary

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**Introduction:** The maternal-fetal attachment shows the mother's attitude toward her unborn child. The mother's positive attitude is exceedingly important as it contributes to a more positive mother-child bonding that influences later socialization, behavioural problems and academic performance. Several studies showed that the mother's partnership satisfaction and perceived social support result in a stronger maternal-fetal attachment. However, symptoms of depression and anxiety have a negative effect on the maternal-fetal attachment. Thus, our aim was to identify the risk and protective factors that affect the maternal-fetal attachment.

**Participants:** 8287 pregnant women participated in the first wave of the questionnaire-based Growing Up in Hungary study between 2018 and 2019. The participants were asked to give information about maternal-fetal attachment, depression, generalized anxiety, perceived social support and interactions with their partner during the third trimester.

**Results:** The data is currently undergoing statistical analysis, and we are expecting the following results: (1) negative correlation among maternal generalized anxiety, depression, negative interactions with the partner, and maternal-fetal attachment; (2) positive correlation among perceived social support, positive interactions with the partner, and maternal-fetal attachment.

**Conclusions:** By aiming to identify risk and protective factors during pregnancy, our results might contribute to the development of future prevention programs targeting the maternal-fetal attachment.

*Acknowledgements:* The data collection was helped by the project of the European Union called "A szociális ágazat módszertani és információs rendszereinek megújítása". Number of identification: EFOP-1.9.4-VEKOP-16-2016-00001.

*Keywords:* maternal-fetal attachment, Maternal-Fetal Attachment Scale-HU-20, emotional distress, perceived social support, positive/negative interactions with the partner

## Resting or task? - A comparison of machine learning-based mental fatigue detection from resting and task-related heart-rate variability data

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**Introduction:** Rapid detection of mental fatigue (MF) based on biomarkers could significantly improve safety monitoring in work and in traffic. A few studies have successfully used machine learning algorithms (MLA) trained on heart-rate variability (HRV) data to detect MF, however, some methodological questions remained unclear [1, 2]

**Aim:** We applied MLA to detect MF based on a larger dataset containing both resting and task-related HRV data. Our aim was to find out whether MF detection is more accurate when trained on task-related HRV data compared to resting HRV data.

**Methods:** The data of three MF experiments (n = 82) applying different cognitive tasks lasting approx. 1-2 hours to induce MF were analyzed. In each experiment, 37 HRV indices were calculated for four 4-min intervals. HRV data obtained from pre-experiment resting and in the first 4-min of the task were labeled as “Non-fatigued” blocks, while post-experiment data and the last 4-min of the task were labeled as “Fatigued” blocks. Supervised classification methods using 5-fold stratified cross-validation (CV) were applied separately for resting and task-related data.

**Results:** Using the best set of features, the highest classification score was achieved by logistic regression trained on task-related HRV (sensitivity = 81.1%, AUC = 0.86). For resting HRV, the k-nearest neighbors method showed the highest performance (sensitivity = 70.9%, AUC = 0.77).

**Conclusions:** We found that MF detection with machine learning based on HRV data is effective, however, it has also been demonstrated that classification accuracy is better when trained on task-related data relative to resting data.

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- [2] Laurent, F., et al.: Multimodal information improves the rapid detection of mental fatigue. *Biomedical Signal Processing and Control* 2013; 8.4:400-408.

**Acknowledgements:** Supported by the ÚNKP-20-3-II-PTE-876 New National Excellence Program of the Ministry for Innovation and Technology.

**Keywords:** mental fatigue, machine learning, classification, heart-rate variability

## Szubjektív anyaság-élmények elemzése látássérült nők körében

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A fogyatékossgal élő nők gyermekvállalási motivációra gyakran hatással vannak a társadalmi előítéletek, sztereotípiák, melyek befolyásolják az anyaságról, szülői szerepekről alkotott elképzeléseket is [1]. Egy látássérült nőt nemcsak a várandósság során, hanem a gyermek születését követően is folyamatosan érhetik olyan külső környezeti hatások, melyek negatívan hathatnak a saját szülői kompetenciájával kapcsolatos elképzeléseire. 20 látássérült és 21 látó anyával (24-52 év) készítettünk félig strukturált interjút (40-50 perc). Kutatásunkban látássérült anyák szubjektív anyaság-élményét vizsgáltuk pszichológiai nézőpontból. Az interjúszövegeken kvalitatív, tematikus tartalomelemzést végeztünk [2].

**Eredmények:** Az elemzés során a látássérült és látó anyák anyasággal kapcsolatos értelmezései igen hasonlóak voltak (pl. felelősség, kiteljesedés, gondoskodás). A tematikus tartalomelemzés során 9 kategória mentén csoportosítottuk az anyasággal kapcsolatos pszichológiai jelenségeket: (1) érzelmek, (2) folyamatosság, (3) identitás, személyiség, szelf formálás, (4) kapcsolat, kapcsolódás, (5) nehézségek, (6) partner, (7) szerepek, (8) fontos szülői elvek, (9) hivatás, karrier.

**Következtetések:** Kutatásunk szorosan kapcsolódik egy korábbi vizsgálatunkhoz, melyben a fogyatékkal élő szülőkkel kapcsolatos szociális reprezentációkat vizsgáltuk. Jövőbeli terveink között szerepel, hogy a beszámolómban megélt tapasztalatokat, szülő-gyermek kapcsolatban megmutatkozó sajátosságokat anya-gyermek közös interakció vizsgálatokkal támasszuk alá, egészítsük ki.

Irodalomjegyzék:

- [1] Lendvai L, Nguyen Luú Lan A: *The lived experiences of visually impaired mothers and their perception of social attitudes towards them. Alkalmazott Pszichológia 2019;19(2):7-30.*
- [2] Braun V, Clarke V: *Using thematic analysis in psychology. Qualitative research in psychology 2006;3(2):77-101.*

*Támogatás:* A tanulmány az EFOP-3.6.1-16-2016-00004: Átfogó Fejlesztések a Pécsi Tudományegyetemen az Intelligens Szakosodás Megvalósítása Érdekében támogatásával készült.

*Kulcsszavak:* látássérültség, anyaság, identitás, szülői kompetencia

## Siket és halló gyermekek teljesítményének összevetése egy új, mentalizációt mértő feladatban

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A neurotipikusan fejlődő gyermekek négy éves koruktól képesek mentális állapotokat tulajdonítani másoknak és önmaguknak, és ettől az életkortól tudják sikeresen teljesíteni a hamisvélekedés teszteket is. Siket gyermekek esetében azonban fejlődési késés tapasztalható a mentalizáció tekintetében azonos korú, halló társaikhoz viszonyítva.

A vizsgálat során arra voltunk kíváncsiak, hogy a vélekedéstulajdonításnál egyszerűbb feladatban, egy érzelemtulajdonítás feladatban hogyan teljesítenek a siket gyermekek a halló társaikhoz képest.

Hipotéziseink szerint a siket gyermekek jobban teljesítenek az érzelem feladatban, mint a mentalizációs feladatban; a halló gyermekek jobban teljesítenek a mentalizációs feladatban, mint a siket gyermekek; valamint a siket gyermekek jobban teljesítenek az érzelem feladatban, mint a halló gyermekek.

Kutatásunkban a Baron-Cohen-féle 'Reading the mind in the eyes' teszt egy módosított változatát használtuk, amely a hat alapérzelmet vizsgálja. A tesztben hat rövid történet van összepárosítva az alapérzelmekkel. A gyermek feladata, hogy a történet alapján megmondja, hogyan érezte magát a főhős (mentalizációs feladat), majd három szempár közül válassza ki azt, amelyik tükrözi a megnevezett mentális állapotot (érzelem feladat).

**Eredmények:** Kutatásunkban a siket gyermekek jobban teljesítettek az érzelem feladatban, mint a mentalizációs feladatban, viszont az érzelem feladatban nem volt különbség a siket és a halló gyermekek teljesítménye között. A halló gyermekek szignifikánsan jobban teljesítettek a mentalizációs feladatban, mint a siket gyermekek.

**Következtetések:** Eredményeink alapján feltételezhetjük, hogy a siket gyermekek esetében a nyelvi hátrányok nehezítik a feladat verbális részének megértését, vagyis az adott érzelem beazonosítását a történet alapján, viszont a kevesebb verbalitást igénylő feladatban jól teljesítettek. Siket gyermekek esetében a siket kultúrába ágyazott, inkább a vizualitásra építő tesztek használatával lenne lehetőségünk kiküszöbölni, hogy valóban kompetenciát mérjünk a jövőbeni vizsgálatok során, ne csak performanciát.

*Támogatás:* EFOP-3.6.1.-16-2016-00004 „Átfogó fejlesztések a Pécsi Tudományegyetemen az intelligens szakosodás megvalósítása érdekében.”

*Kulcsszavak:* mentalizáció, siketség, érzelemfelismerés, Eyes teszt

## Életívek és megküzdés a mesében

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**Bevezetés:** Szakdolgozatom keretén belül végzett kutatásom a mesepszichológia eljárásait ötvözi a személyiség mérésére használt tesztekkel. A meseírás projektív tesztként alkalmas lehet az egyén szükségleteinek, motivációinak feltárására. A kreatív szövegalkotás során kapott mesék elemzése, illetve teszteredményekkel való összevetése komplex képet adhat a személyiség mélyebb rétegeiről, a lehetséges protektív tényezőkről és a rendelkezésre álló erőforrásokról.

**Célkitűzések:** A kutatás középpontjában az a kérdés állt, a saját mesékben leképződnek-e a személyiség egyes aspektusai, a főhős megküzdési stratégiái, társas és belső erőforrásai kapcsolatban állnak-e a kitöltők saját viszonyulásával.

**Módszer:** A szövegek elemzése Propp (1999) morfológikus szempontrendszere, a TAT-teszt Murray által kifejlesztett elemzési rendszeréből átvett elemek, valamint a szakirodalom alapján további saját szempontok szerint zajlott. A kreatív írás feladatát olyan pszichológiai faktorok kérdőíves felmérése egészítette ki, mint az élet értelmébe vetett hit, a koherencia-érzés, a társas támasz szintje és a depresszió szint, amelyek további információkkal szolgáltak az egyes személyek megküzdési kapacitásáról.

**Eredmények:** Az eredményekből megállapítható, hogy a teszteredmények és a mesei szempontok között kapcsolat van. A társas támasz mesei és kérdőíves kapcsolata abban mutatkozott meg, hogy akik a meséjükben segítőként emberi alak helyett állatot választottak, szignifikánsan magasabb szintű egzisztenciális frusztrációról számoltak be. Az ellenfélre adott pozitív, illetve negatív vagy passzív reakciót választó személyek között jelentős különbség mutatkozik a magönértékelés és az élettel való elégedettség terén.

**Következtetések:** A kutatás tekinthető óvatos tájékozódásnak egy mindeddig kevésbé kutatott területen. A mesei műfajok közül egyedül a varázsmesék rendelkeznek olyan sajátos szerkezettel, amelyben az események a narratívákhoz hasonló logikus sorrendben követik egymást, így az eredmények rámutatnak, hogy egy saját mesében lekövethetővé válnak az élettörténeti narratívum egyes elemei. Emellett a mesei forma allegorikus formában készíthet önreflexióra, regresszív működésmódot, gyermeki gondolkodást hívhat elő, így szimbolikus alakban képződhet le írójának önmagához és a világhoz való viszonya.

Irodalomjegyzék:

[1] Propp V.J. (1999): *A mese morfológiája*, Osiris Kiadó

*Kulcsszavak:* mesepszichológia, személyiség, megküzdés, társas támasz

## Óvodás gyermekek felidézési teljesítményének vizsgálata multimédiás eszközök használata során

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**Bevezetés:** A szakirodalomban megfigyelhető egy viszonylagos egyetértés az interaktív mesekönyvekben alkalmazott multimédiás elemek pozitív hatásait illetően, míg az interakciós lehetőségek szerepe vitatott. Sokan amellet érvelnek, hogy a képernyővel való interakció a történet feldolgozása során fokozott terhelést jelent a még éretlen kognitív folyamatokra nézve, ugyanakkor találhatunk az interaktív elemek tanulásban betöltött szerepét igazoló empirikus adatokat is. Számos tényező állhat az eredmények diverzitásának hátterében. Feltételezésünk szerint az egyik ilyen tényezőt a figyelmi folyamatok egyéni szinten megfigyelhető eltérései jelenthetik. Mivel ezen tényező vizsgálata többnyire kívül esik az interaktív mesekönyv kutatás tárgykörén, jelenleg korlátozott azon ismeretek köre, melyek rendelkezésünkre állnak a témában.

**Célkitűzés:** Mindezek alapján azt vizsgáltuk, hogy a multimédiás és interaktív elemek miként befolyásolják az információfeldolgozást interaktív mesekönyvek használata során, kiemelt figyelmet fordítva arra, hogy feltárjuk a munkamemória-kapacitás és figyelmi teljesítmény lehetséges hatásait is.

**Módszer:** Vizsgálatunkban óvodáskorú gyermekek vettek részt ( $n = 32$ ,  $M = 5.5$ ,  $SD = .619$ ). Minden résztvevő három mesével ismerkedett meg az adatfelvétel során. A mesék bemutatása három eltérő módon történt: (1) kizárólag multimédiás elemek segítségével, (2) multimédiás és interakciós elemek együttes használatával (3) továbbá egy hangfelvétel útján. Az adatfelvétel összesen három ülésben zajlott. Minden ülésen 11 kérdést tettünk fel a bemutatott mesével kapcsolatban. Emellett felmértük a gyermekek munkamemória-kapacitását és figyelmi teljesítményét is. A szülők és óvodapedagógusok minden résztvevőről kitöltötték a Gyerek Hiperkinetikus Zavar Kérdőívet.

**Eredmények:** A statisztikai elemzés nyomán megállapítható, hogy a résztvevők a figyelmi folyamatok működésétől függetlenül jobban teljesítettek a multimédiás helyzetben az egyszerű mesehallgatáshoz képest. A figyelmi teljesítmény ugyanakkor összefüggést mutatott a felidézési teljesítménnyel mind a három vizsgált helyzetben. Egy mediáció elemzés rámutatott arra is, hogy a képernyővel való interakció lehetősége nehezebbé teheti az információfeldolgozást azok számára, akiknél figyelmi problémák is megfigyelhetőek.

**Következtetések:** Úgy véljük eredményeink nem csak rávilágítanak a multimédiás elemek jelentőségére, de hozzájárulhatnak egy olyan digitális környezet megteremtéséhez is, amely képes megfelelni a multimédiás eszközök használata során megfigyelhető egyéni szükségleteknek.

*Kulcsszavak: információ- és kommunikációtechnológia (IKT), interaktív mesekönyv, multimédiás tanulás, felidézés, figyelmi folyamatok*

## A sporttevékenységek (fizikai és mentális) hosszú távú hatásai a végrehajtói-figyelmi hatékonyság, a „karakter elvesztése” és a mentális állóképesség változására

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A kutatás célja a sporttevékenységek hosszútávú, akár versenyszinten való űzésének fejlesztő hatásainak a vizsgálata – a mentális állóképességre, a fenntartott figyelemre, továbbá a figyelmi-végrehajtói képességre – olyan személyek esetében, akik fizikai -, vagy mentális sportot űznek. Mindemellett a kutatásban egy kontroll csoport is közreműködött, akik hobbi-, vagy semmilyen szinten nem űzik egyik sporttípust sem. A kutatásban többnyire egyetemista hallgatók vettek részt (online e-sportolói mintát 42; az ismételt felmérést tekintve 40 személy alkotta). Az említett kognitív képességek mérésének érdekében három eljárás került felhasználásra: az adott csoport szempontjából releváns mentális állóképesség kvóciens kérdőív (MÁQ), a mindennapi figyelem tesztje (TEA), és a „karakter elvesztését” vizsgáló BrainB teszt (mentális sportot űzők online csoportja esetében csupán kettő: MÁQ, BrainB).

**Eredmények:** A kutatás eredményeként többnyire tendencia jellegűen fejlődés volt tapasztalható a két sportcsoport esetében a legtöbb faktor mentén.

**Következtetések:** A sporttevékenység, akár mentális, akár fizikai, tendencia szintű fejlesztő hatást gyakorolhatnak az adott tevékenység űzőire, kiváltképp a figyelem aspektusai mentén.

*Támogatás:* Az Innovációs és Technológiai Minisztérium ÚNKP-19-2-1 kódszámú Új Nemzeti Kiválóság Programjának szakmai támogatásával készült.

*Kulcsszavak:* sport, sportpszichológia, e-sport, figyelem, mentális állóképesség

## Learning Alone – avagy magukra maradt hallgatók a távolléti oktatásban?

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A COVID-19 járvány új kihívások elé állította az egész világot. A személyes kontaktusok számának csökkentése érdekében Magyarországon 2020. április 9-től digitális munkarend lépett életbe. A speciális helyzetre való tekintettel azonban nem beszélhetünk valódi távoktatásról. A szakirodalom emergency remote learningként (Hodges et. al, 2020; Bozkurt és Sharma, 2020), avagy vészhelyzeti távolléti oktatásként utal a köz- és felsőoktatásban kialakult távoktatásra. A hirtelen bevezetett intervenció a legtöbb helyen számos didaktikai problémát vetett fel, viszont fontos tudni azt is, hogy így a hallgatók intézményi szociális kapcsolatai is redukálódtak, ami a lemorzsolódási rizikót növelő tényezők egyike (Puztai, 2011). Hallgatói tapasztalatokat feldolgozó kérdőívünket 677 hallgató töltötte ki (172 férfi és 505 nő) összesen 31 magyarországi felsőoktatási intézményből.

**Eredmények:** Az eredményeink több ponton igazolták a szakirodalom álláspontjait, miszerint az intézményi kapcsolatoktól elszigetelt hallgatóknál alacsonyabb tanulmányok melletti kitartás figyelhető meg. Eredményeink a virtuális egyetem koncepciók egyik komoly gyengeségére is felhívják a figyelmet.

**Következtetések:** A COVID-19 okozta távolléti oktatás negatív hatással volt a hallgatók tanulmányok melletti kitartására, ami összefüggésben állt a hallgatók intézményi kapcsolatainak minőségi és mennyiségi csökkenésével. Mindez így a távoktatási formák lemorzsolódási rizikójának a növekedésére hívja fel a figyelmet.

*Kulcsszavak:* COVID-19, oktatás, távoktatás, sürgősségi távolléti oktatás, lemorzsolódás, felsőoktatás, virtuális egyetem



# **Orvostudományok**



# **Medical sciences**

## Diagnostic Approaches for Patients with BRAFV600 Melanoma: Immunohistochemistry or PCR?

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The analysis of B-raf proto-onkogene, serine/threonine (BRAF) mutation status is important regarding the diagnostics of melanoma and its BRAF-inhibitor therapy. Nowadays, the DNA-based PCR techniques are the gold standard assessment of BRAF mutation.[1] However, recently the testing of immunohistochemical BRAF antibody became available, which would help the detection of BRAF mutations. Our aim was to investigate the results of the assessments of immunohistochemical BRAF mutated protein and to understand its role in the melanoma diagnostics. We included 49 patients with primary and metastatic melanoma in our pilot study. We examined the FFPE (formalin-fixed, paraffin-embedded) samples of these patients for *Sanger* sequencing (PCR) and for immunohistochemistry (IHC) analysis and assessed the BRAF mutation status from the results of PCR and IHC.

**Results:** In 18 cases out of 49, BRAF mutation was found. The VE1 antibody showed a sensitivity of 94.4% with a specificity of 82%. The positive predictive value was 81% and the negative predictive value was 95%. The overall concordance rate was 71.4% between the PCR and IHC VE1 staining on BRAF status.

**Conclusions:** The results from our study compared to the literature validate the high sensitivity and specificity of the BRAF VE1 antibody. Our data support the use of the immunohistochemical VE1 antibody staining for the BRAF V600E mutation screening and IHC can be a potentially alternative to PCR testing.

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*Acknowledgements:* The project has been supported by the OTKA NKFIA K125509 2017.

*Keywords:* melanoma, BRAF V600E, immunohistochemistry (IHC), polimerase chain reaction (PCR)

## An integrated electro-optical biosensor system for rapid, low-cost detection of bacteria

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In medical treatment, the detection of pathogens at an early stage of diseases is a key step to set up an appropriate diagnosis. To reach this goal, several techniques have been elaborated for point-of-care diagnostic applications. One of the state-of-the-art methods is the application of biosensor devices. Label-free versions of them ensure an appropriate detection of pathogens from fluid samples by their relative sensitivity, rapidity and portability, thus offering a feasible and affordable alternative to the traditional diagnostic techniques. The aim of the present study is to fulfill these requirements with a cheap construction of an electro-optical biosensor, for application as a rapid test in clinical diagnostics. Hence, an integrated microsystem comprising of dielectrophoretic surface-electrodes, a rib waveguide and a microfluidic channel was created for label-free optical detection of bacteria from fluid samples. To model the efficiency of the sensor, we carried out quantitative measurements by observing the light scattered by living *Escherichia coli* cells located in the vicinity of the waveguide.

**Results:** A significant change in the scattered light pattern was observed even when objectives of moderate magnification (x10, x4.7) were used, implying that such type of sensing of the cells can be achieved by low-cost cameras, as well. The optimal frequency utilized in the process of dielectrophoretic cell-collecting was also established. With this novel system, a detection limit of ca.  $10^2$  CFU  $\times$  mL<sup>-1</sup> was achieved, which is relevant to characteristic pathogen concentrations in body fluids, e.g., urine.

**Conclusions:** The working principle of this dielectrophoretically enhanced detection of *Escherichia coli* cells from their suspensions gives us a low-cost and rapid-sensing alternative to routinely used, but time- and money-consuming other methods. Hence, we expect it to be readily applicable in point-of-care diagnostics as a basis of rapid tests to identify general pathogens from various body fluids.

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*Keywords:* Dielectrophoresis, Microfluidics, Integrated Optics, Biosensors, *Escherichia coli* bacteria, Light scattering

## Investigation of the osmoregulatory role of the ion channel TRPV4 in human podocytes

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**Introduction:** The TRP channels (transient receptor potential ion channels), with some exception, possess a non-selective permeability to cations, including calcium. These multimodal cellular sensors can act as sensors of temperature, pH, osmotic pressure and volume; and are expressed by many cell types in the human body. Our research group discovered thermosensitive TRPV (mainly TRPV4) channels in podocytes, which have an important role in the formation of a glomerular filtration barrier.

**Aim:** In this project we are looking for the role TRPV4 channels play in regulating certain biological processes in podocytes and how they can contribute to the physiological functions of these cells.

**Methods:** We used an immortalized human podocyte cell line in our experiments. We tested the function of TRPV4 with pharmacological methods by using specific agonist (GSK1016790A) and antagonists (HC067047 and RN9893). We investigated the response of podocytes to hypotonic solutions and the susceptibility of TRPV4 to hypo-osmotic stimuli by using Fluo-4 fluorescent Ca<sup>2+</sup> indicator to assess intracellular Ca<sup>2+</sup> concentration.

**Results:** Based on our research so far, TRPV4 may play an important role in hypotonic stress induced responses, because the intracellular Ca<sup>2+</sup> signals evoked by hypo-osmotic conditions were decreased in the presence of the TRPV4 antagonist. These results suggest that the TRPV4 channel could play a role in the regulation of the cellular responses related to osmotic challenges in podocytes.

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*Keywords:* TRPV4, podocyte, osmoregulation

## **Assessing rapamycin induced klotho and autophagy process in aged mice**

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The average age of the population is increasing rapidly, according to the WHO. Age is a potential risk factor and considered as main predisposing factor for the common diseases including cardiovascular disease and cancer in the developed countries. Numerous studies show that autophagy has a significant role in aging. Several studies revealed that autophagy decreases with aging. In this study we have investigated the alteration of autophagic process and the level of klotho protein in aged mice. In order to induce the klotho protein aged mice (24 months old) were treated with ip. rapamycin (1.5 mg/bwkg) weekly for 12 weeks. The body weight was monitored during the treatment. Thereafter the organs were isolated. The expression levels of anti-aging klotho protein and autophagic, apoptotic proteins such as LC3B-II and p62 were evaluated by Western blot. Different cytokines level were measured. Furthermore, we have also visualized the immunohistochemical localization of klotho protein in the different organs. We have noticed decreased lifespan and body weight at the control group compared to mice treated with rapamycin. The extended lifespan suggests that rapamycin induced klotho functions as an anti-aging protein. The results revealed that the expression level of the klotho is increased in most of the organs, especially in the kidney liver and adipose tissue. Furthermore, a decreased p62 protein level and increased LC3B-II level were found in the treated group, which denotes the increased level of autophagy. Taken together our results suggest that rapamycin induced klotho protein expression is accompanied by enhanced autophagy, which may help to reduce damaged proteins and organelles.

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## Effect of the modulation of the innate immune responses on bladder cancer in mouse model

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Every day, our body produces several thousand of neoplasm cells, however a functioning immune system can recognise and eliminate them. This scientific discovery serves as the basis of the antitumour immunotherapy, of which the major purpose is the stimulation of the immune system. There are two main therapeutic approaches to achieve this effect, on the one hand, there is application of tumour specific antigens, on the other hand, the aim is to use molecules, that are capable of causing a general immune response by activating the cells of the innate immune system. We have used two molecules belonging to the class of the Pathogen Associated Molecular Patterns, one of them was unmethylated CpG oligonucleotide, a ligand of TLR-9 and lipopolysaccharide (LPS) a component of the Gram-negative bacterial cell wall, recognized by TLR-4, combined with an OX40 receptor-specific antibody (anti-OX40), which is expressed by the activated regulator T-cells. The objective of this study was to prove the effectiveness of the aforementioned compounds by examining median survival time in an animal model, on a bladder cancer cell line.

We have instilled a total of  $1 \times 10^7$  MB49 cells subcutaneously, in a form of a 0.2 ml suspension, to the region of the left musculus biceps femoris. We have created three observation groups, each containing 10 C57BL6 mice. After eleven days of incubation, all mice bearing the size of 0.5-0.8 cm tumour were administered (in situ vaccination) 50  $\mu$ g CpG + 5  $\mu$ g anti-OX40 or 500 ng LPS + 5  $\mu$ g anti-OX40 three times and we have waited 3 days between each treatment. We have used autopsy and histopathology to identify the cause of death.

All the specimens from the control and LPS+anti-OX40 groups have died by the sixtieth day of the observation period, however, five mice from the CpG+anti-OX40 group were still alive (50%). The median survival time of mice vaccinated with CpG+anti-OX40 (60 days) and naive (35 days) was longer than the mice, who have received LPS+anti-OX40 treatment. A statistically significant increase in the median survival times was detected in the animals treated with CpG+anti-OX40 compared to the naive control ( $p < 0,05$ ) and LPS+anti-OX40 group ( $p < 0,05$ ). The LPS-anti-OX40 treatment had no statistically significant effect on the median survival times vs control. The whole experiment has lasted for 142 days, two additional mice has died or had to be euthanized due to poor general condition. The three remaining mice's tumour has gone into remission.

The compound containing CpG+anti-OX40 has shown increased antitumour activity compared to the naive control and LPS+anti-OX40 groups. The intratumoural treatment with LPS was not made anti-OX40 more potent and was not increased the median survival times.

*Keywords: tumour therapy, immunotherapy, in situ vaccination*

## Szisztémás amyloid lerakódás vizsgálata endogén PACAP és receptorának hiányában

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A PACAP (hipofízis adenilát-cikláz aktiváló polipeptid) egy olyan számos szervben expresszá-lódó neuropeptid, amelynek általános citoprotektív, antiinflammatorikus és antiapoptotikus ha-tása bizonyított. Az öregedési folyamatokban betöltött szerepéről azonban kevés adat áll ren-delkezésünkre. Korábbi kísérleteinkben PACAP KO egerekben akcelerált szisztémás szenilis amyloid lerakódást figyeltünk meg. Jelen kísérletünk célja, hogy felderítsük, hogy a PACAP heterozigóta (HZ) egerekben fennálló részleges PACAP hiány, illetve a PAC1 receptor KO álla-tokban létrejövő PACAP ineffektivitás milyen hatással van az amyloid lerakódásokra. Kísérle-tünkben PACAP HZ (n=4) 12-18 hó és 1 éves PAC1 receptor vad (n=9) és KO (n=2) egerek több mint 20 szervéből vettünk mintát. Az amyloid lerakódások vizsgálatához haematoxylin-eosin és Kongó-vörös festést alkalmaztunk. A szervek amyloid-tartalmát súlyosság szerint 0-3-ig terjedő skálán értékeltük.

**Eredmények:** Hisztopatológiai elemzésünk során a HZ egerek esetében a részleges PACAP hiány mellett ugyanolyan mértékű vagy súlyosabb lerakódásokat figyeltünk meg, mint a PACAP KO egerek esetében. A legsúlyosabban érintett szervek a vese, lép, máj, bőr, pajzsmirigy, trachea, nyelőcső és belek voltak. A PAC1-receptor WT és KO egerek egyikében sem találtunk amyloid lerakódásokra utaló jeleket.

**Következtetések:** Eredményeink alapján elmondhatjuk, hogy a PACAP nem csak teljes, hanem részleges hiánya következtében is szisztémás amyloidosis alakul ki, ezzel szemben receptorának hiánya nem vezet kóros fehérje lerakódásokhoz.

*Támogatás:* Nemzeti Kiválóság Program TÁMOP 4.2.4.A/2-11-1-2012-0001, GINOP-2.3.2-15-2016-00050 „PEPSYS”, MTA-TKI Lendület Program.

*Kulcsszavak:* PACAP, amyloid, szisztémás amyloidosis, öregedés

## A fraktalkin receptor szerepet játszik a krónikus immobilizációs stressz-okozta fájdalom kialakulásában

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**Bevezetés:** A krónikus pszichoszomatikus stressz és a neuroinflammáció szerepet játszik számos súlyos fájdalommal járó betegség kialakulásában (pl. fibromialgia) és progressziójában (pl. arthritisz, neuropátia). A fraktalkin (CX3CR1) receptor a mikroglia aktiváció egy fontos útvonala, szerepét hangulatzavarokban, stresszben és gyulladásos fájdalomban kimutatták, azonban a stressz-indukált fájdalommal betöltött szerepére vonatkozóan nincsenek adatok. Jelen kísérleteinkben ezért e receptor szerepét vizsgáltuk krónikus immobilizációs stressz-indukált fájdalom egérmmodelljében. Fraktalkin receptor géniült (knockout: KO) és C57Bl/6J vad típusú egereket krónikus immobilizációs stressz kiváltására 2 héten át napi 6 órára mozgásukat korlátozó csőbe helyeztük. A hideg toleranciát jeges vízből való lábkihúzási latenciával mérésével, a mechanonociceptív küszöböt dinamikus plantáris eszteziométerrel vizsgáltuk. A 2. hét végén depresszióra és szorongásra utaló forszírozott úszás tesztet és farokfellógatási tesztet, valamint sötét-világos doboz és nyílt terep tesztet is végeztünk. Formalin perfundálást követően a timusz- és a mellékvese-tömegét lemértük.

**Eredmények:** Az immobilizációs stressz hatására közel 15%-os testtömeg csökkenést találtunk a vad típusú és KO csoportokban egyaránt. Továbbá megközelítőleg 50%-os tímusztömeg csökkenést és közel 20%-os mellékvesetömeg növekedést tapasztaltunk mindkét stressznek kitett csoportban. A vad típusú stresszelt állatokban 60-70% hidegtolerancia csökkenést és 10% mechanikai hiperalgéziát tapasztaltunk. Az első és a második héten az immobilizációs stressz hatására kialakuló hideg tolerancia csökkenés, a második hétre kialakult mechanikai hiperalgézia is szignifikánsan kisebb volt a fraktalkin receptor KO egerekben. A szorongás és a spontán lokomotoros aktivitás sem a stressz, sem a géniültetés hatására nem változott. A forszírozott úszás teszt esetében a stresszelt KO egerek szignifikánsan rövidebb ideig voltak immobilisak, ami antidepresszáns fenotípusra utal.

**Következtetések:** A fraktalkin receptor fontos szerepet játszik a krónikus immobilizációs stressz-indukált hideg- és mechanikai hiperalgézia kialakulásában, amelynek jelentős centrális szenzitizációs komponense van. Ennek neuroinflammációs mechanizmusait, potenciális farmakológiai befolyásolhatóságát jelenleg vizsgáljuk.

*Támogatás:* National Brain Research Program 2017-1.2.1-NKP-2017-00002 (NAP-2; Chronic Pain Research Group), GINOP-2.3.2-15-2016-00050 (PEPSYS), EFOP 3.6.2-17-2017-00008 N (2017-2019). Az innovációs és technológiai minisztérium ÚNKP-20-3 kódszámú Új Nemzeti Kiválóság Programjának a Nemzeti Kutatási, Fejlesztési és Innovációs Alapból finanszírozott szakmai támogatásával készült.

*Kulcsszavak:* fraktalkin receptor, immobilizációs stressz, mechanikai hiperalgézia, CX3CR1



# **Kémia és vegyipari technológiák**



# **Chemistry and chemical engineering**

## A comparison of the stochastic and deterministic approaches in a nucleation-growth type model of nanoparticle formation

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A kinetic model describing nanoparticle formation is presented here using both the deterministic and stochastic approaches. The model starts from a monomer unit, two of which combine in a slow second-order seed formation reaction. The other process is second-order particle growth between a particle and a monomer unit, the rate constant of which is proportional to the mass of the growing nanoparticle.

**Results:** Exact analytical solutions are derived for the time dependence of the concentrations of all different kinds of nanoparticles [1]. These are compared with the results of simulations using the Gillespie algorithm [2].

**Conclusions:** An interesting aspect of this system is that the very high number of different species guarantees that the individual concentrations or particle numbers are extremely low, yet the deterministic approach still gives a description that seems acceptable for interpreting experimental results.

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**Keywords:** nucleation kinetics, nanoparticle growth, stochastic kinetics, deterministic kinetics, Gillespie algorithm

## Mössbauer Study of Iron(III) Citrate Photodegradation in Solutions

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Iron is an essential cofactor in all living organisms. It is transported in the plant xylem as a citrate complex [1], while several types of bacteria possess a system specific for iron(III) citrate [2]. Despite its key biological relevance, the photochemistry of iron(III) citrate complexes remains unclear and disregarded during planning biological experiments. Visible light is known to promote iron(III) reduction accompanied by oxidative decarboxylation of the carboxylate. The photochemical properties of iron(III) citrate complexes highly depend on the preparation method, the light source and the experimental conditions. The rate of the photodegradation and the final products highly vary in works of different authors. Moreover, it is worth to take into account that most of the photodegradation studies of iron(III)+carboxylic acid systems are devoted to detect the oxidation products of the organic material, or include additional reactions and complexation of iron (by adding *o*-phenanthroline [3] or BPDS and measuring absorption of light). We performed the first direct <sup>57</sup>Fe Mössbauer investigations of iron(III) citrate photodegradation in aqueous solutions at different initial pH of the mixture. To investigate the photodegradation process of iron(III)+citric acid solutions and to determine the irradiation time dependence of the Fe(II)/Fe(III) ratio at different pHs. Three samples of 1:1.1 iron to citrate molar ratios were prepared at various pHs and placed into a plant growth chamber. In order to explore iron chemical forms, <sup>57</sup>Fe Mössbauer transmission spectroscopy was applied in frozen solutions.

**Results:** Iron(III) citrate photoreduction and formation of iron(II) hexaaqua complex was observed at all investigated pHs. The ratio Fe(II)/Fe(III) highly depends on the initial pH, the irradiation time, and the light source used. In the case of pH > 3, a subsequent reoxidation of Fe(II) was detected. The change of the color of the solution and the significant increase of the quadrupole splitting value suggest the occurrence of iron polymerization.

**Conclusions:** The results obtained have high biological relevance and should be considered during planning iron metabolism studies (plants foliar treatment, microorganisms system modelling, etc). It was shown that the complexation and filtering methods applied earlier disturb the chemical equilibrium in the sample. In contrast, the Mössbauer results obtained can be used as a reference for biological experiments and make the mechanism of iron(III) citrate photodegradation more understandable.

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*Keywords: Mössbauer spectroscopy, photochemistry, iron citrate, frozen solutions, photodegradation*

## Preparation and Characterization of Iron (III) Oxide Doped Calcium Oxide Nano-particles Calcined in Vacuum

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Calcium oxide (CaO) is an important inorganic compound that is used in a wide range of applications. CaO can be used as a component of composite or doped material in thin-film technology. CaO is an attractive CO<sub>2</sub> absorber, due to its good kinetics and high capturing capacity, even under low CO<sub>2</sub> concentration condition. The main drawback of this category of sorbents CaO is the rapid decay of the CO<sub>2</sub> uptake capacity during the cycles of carbonation and decarbonisation reactions. The CaO nanoparticles have comparatively higher adsorption efficiency and the capabilities of multiple carbonations and decarbonisation cycles. CaO rapidly degrades due to the application of the sorbent. The development of CaO based adsorbents decreases over a number of cycles of CaO carbonation/calcination. To improve the sintering-resistant properties of CaO-based adsorbents, many factors should be considered such as decreasing the particle size and increasing the surface area, dispersing CaO on an inert support, as well as surface modification. The physical and chemical properties of CaO can be changed in nanoscale, morphology, surface area and capturing efficiency can be carefully controlled under specific synthesis conditions, and positively affected the sorbents' reactivity. Doping the CaO nanoparticles with different atoms is considered as an important method to increase the capturing efficiency and the lifetime of the sorbent materials. Several research works have been conducted which show better properties of metal-doped CaO nanoparticles. Great enhancement of capturing performance, stability and regeneration ability during extended operating cycles can be achieved through doping and co-doping process. Iron is an optimal element to enhance both the catalytic activity and the carbon deposition during the catalytic test. In this research work, Fe<sub>2</sub>O<sub>3</sub> doped CaO was prepared by using CaCl<sub>2</sub>, FeCl<sub>3</sub>, NaOH as reactants through thermal decomposition method. The wet precipitates were calcined at a temperature range of 40 °C to 650 °C under vacuum with a heating rate of 60 °C/min. XRD investigation of the produced Fe<sub>2</sub>O<sub>3</sub>: CaO powder confirms the existence of Ca(OH)<sub>2</sub> and small amount of CaCO<sub>3</sub>. Fe<sub>2</sub>O<sub>3</sub>: CaO started to calcine at 200 °C with a few amounts of Ca(OH)<sub>2</sub> and CaCO<sub>3</sub>, but then completely calcined at 650 °C in which pure Fe<sub>2</sub>O<sub>3</sub>: CaO is formed without CaCO<sub>3</sub> or any other impurities.

## Threat or opportunity? Utilization of the hysteresis phenomenon for chiral high-performance liquid chromatographic method selection in polar organic mode

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Investigation of mirror image molecules (i.e. enantiomers) is a common and important task in the pharmaceutical industry, because in many cases only one of them possesses the desired biological activity. For the determination of their ratio typically chromatographic, more specifically, direct high-performance liquid chromatographic methods are used with enantiopure stationary phases [1,2]. The most commonly used molecules as selectors of these stationary phases are chemically modified polysaccharides. In chromatographic separations, analysts use various stationary and mobile phases in order to achieve different retentions for the compounds they want to determine. The retention times carry the qualitative information about the analytes. Therefore, they should typically have a well-defined value using the chosen set of chromatographic parameters. However, there are some special fields, for example the chiral chromatography, where this is not always the case: based on the history of the system, the same compound can possess different retention times using the same set of chromatographic parameters. This surprising observation can be perceived as a threat, or can be turned into an opportunity for those who familiarize themselves with it.

**Results:** The surprising observation of history-dependent retention times was observed on one of the above-mentioned polysaccharide-based stationary phases using mixtures of methanol and 2-propanol as the mobile phase [3], which are typical polar organic mode solvents. With thorough scientific work we could turn this first perplexing phenomenon into a means to provide an extended space for enantioseparations and an opportunity for an entirely new strategy in the chiral method development [4].

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**Keywords:** chiral HPLC, amylose tris(3, 5-dimethylphenylcarbamate), method screening strategy, history dependence, solvent memory effect

**Quantum chemistry aided design of biomimetic nitrogen fixation catalysts: how to prevent H<sub>2</sub> coordination and facilitate N<sub>2</sub> coordination to Fe**Joseph Kfoury<sup>1</sup>, Zsolt Benedek<sup>1</sup>, Julianna Oláh<sup>1</sup><sup>1</sup>Departement of Chemical Technology and BiotechnologyCorresponding author: joseph.a.kfoury@gmail.com

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Biomimetic nitrogen fixation catalysts, mainly synthetic Fe nitrogenases, are auspicious catalysts that aim to synthesize ammonia from nitrogen at atmospheric pressure, therefore depicting an alternative for the long-established, energy demanding Haber-Bosch process. The main challenges of the biomimetic ammonia production are the competing unproductive hydrogen evolution reaction and swift catalyst deactivation. Our group recently explored the mechanism of the latter side reactions: [1] H<sub>2</sub> molecules, originating from the noncatalytic reaction of acid and reductant reagents used for the synthesis, are apt to coordinate to the iron center of the catalyst complex (competing N<sub>2</sub> coordination). This leads to the autocatalytic production of additional H<sub>2</sub> molecules and to undesired catalyst deactivation.

**Results:** In this theoretical work, we applied various modifications on the original triphosphino-E (E = B, C or Si) coordinated iron complex (EP<sub>3</sub>Fe) applied by Peters et al. [2] for nitrogen fixation, and examined their influence on the desired Fe-N<sub>2</sub> coordination as well as on the undesired Fe-H<sub>2</sub> formation. Our investigations are carried out using benchmarked DFT methods, taking into account thermodynamic as well as kinetic considerations.

In the end, we managed to find a group of substituents which increase the affinity of EP<sub>3</sub>Fe catalyst to bind N<sub>2</sub>, while decreasing the affinity to H<sub>2</sub>.

**Conclusions:** A proper ligand substitution on recently synthesized biomimetic nitrogenases can eliminate the undesired production of H<sub>2</sub>, while keeping the rate of ammonia formation high. We recommend experimentalists to consider the modifications predicted to be beneficial by theory as starting points of future catalyst design.

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*Keywords:* Biomimetic, Nitrogen, Fixation, Artificial Nitrogenases, Catalyst, Ammonia, Hydrogen, Ligand Substitution, Affinity, Selectivity

## Development of Zr-pillared montmorillonite clays with characterization

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Pillared clays (PILCs) are getting more attention due to their excellent adsorption and catalytic properties[1]. They are prepared by exchanging the cations present in the interlayer space of clay minerals with bulky polyhydroxy metal cations. During heat treatment, the polyhydroxy metal cations are converted into metal oxide pillars. These oxide pillars provide stability to clay minerals and introduce microporosity and surface acidity[2]. Preparation of PILC depends upon several parameters such as starting material, pH of pillaring solution, intercalation temperature, aging and stirring time period, calcination temperature[3].

In the current study, Zr-PILCs were synthesized at different Zr/clay ratio i.e (2.5, 5, and 10 mmol/g) using raw montmorillonite (R-Mt) and sodium saturated montmorillonite (Na-Mt) as precursor material.

The XRD analysis shows the increase in basal spacing of Zr-PILCs while using both precursor i.e. 1.14 to 1.84 nm for samples prepared from Na-Mt and from 1.25 to 1.7 nm in case of R-Mt. Moreover, better XRD results were observed in case of Na-Mt especially at lower Zr concentration.

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*Keywords: PILCs, Montmorillonite*

## A study of the flexibility of salen type ligands

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**Introduction:** Metal-salen scaffold complexes have been attempted to be used from medicine through catalysis to nanotechnology due to their cheap and simple preparation. Since they have been tested in a wide array of fields, many researchers have tried to describe these for comparison with other compounds in and out of this family. The consensus in the literature is that these compounds are quite flexible when the imine groups are reduced and that they usually have four conformers: flat, half-stepped, stepped, and umbrella-shaped. Our objective was to find coordinates that can be used to describe every member of this family quantitatively, not only qualitatively. Using these coordinates, we have done a systematic conformational analysis of 6 model compounds for all their stereoisomers. From these, we have derived other complexes involving differently charged groups and another central metal ion.

**Methodology:** All calculations were performed by PM6 semi-empirical method using implicit PCM including water as a solvent without symmetry restrictions as implemented in the Gaussian09 package. The systematic conformational analysis has been performed using redundant coordinate scan calculations. Stationary point selection from these scan calculations was by comparison of the energy of the eight adjacent points and then optimizing the local minima. All complexes were considered in their singlet spin state.

**Results:** Our calculations show that the backbone and arm rotations are separate from each other. The number of isomers for a given compound increase as a 2<sup>nd</sup> degree polynomial as the number of backbone carbon atoms increase. Changing the charges on the pendant arms change structure as it would be expected. Changing the central metal ion to a smaller radius one does not change the conformation drastically.

**Conclusions:** We were able to find good coordinates that describe the backbone torsion and pendant arm rotation of the complexes. Using these coordinates, we have done a full conformational analysis of our model compounds finding the higher energy conformers as well. Using these conformers, we have done the conformational analysis for other compounds as well.

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*Keywords:* palladium, flexibility, salen, conformation



## Microkinetic modeling: a bridge between experimental and computational chemistry

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The two branches of chemistry, theory and experiment, are interdependent: theoretical calculations are required for the evaluation of experimental results (e. g. for the exploration of mechanisms), while experimental data are indispensable for theoretical works (e. g. for method validation). Still, the cooperation between the areas is often cumbersome as the results of computations - typically reaction and activation energies - are difficult to interpret for experimentalists who observe macroscopic properties such as yield, reaction time and the time course of concentrations.

**Results:** Our research group successfully applied microkinetic modeling as a bridge between computational and experimental data. In this approach, the computed activation Gibbs free energies ( $\Delta G^\ddagger$ ) of elementary reaction steps are converted to rate constants (k) using the Eyring-Polányi equation. Then, the system of reaction rate equations is solved numerically to obtain the time course of concentration of all intermediates, which is exactly what one can measure experimentally. By comparing the simulated evolution of concentrations to available experimental data, the rate constants can be fine-tuned to eliminate the error of computation. In this way, an accurate theoretical model of the studied reaction mixture can be gained, which can be used to optimize reaction conditions or explore quantitative structure-reactivity relationships without the need of a large number of experiments.

In this presentation, two practical applications of microkinetic modeling is discussed: the rational (mechanism-based) design of biomimetic ammonia synthesis catalysts [1-3] and the evaluation of carcinogenic potential of estrogen hormones.

**Conclusions:** Microkinetic modeling, though rarely applied to date, is one of the most effective methods to explore the behavior of complex reaction mixtures, as it is based on the co-evaluation of experimental and theoretical information gathered for the studied system.

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**Keywords:** *computational chemistry, transition state theory, microkinetic modeling, nitrogen fixation, estrogen metabolism, breast cancer*

## Computational perspectives on NO-SGC signaling mechanism using the *Shewanella* H-NOX protein

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In the nitric oxide (NO) signaling pathway, cyclic guanosine monophosphate (cGMP) is synthesized by human soluble guanylate cyclase (sGC) to modulate vast range of physiological functions and pathological conditions like coronary artery disease, moyamoya disease, and hypertension; making sGC as a cardiovascular therapeutic target. Previously, it was thought that sGC activation results exclusively from a single NO binding to the heme of the H-NOX domain; however, later experimental studies indicated that heme-bound NO only partially activates sGC and additional NO was involved in the mechanism of maximal NO activation [1]. According to the presently most supported mechanisms [2] the second NO binds to the sGC heme iron as a proximal ligand replacing the proximal histidine residue, but the state that shows the maximum activation of sGC has remained vague “distal vs. proximal NO bound states” [3].

In order to explain the mechanism of NO binding and protein activation, we used the x-ray structures of the H-NOX protein of *Shewanella oneidensis* as a homologous system of human sGC. To discuss the diffusion of NO into the distal and proximal pockets as well as to analyze the dynamic properties of the different states, we used MD simulations. In addition, the success of DFT functionals in describing the energetics of NO-binding events was critically evaluated using CCSD(T) and DLPNO-CCSD(T) methods using a porphine model of the heme group. Finally, using QM/MM computations, we explored the possible mechanisms leading to the conversion of the various states, which will lead us to clarify the discrepancy between the proposed mechanisms.

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**Keywords:** sGC, NO-sensing, MD simulations, DFT

**Állati eredetű melléktermékek feldolgozástechnológiai**Csurka Tamás<sup>1,2</sup>, Pásztorné dr. Huszár Klára<sup>2</sup>, Dr. habil. Friedrich László<sup>2</sup><sup>1</sup>Szent István Egyetem, Élelmiszertudományi Doktori Iskola<sup>2</sup>Szent István Egyetem, Élelmiszertudományi Kar, Élelmiszertechnológiai Intézet, Hűtő- és Állatitermék Technológiai Tanszék

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Napjainkban egy igazi forrópont a környezetterhelés és ezzel a pazarlás, különösen a valamilyen szempontból veszélyes hulladékok csökkentése. Nincs ez másként az élelmiszeripar legnagyobb hozzáadott értéket teremtő ágazatában, a húsiparban sem. Nem csak az etikai, hanem a gazdasági érvek is egyértelműen arra mutatnak, hogy csökkentenünk kell az eddig veszni hagyott állati eredetű melléktermékek mennyiségét az Európai Unió jogszabályi és ajánlási előírásaival konformizált állat- és humánegészségügyi ismeretek komplex felhasználásával.

Emberi fogyasztási célra átlagosan egy szarvasmarha 45%-a, míg egy sertés, vagy broiler csirke 55%-a hasznosítható. Hazánkban a „maradék” pedig általában veszélyes hulladékká történő minősítés után ártalmatlanításra kerül. Az ártalmatlanított hulladékot utána takarmányként, vagy talajjavítóként használják fel. 1924 óra szabályozzák Magyarországon az állati eredetű melléktermékek kezelését, így elmondhatjuk, hogy nálunk hagyománya van a veszélyes hulladékok helyes kezelésének. 1949-ben kezdte meg működését az Állatifehérje Takarmányokat Előállító Vállalat, amely ma ATEV Fehérjefeldolgozó Zrt-ként működik. A történelemben való előjárás ellenére viszont több típusú melléktermék felhasználásában igencsak fejlődésre szorulunk ahhoz, hogy „Az európai zöld megállapodás” céljait elérjük.

**Eredmények:** Munkámban az Eurostat, valamint az USDA adatbázisainak felhasználásával trendelemzést végeztem, melynek eredményeként 2003-tól 2018-ig értékeltem a szarvasmarha, sertés, juh, kecske és baromfi haszonállatokból kitermelt vér, bél (azon belül vékonybél, vakbél, remese és teljes bélhossz), szőr/toll, valamint belső elválasztású mirigyek (hipofízis, tobozmirigy, pajzsmirigy, mellékvese, hasnyálmirigy és petefészek) minősített mennyiségét. Ezek közül a legkönnyebben, legnagyobb mennyiségben hasznosítható melléktermék a vér. Csak Magyarországon, csak 2018-ban több mint 1,4 millió L marha és több mint 16 millió L sertés eredetű vér került semlegesítésre, onnan pedig a gyakorlatilag veszteséges haltakarmány, vagy talajjavítószer összetevőjeként történő felhasználásra az értéknövelő tovább-feldolgozás helyett. Összegyűjtöttem a különböző iparágak által jelenleg alkalmazott feldolgozási technológiákat és fejlesztési lehetőségeket.

**Következtetések:** Annak tudatában, hogy az abszolút és relatív túlnépesedés következtében várhatóan egy fehérje krízis előtt állunk, amely felülmúlhatja a jelenlegi fejlődő országokban tapasztalható éhezést is, elkerülhetetlen olyan fehérjeforrásokat, valamint egyéb makro- és mikrotápanyag-forrásokat bevonni az emberi fogyasztásra történő felhasználásba, amelyet eddig melléktermékként kezeltünk. Ehhez már ma el kell kezdeni az ipari szintű folyamatfejlesztést az állati eredetű melléktermékek feldolgozástechnológiai területén. Kiemelt szerepet kaphat továbbá a fenntarthatóságban a *green technology* is, amely az élelmiszerláncba vissza nem vezethető anyagokat használhatja fel például a műanyag kiváltására.

*Kulcsszavak:* állatitermék, állati eredetű melléktermék, állati vér, fenntarthatóság, melléktermék

## Tojásfehérje alapú tej- és tejtitalanalógok reológiai tulajdonságainak vizsgálata

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A modern élelmiszerfogyasztók körében egyre elterjedtebb a laktózérzékenység és a tejfehérje allergia, illetve egyre többen követnek olyan étkezési trendeket, amelyekén ugyan elvárás a nagymennyiségű fehérje bevitele, azonban tiltják a tejtermékek fogyasztását. Ezen okok miatt mára számtalan tejhelyettesítő termékkel találkozhatunk a boltok polcain, azonban ezek növényi alapanyagokból készülnek, felvetve a fehérje hasznosíthatóságának, illetve az esetleges allergizálás a kérdéseit.

Kutatásunkban tojásfehérje alapú tej- és tejtitalanalógok reológiai tulajdonságainak vizsgálatával foglalkoztunk. Méréseinkhez tojásfehérje alapú tejet (ToTu tej) ízesítettünk különböző édesítőszerekkel, kakaó porral, karob porral és instant kávéval. Az elkészített italokat Anton Paar MCR 92 típusú reométerrel vizsgálatuk 15°C-on CC27 mérőrendszerrel 10 és 1000 1/s közötti nyírási sebesség között. A mérés gyorsuló szakaszának mérési pontjaiból folyásgörbéket készítettünk, míg a lassuló sebességű mérési szakaszra kitevő modellt illesztettünk az eredményeink értékelésére.

**Eredmények:** Eredményeink azt mutatják, hogy az ízesítés hatására nőtt a termékek kezdeti viszkozitása. A legkisebb eltérést az ízesítetlen kontroll termékhez képest az instant kávéval készült termék esetében tapasztaltuk. A nagyobb szárazanyag tartalmú termékek folyási tulajdonságai egyre kevésbé mutatták a newtoni folyadékokra jellemző tulajdonságokat, egyre plasztikusabbá váltak.

**Következtetések:** Eredményeink alapján elmondható, hogy az ízesített tojásfehérje alapú termékek a reológiai tulajdonságaikban bekövetkezett változások ellenére jól keverhető és szivattyúzható termékek, amelyek viszkozitás-változása elhanyagolható a csőrendszerek, keverőtartályok és szivattyúk méretezésekor.

*Támogatás:* Kutatásunk a KFI\_16-1-2017-0551 pályázat segítségével valósulhatott meg, amelyért rendkívül hálásak vagyunk.

*Kulcsszavak:* tojásfehérje, tejtermék analógok, reológiai vizsgálatok

# **Társadalomtudomány**

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**Social science**

## Labeling of statuses and effects on human rights of the Rohingya people in Bangladesh: Rhetoric and Reality

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Bangladesh is the host country of 1.2 million Rohingya people fleeing from Myanmar. They used to live in Burma, present day Myanmar for hundreds of year. But they have no citizenship rights in their birth and ancestral land. Now they are the largest stateless minority people in the world. The first exodus happened in 1978 and the latest in 2017. Rohingya people have already been named in three more statuses: registered refugee, unregistered refugee, Undocumented Myanmar Nationals (UMNs), and Forcibly Displaced Nationals (FDMNs) so far since 1978 here in Bangladesh. By taking up the issue, this study aims to examine how the different labeling of statuses of ill-fated Rohingya people affects their human rights in the refugee camps in Cox's Bazar of Bangladesh.

**Methodology:** To that end, this investigation explores and collects data from Government of Bangladesh (GoB) and UNHCR reports, different human rights analysis, academic studies, and popular media reports about the human rights of Rohingya people in Bangladesh.

**Results:** After an exploration of the relevant literature and secondary data, it comprehends that labeling of Rohingya people in different statuses has considerable effects on their human rights and those labeling and classifications are involved with discriminations as well as deprivations of the Rohingya people.

**Conclusions:** Finding the labeling a political issue, this study recommends the competent authority to consider their human rights as a human being irrespective of labeling them in different categories.

*Keywords: labeling, humanitarian provision, human rights, discriminations, political, host.*

## International Recommendations on Migration Statistics. Retaining the Status Quo or Development in Measurement of International Migration?

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Since the first UN Recommendations on Statistics of International Migration was adopted almost 70 years have passed, the latest Recommendations was formulated also more than 20 years ago (*United Nations 1*). People move more easily than they did 20 years ago, migration has become an increasingly important component of both demographic and social change. Increases in the levels and changing patterns of migration have raised the demand for collecting accurate and timely data. A number of initiatives have stressed the need to collect and use migration statistics to develop evidence-based migration policies.

The paper aims at showing the main milestones of developments in measurement of international migration since the adaptation of the first international recommendations in 1953 (*United Nations 2.*) and to examine the reasons why better quality of data on migration is needed and what are the challenges of its measurement. The development of migration statistics is a parallel phenomenon with changes of international socio economic factors and with appearance of new data technologies.

The work on establishment of new updated recommendations is going to be prepared under scope of a Task Force within the Statistics Division of the United Nations (*United Nations 3.*).

During the work I am going to shed light on connection between social developments and between changes in international recommendations which have of utmost importance on assessment of international migration and also influence the statistical methodology and equipment which are applied in order to collect and examine statistical data on international migration.

Since methodologies on measurement of international migration are in significant correlation with changes in the society, thus my conclusion is going to emphasize the importance of continues development of this methodologies. The main outcome of my research is to specify the directions where the international recommendation on migration statistics need to be developed taken into account the fact that migration is one of the three pillars which affects the establishment of an exact population figure and the definitions used in international migration are essential also for describing demographical changes.

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## Turkish otherness in Armenia

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Binary opposition has also played a crucial role in Armenian national identity construction. This binary was hostility against Ottoman empire and then Turkey. The representations of mythology, land pretensions (Great Armenia Project) and Armenian Genocide ignited Turkish hostility in practice starting from 19<sup>th</sup> century. However, before 19<sup>th</sup> century or starting from 16<sup>th</sup> century being geographically and religiously isolated between Ottoman and Safavi (Turkic oriented) empires, increased Armenians' fears about survival. These fears started to appear at the end of 19<sup>th</sup> century with insurrections against Ottoman Empire. The construction of Armenian national identity starting from the end of 19<sup>th</sup> century was completely based on primordial elements. The mythologies and Great Armenia Project were the main representations of primordial elements in national identity construction. The basis of all these mythologies and Great Armenia Project was the enmity against Turks. This enmity has been reinforced during the Soviet time when Turkey was a part of NATO in 1955. However, after the fall of communism when Armenia declared its independence in 1991, Turkish Otherness was also transformed into a new form. There happened two discursive shifts in Turkish otherness after the establishment of Armenian statehood. The first shift appeared during the first president- Ter-Petrosian's period who tried to minimize Turkish otherness in order to create good economic relation with Turkey. The attempt to exclude Armenian genocide from political agenda in this process caused the wrath of both Armenian Diaspora and nation which resulted his resignation. The second president- Robert Kocharian created the second discursive shift in national identity construction by combining both primordial and civic elements. His main aim was to reemerge Turkish Otherness again through the new discourse of victimization. The new discourse's main representation was Armenian Genocide which targeted Turkey as the Other not only in the minds of people, but also in the foreign policy of the country. To include again Armenian genocide to political agenda, and recognition of Armenian genocide in the foreign policy was the primary aim of new discourse. The appearance of victimization discourse with highlighting genocide in the Armenian foreign policy became the new form of Turkish otherness.

**Conclusions:** Considering the historical facts and discursive shifts, the research aim to analyze how Turkish otherness have played an important role in Armenian nation-building and how the new discourse of victimization emerged and started to represent Armenian foreign policy by targeting Turkey as the other during the presidential period of Robert Kocharian.

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*Keywords:* Binary Opposition, Turkish Otherness, National identity, Victimization.



## Marriage or civil union? Comparing the role of the Hungarian and the Italian Constitutional Court in the recognition of same-sex couples

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**Introduction:** What is marriage? Reviewing the literature on marriage, there are different answers and approaches to this question. It can be considered a basic social formation but also the basis of family. It can be seen as an institution which regulates or self-regulates sexuality. Some see it as core right associated with sexual or intimate citizenship, while others see it as an oppressive institution due to the reproduction of its inherent power relations.

Debates about marriage equality often revolve around the essence and the purpose of the institution of marriage [1]. Is it an essential element of this institution that the partners are of a different sex? If so, how can States recognize same-sex couples and their right to respect for private and family life? To answer these questions, I will be analysing two Constitutional Courts' decisions (Alkotmánybíróság, Hungary [2]; Corte Costituzionale, Italy [3]) related to marriage and the recognition of same-sex couples.

**Results:** Understanding how these Courts view marriage can also give an account as to why in both countries the legal development of recognition of same-sex partnerships lead to the establishment of the institution of civil union (bejegyzett élettársi kapcsolat and unione civile). This institution is only open to same-sex couples, while marriage is kept to different-sex couples. Based on the analysis of the decisions of the Constitutional Courts, it can be stated that both Courts played a crucial role in the advancement of the rights of same-sex couples. However, there is a difference in their approaches, for example regarding their proactivity or the use of the case law of European courts.

**Conclusions:** According to both Constitutional Courts' interpretation, marriage is essentially an institution which recognizes different-sex couples. At the same time both Courts conclude that same-sex couples have the right to recognition based on each country's Constitution. This indicates that marriage equality is not achieved in these countries as same-sex couples are excluded from the institution of marriage. Their recognition is guaranteed through the institution of civil union.

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*Keywords:* equality, marriage, marriage equality, same-sex couples

## **Between Humanitarian Assistance and the Development Process**

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More than eight years have passed since Syrian refugees began to flee in big groups to neighboring countries to seek refuge. This presentation will present the case study of Jordan and how during the past period their presence was mainly dealt with through providing humanitarian care and assistance rather than focusing on developmental approaches. This classical humanitarian assistance will not succeed in keeping up with their rising needs. International organizations have begun to push the kingdom for more development-oriented crisis response, which can decrease the dependency of refugees and make them more resilient, but to succeed in that many points have to be taken into consideration. This paper aims to provide some recommendations to the government of Jordan and stakeholders to benefit from the potential asset that comes with hosting Syrian refugees and make them more resilient. Some of the most important factors that will help the country to move in this direction are, the financial aid, that Jordan will not be able to function without, especially in the short run, controlled inclusion by the government to lessen the effects of social tension between Jordanian host communities and Syrian refugees, and finally new investments. In conclusion, Jordan should adopt a developmental approach to deal with refugees to turn the burden of refugees into a benefit that can contribute to the socio-economic advancement of the country.

*Keywords: Refugees, Humanitarian-assistance, Developmental-approach, crises.*

## Impact of Fear of Gender-Based Crime on Women's Regular Personal and Social Life in the Urban area of Bangladesh: An Empirical Assessment

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Fear towards crime, violent crime, and gender-based crime is not a new phenomenon, but in the present-day, fear of gender-based crime has become a significant problem in Bangladesh. Based on the contemporary scenario of Bangladesh, fear of gender-based crime, and the fear of crime victimization undoubtedly is a major social problem, especially in the urban area of Bangladesh. Various crime data, police records, and human rights reports show that gender-based crime and victimization are increasing in Bangladesh at a higher rate compared to the last two decades, especially among the urban women who are involved with the outside activities. Thus, fear of gender-based crimes in urban areas is a severe obstacle for women in Bangladesh. Therefore, the main objectives of the current study were to explore and examine the real-life impact of fear of gender-based crime on women's regular personal and social life, especially on their education, income, and professional career. To explore the fact the study has been applied mixed methodological approach comprising with quantitative and qualitative methods and used secondary information from various authentic national and international sources.

The study found that fear of gender-based crime traumatized women and forced them to withdraw themselves from their essential and non-essential daily activities. Women perceived most fear of rape, sexual assault, physical assault in public places than other crimes. Thus, women must compromise with their freedom and independence only because to avoid such a possible threat. Also, they avoid visiting certain places at certain times and participate in social activities, and they come back home before evening compromising their financial benefit. Corresponding global pictures, this study also found that gender, age, complexion, social position, and ethnicity are the influential factors of sexual assault and victimization in Bangladesh. These also lead women to become more fearful about crime victimization than others. Women who find themselves as weak bonding and low networks with their neighbors and living for a short duration have a feeling of more fear. Therefore, the elderly women and other members of the family do not allow younger girls to go and involve outside activities to secure their family status. At the same time, most women sometimes leave their job, do not accept better posting, faced early age marriage to avoid perceived risk. Most of the women must avoid public transport only to avoiding the possible threat of gender-based crime that hamper their financial wellbeing.

The study also explores that fear of crime does not always depend on crime rate but crime news, the severity of the crime, delay justice, ineffective policing, easy bail of criminals, corruption and political favoritism, etc. Finally, the paper concludes that the fear of gender-based crime and violence creates multiple barriers to women's total lifespan in Bangladesh, especially on their income-generating activities, freedom, and empowerment.

*Keywords: personal freedom, fear of crime, fear of gender-based crime, fear of crime victimization, rape, sexual assaults, withdrawal from essential and non-essential activities*

## Impact of TV Dramas on Housewives: A Case study of Asian Society

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Drama is a source of, educating, guiding, informing and entertaining people. It has great impact on the minds of its viewers. It persuades its audience and thus develops opinion in the mind of its viewers. This study is conducted in account to investigate the impact of TV dramas on the housewives residing in Asian countries. To find out the impression of TV dramas, the study is conducted through the qualitative approach in order to understand the adoption level and social behavioural changes in women who watch television dramas. The study focused on the respondents' utilization patterns, intensity of watching favourite dramas and the most important factor that is the influence of dramas on their social life.

**Results:** The study could find that women watch TV dramas for their unique stories and they showed agreement that these dramas have significant impact on their social life since they adopt different things from dramas such as lifestyle and fashion trends.

**Conclusions:** The study presents similarity in opinions of housewives who are at home running daily chores; their feelings and attachment are somehow similar with respect to their adoption level that they adopt fashions trends and other societal norms to some extent. Also, their likeness towards their favourite actors and the content of dramas motivate them to enjoy watching dramas and find different stories every other time.

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*Keywords: dramas, asia, housewives, tv, media, women, social life, lifestyle*

## The idea behind manufacturing frozen conflicts: composing a model to be applied in- and outside of the post-Soviet region

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As the Cold War ended, the Russian Federation lost its superpower status. However, there were some attempts to build partnership with the West, at the same time Russia started to restore its former sphere of influence by establishing ‘frozen conflicts’ in the post-Soviet states. Numerous conflict was formed in the early ‘90s (Abkhazia, South Ossetia, Nagorno-Karabakh or Transnistria), but the events of 2014 in Ukraine are also following the pattern of establishing frozen conflicts.

The literature only applies the term ‘frozen conflicts’ to the cases of the post-Soviet region[1], although there are other significant cases which suit the definition; they are ‘unofficial’ but often mentioned in the literature: e. g. Western Sahara, Palestinian issue, Cyprus, Kosovo, etc. [2]. As the new type security challenges have started to emerge with the end of the Cold War and the superpowers had not been controlling their spheres of influence anymore, unresolved conflicts came to the front meaning greater security threats than before and for the most part referred to them as frozen conflicts as well.

In the research I assume that there is no significant difference manufacturing and maintaining a ‘frozen conflict’ in the nature of the conflict and in the circumstances in- or outside of the post-Soviet region in the post-Cold War international system, therefore the term of ‘frozen conflict’ is applicable to other cases except the post-Soviet region. Using the methodology of comparing case studies in the timeframe of 1990s to nowadays by choosing one case from the post-Soviet region (Transnistria) and one outside from the region (Kosovo), I apply the model of manufacturing frozen conflicts which can be found in the following study: Agnia Grigas *Frozen Conflicts. A Tool Kit for US Policymakers*[3].

Although the model is composed for the post-Soviet frozen conflicts, it can be altered to the non-post-Soviet examined cases and it will show that the nature of the conflicts and the goals of the different actors are a lot similar. Therefore another model for manufacturing and maintaining frozen conflicts is about to be composed in order to be applied in a broader context giving a new aspect to the complexity of the unresolved, protracted conflicts in the changing international security system.

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*Keywords: frozen conflicts, post-Soviet region, Russian Federation, sphere of influence, Transnistria, Kosovo*

## Generációs különbségek a közösségi média és mobiltelefon használatban

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Az Y generáció tagjai voltak az elsők, akiknek a fiatalkorát már megérintette a digitális fejlődés, ők már magabiztosan kezelik a különböző elektronikai eszközöket és életük egy jelentős hányadát a virtuális térben élik: közösségi média oldalakon posztolják fontosnak tartott életeseményeiket, online munkahelyi megbeszéléseken vesznek részt, online hallgatják óráikat, kapcsolataikat üzenetküldő applikációk segítségével ápolják, tájékozódásra pedig az internetet használják. Az őket követő Z generáció tagjai, akik csoportját középiskolások és fiatal egyetemisták/munkavállalók alkotják, már a digitalizált világba születtek, sokszor „digitális bennszülöttek” néven hivatkoznak rájuk. Ők az első generáció, akik társas interakcióik sok esetben már nagyobb arányban folynak a virtuális térben, mint „élőben”. Számukra teljesen természetes a mindennapos posztolás, a szelfik világa, a különböző üzenetküldő applikációkon (pl. Messenger, Whatsapp) keresztüli kapcsolattartás előnyben részesítése. A Z generáció tagjai sokkal több emberrel állnak passzívan kapcsolatban a közösségi médián keresztül, mint amire az offline világban fizikailag lehetőség lenne, de ezek a kapcsolatok egyúttal felszínesebbek is. A közösségi média fiatalokra gyakorolt hatásával számos kutatás foglalkozik, melyek kiemelik az önértékelési problémákat, hangulatzavarokat, az elmagányosodást, a folyamatos társas összehasonlítás negatív következményeit, valamint olyan jelenségeket, mint például a „cyberbullying” vagy a FoMO. Az idősebb generációk tagjai (X Generáció és Baby Boomerek) között sokkal kisebb arányban találunk aktív közösségi média és mobil felhasználókat. Az idősebbek nem születtek bele a digitális eszközök világába, nekik minden számítógép, okostelefon és internet-használattal kapcsolatos készséget tanulással kellett elsajátítani.

A digitális világ megváltoztatja a kommunikációs szokásokat, az érzelemkifejezés és -értelmezés az online térben máshogy történik, mint a mindennapi interakciók során. Mindeközben maga a közösségi média használat (még társas interakció hiányában is) erős érzelmeket válthat ki, és ezeknek hatásoknak leginkább a fiatalok vannak kitéve (már csak a digitális térben töltött idő mennyisége révén is). Jelentős egyéni és életkori különbségek figyelhetők meg az érzelmi intelligencia, és az önszabályozás területén, de mindkét képesség kiemelt jelentőségű a közösségi média használat „sikeressége” szempontjából.

Kvantitatív, feltáró jellegű kutatásunkban arra kerestük a választ, hogy kimutathatók-e különbségek az egyes generációk között a habituális (mindennapi tevékenységekhez kötődő) és problematikus (addiktív) mobilhasználat tekintetében, valamint kimutatható-e kapcsolat a mobilhasználati mintázatok és a válaszadók érzelmi intelligenciája, társas stressz szintje, illetve önszabályozó képessége között.

*Kulcsszavak: Z generáció, Y generáció, generációs különbségek, érzelmi intelligencia, közösségi média, EQ, mobilhasználat*

## Zöldrefestés – környezettudatos fogyasztók megtévesztése

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Az utóbbi időben a vállalatok által egy széles körben elterjedt gyakorlattá vált a „zöldrefestés” (angolul: greenwashing), mely során a cégek igyekeznek kihasználni a saját környezettudatos fogyasztóik – az utóbbi időben egyre növekvő – „zöld” igényeit. Mindezt „zöld” retorikával, szimbólumokkal leplezik, ezzel magukat ebből a szempontból jobb színben próbálják feltüntetni.

Vizsgálatunkat 175 fős nemzetközi, demográfiaileg heterogén mintán végeztük el. Kutatásunkban online kérdőíves eljárást alkalmaztunk, mellyel a környezettudatos viselkedést, fogyasztói szokásokat és a kitöltők környezetismerettel kapcsolatos tudását vizsgáltuk. Ezen kívül használtunk vizuális ingeranyagot, melyet különböző vállalatok „zöld” szlogenjeiből és lógóiból válogattunk össze.

**Eredmények és következtetés:** Eredményeinkből arra következtethetünk, hogy a „zöldrefestés” akár azon embereket is képes megtéveszteni, akik törekednek környezettudatosan élni, sőt, ezen személyek könnyebben félrevezethetőnek bizonyultak.

# **Műszaki tudományok**



# **Technical sciences**



## Human Risk Factors in the Information Security of Critical (Information) Infrastructures

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With regards to the threats of information society of nowadays, the digital asset management and the safety of the related information systems as well as critical infrastructure elements became highly important. The defense of cyberspace itself evolved as a social necessity. This conference paper of social science focus aims to provide an overview of how certain human risk factors influence the effectuation of information security measures within firms and/or organizations operating critical (information) infrastructures. The impact of human risk factors on the engineering of the data processing and analytics procedures of critical infrastructures is also discussed. Moreover, the helpful role of the possible methodological toolset connected to HR, management, and risk management is assessed in the context of managing and improving information security awareness.

**Results:** Based on the aspects highlighted in the discussion, I have made practical suggestions, with the help of which, the human risk factors influencing the effectivity of information security measures can be successfully managed, focusing on security aspects appearing in the context of organizational structures and interactions.

**Conclusions:** The research successfully outlined possible risk management methods to improve organizational security awareness, through analyzing military concepts of cyberspace operations and tools from the civil context applied when facing similar problems. The results are a useful basis for continuing research in the topic, suggested to be put in military engineering context.

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*Keywords:* critical infrastructure, information security engineering, human risk factors, security awareness

## Spine 3D navigation from 2D DICOM images

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Diagnostic images have long been used in medicine to detect lesions and injuries in patients and to diagnose their improvements. In some cases, these medical diagnostic images also play a role in the preparation for surgery. These images are taken from only one direction, vertical or perpendicular, so they can only prepare for surgery from coordinates corresponding to two dimensions. There are also cases where the coordinates of the third dimension would be needed from these images as well. These cases also include spinal surgeries. Our presentation presents the data that can be extracted from medical diagnostic images and the transformation of the images to extract the data needed from the third dimension.

**Results:** From the processed medical diagnostic images, the data required for many surgeries can be extracted from 2-dimensional images. These data are stored in images used in medical diagnostics. An algorithm developed for this purpose is required to generate additional data. The developed algorithm is able to extract the searched third dimension data from the available images and present this data to the surgeon.

**Conclusions:** Medical diagnostic images produced in the digital DICOM standard[1] , are suitable for extracting two- and three-dimensional data necessary for a spinal operation. An algorithm specifically designed to help design spinal surgery is able to extract data required for surgery in addition to stored data based on diagnostic images. Two-dimensional images can also be used to produce two-dimensional images that are suitable for depicting a person in a view from which the third-dimensional data required for the operation can be extracted.

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*Acknowledgements:* This presentation supported by GINOP-2.3.4.-15-2016-00003.

*Keywords:* DICOM, medical imaging, surgery, spine surgery

## Opportunistic Maintenance in the Digital Era : Resolving Conflict Between Managerial and Technological Objectives

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Nowadays, manufacturing systems have become more complex due to their complicated processes and their expensive multi-components. This leads to a challenge to maximize the utilization of these multi-components during their lifetime by developing advanced maintenance strategies [1]. Implementing and selecting an optimal maintenance strategy aims at reducing the maintenance costs, in addition, to take into consideration the different dependencies existing between the manufacturing systems' components and the harmony between the production and maintenance systems as a whole [2]. These dependencies might be economical, stochastic and structural dependence [3]. Opportunistic maintenance can be defined as “the combination of corrective and preventive maintenance” [4], or in a more comprehensive definition according to [5] opportunistic maintenance is “a systematic method of collection, investigation and preplanning activities for generating a set of maintenance tasks to act on in the occurrence of an opportunity.” The aims of this study are to conduct a literature survey to investigate, address and align the aspects of opportunistic maintenance that can declare and resolve the conflict between managerial and technological objectives in the manufacturing firms, introduce the tools which might help in finding a good compromise between them, in addition, to characterise the roles of planning and scheduling tasks in this respect to help the decision-makers to adopt such approach to exploit in the best way the time windows that happen to be available during production time. The relationship between the managerial and the technological functions can be depicted through developing a comprehensive maintenance management system. According to Duffuaa and Raouf in [5], the maintenance management system consisted of three major functions, namely planning and scheduling, organizing, and controlling. To conclude, applications of opportunistic maintenance are widely available in the literature, however in the real industry still limited. The implementation of an opportunistic maintenance strategy will result in a smaller number of scheduled shutdowns, increased efficiency and less maintenance costs in return of increased investment in staff training, coordination and planning activities.

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*Keywords: opportunistic maintenance, multi-dependent components, planning and scheduling, maintenance strategies*

## Fracture and fatigue of welded joints based on mechanical investigations

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The history of engineering is replete with many examples of catastrophic failures which have been directly attributed by material fracture. So, what is fracture? During the lifetime, many material structures such as road and railway bridges, oil and gas exploitation platforms (offshore platforms), windmills, and so on are subjected to a high number of repetitive cyclic stresses. Over time, those stresses can cause damage, such as cracks [1]. In general, the accept of cracks and study of its propagation phenomenon is called "Fracture." Welding it considered as the most prone location can be affected by fracture, as it one of the earliest and most used methods for material joint and it affect the material properties by heating, cooling, and combining. However, the fracture assessment during the design and maintenance is inevitable [2].

**Results:** Results revealed that, many parameters (production process, material quality, geometry...) influence the fracture in welded steel, from what make it an insufficiently researched phenomenon, nominal stress it is necessary to be determined in observed location for international standard design, the weld joint issue can be complicated if the if the elements are subjected to multiaxial fatigue, and Fracture mechanics describes the fatigue crack propagation, but it is still unexplored enough that it leaves space for further research, in particular, with multiaxial fatigue assessment and taking into account residual stresses [3].

**Conclusions:** In the present work, we studied the most common fracture assessment methods used for welded steel joints. As we reviewed the peculiarities of fracture critical welded joints and the most important methods for design and fracture life assessment of welded steel structures that are prone to fatigue.

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*Keywords: Fatigue, Weld joints, Material Structure, Fracture Mechanics*

## Cost-benefit analysis of two cycling interventions in Budapest

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Urban transport systems have been under high pressure due to the great number of users that have been growing steadily over the years providing a real challenge for those who need to spend hours in traffic jams and for those who do not but are affected by the emission of gases, noise and accidents.

A large portion of environmental problems stems from the growing use of vehicles, notably those powered by oil products. The result is the degradation of ecosystems, very high levels of atmospheric pollution and consequent changes in the climate. All of these factors end up compromising living conditions on the planet. This has led man to realize that natural resources are not inexhaustible and that we must discuss the current model of development.

Among the causes of global warming, the automobile can be one of the main polluting agents of the atmosphere since the source of its energy is the burning of fossil fuels. In addition to increasing air pollution, excessive motor vehicles can cause stress and other physical and psychological ills in drivers and passengers. Given this, measures have been adopted in some countries to encourage sustainable urban mobility. Among these measures, cycling has been increasingly prioritized as a sustainable mode of transport and can be a powerful agent in the fight against cardiovascular diseases and physical inactivity.

Opting for cycling as a transport mode brings a great number of potential positive outcomes, including increased rates of physical activity, economic benefits and contribution to preserving the environment, once the greenhouse components will not be emitted to the atmosphere.

A very effective way to increase access to biking for visitors and residents of a community without the cost and responsibility associated with bike ownership is public bike-sharing systems. The main objective of bicycle-sharing is to increase and coordinate cycling into transportation frameworks, so it can become an everyday transportation mode.

Investments in infrastructure are important for economic growth and are driven primarily by the public sector. Therefore, decision-makers must choose among many alternative investment choices, including investment in transport. The method of Cost-Benefit Analysis (CBA) can help in making such decisions.

Two scenarios are assessed in this study to assess investments in cycling infrastructure and public bike-sharing development in Budapest. Both cases are compared to the business-as-usual scenario; financial and economic analyses are made to determine the viability of these investments. The first scenario assesses the investment in cycling infrastructure, whereas the second one assesses investment in public bike-sharing system.

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*Keywords:* Urban transport system, bicycles, public bike-sharing system, CBA, financial analysis, economic analysis, monetization of market impacts

## **Prediction of Failure of Ferritic steel using Artificial Neural Network**

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The Gurson–Tvergaard–Needleman (GTN) model, is a robust tool that we use to predict the failure of equipment based on lab specimens, To determine GTN parameters directly we need to consume much time. The direct method to determine the GTN parameters and predict the failure of the materials is finding the correct combination between the experimental and Finite Element results, and the process is to repeat the simulations until the simulation result fit the results found with the experiment. In this paper, we were able to find the GTN parameters for the Compaq test (CT) specimen based on the Notch tensile test in a short time by using the Artificial Neural Network (ANN) approach. The results that we got from this work proves that we can use the ANN as another great tool to determine the GTN parameters and predict the failure of the materials.

**Conclusions:** In addition to the fact that the determination of the right combination of GTN parameters is quite complicated, the use of ANN helped us to determine GTN parameters in a short time, and more studies have to be done in this field to make it applicable in the industrial level.

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*Keywords:* GTN, ANN, simulation

## Survey on retrodirective arrays

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The retrodirective surfaces [1-5] have the exceptional property that the angle of the incident wave and the angle of the reflected wave are identical. This property has been primarily used in radar technology. However, there are recent improvements regarding the retrodirective surfaces that focuses on wearable devices and autonomous driving. Two types of such structures are commonly applied the Van Atta array [1-4] and the Pon structures [5]. The Van Atta arrays are based on the identical path lengths of propagation, while the Pon structures employs active phase conjugation technique to obtain the wave reflection in the required direction. In this presentation, we review the implicit formulas [6] regarding the relation between the excitation phase and the beam direction. Then we summarize the limitations regarding to the interrogation range of the available retrodirective surfaces. This limitation can be attributed to the geometry of the constructor elements (e.g. the size of the individual patch antennas) of the retrodirective surfaces. As another technique phase gradient metasurfaces can be applied as retrodirective surfaces. With properly designed subwavelength unit cells the acceptance angle and the working frequency range may be improved. Further enhancements can be done with synthesizing the phase gradient [8], consequently the interconnections could be completely eliminated.

**Results:** The array factors of the Van Atta arrays are calculated and the limitations of the design are identified. Therefore we proposed using aperture coupled antenna elements.

**Conclusions:** The simulation results are in agreement with those presented in the literature. Novel array elements can be further improve the proposed design with slot feeding.

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*Keywords:* Retrodirective surfaces, Van Atta array, Phase conjugation, Pon array, Phase gradient metasurface

## Data-driven analysis of disruptive challenges in the energy sector

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The energy sector, specially the distribution and energy trader companies are currently undergoing two main transformations: digitization and liberalization. Both transformations bring disruptive challenges on the side of users, technologies, business and legal. [1] [2] [3] [4]

The aim of this presentation is to take a closer look on these challenges and categorize them based on their effects. Moreover the presentation examine the data-intensity of each challenge to determine which problems require the use of data analysis solutions.

To these challenges the required data sets are also collected in this presentation. Using these, it is shown how these data sets can be integrated into a conceptual data model of energy companies, which has been published earlier. [5] Thus, it will be possible to determine later how the new data sets fit into the already established data storage systems and what other data sets can be added for the purpose of data analysis tasks.

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*Keywords: energy sector, disruptive challenges, data analysis, conceptual data model, data sets*



## A comparative study between different Emergency shelter typologies (Temporary houses between past and present)

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Throughout history, architects have played an important role to deliver human needs, including the need to design shelters after natural disasters such as earthquakes and crisis such as wars, which usually causes destroyed buildings and a huge number of people without a home. This study shows the significant role of emergency shelter in helping affected people to restore their typical life activities after a disaster. Despite its importance, the solutions and suggestions of temporary houses that have been used or designed until now do not meet the requirement of a shelter which can cause severe consequences for people and the environment. The main goal of this research is to compare and make an analysis of the effectiveness of various emergency shelters developed by researchers or designers according to different aspects and to identify opportunities for improvements by setting the guideline recommendations which can lead in the future for better shelter construction.

**Results:** In this study, I classified the temporary houses according to different aspects: \*The first classification according to the time response after the earthquake: 1- preparedness plans (tents and tarpaulins) which can be provided to victims just hours after the disaster. 2- Emergency shelter (the Exo shelter, the better shelter, the FEMA trailer) which is a ready-made shelter that can be provided to victims a few weeks to months after the disaster 3- Transitional shelter (the sandbag house, the paper log house) which can be provided to victims a few months to years after the disaster and it can be used for a long term. \*The second classification according to the construction type: 1- Ready-made shelters (tents, tarpaulins, the Exo shelter, the better shelter, the FEMA trailer). 2- shelters constructed in place (the sandbag shelter, the paper log shelter). Also, I compared between different type of shelters: traditional forms such as (tents and tarpaulins) and innovative forms such as (the Exo shelter, the better shelter, the FEMA trailer, the sandbag shelter, and the paper log shelter) according to different aspects: the cost, the construction time, sustainability, cultural and social suitability, the comfort, flexibility and light, possibility of reuse. . . . I found that each type has positives in some aspects and negatives in others, and none of these temporary homes is an ideal shelter. But I think that we can learn from these solutions by moving away from mistakes and combining their positives in order to provide better solutions in the future.

**Conclusions:** Due to climate changing, it's predicted that disasters will continue to happen and as a consequence, the demand for temporary housing will still exist too. Therefore, it is crucial to develop further research on the topic in order to develop effective and successful solutions by mixing traditional knowledge and new technologies.

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*Keywords: Temporary houses, emergency shelters, disaster relief, ready-made shelter.*

## **Physical simulation and mathematical modelization with hardness distribution mapping of SICO test**

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Hot cracks appear when thermal shrinkage together with deformation caused by restraint cannot be accommodated by plastic deformation. This happens during welding to such alloys, which segregate on heating and cooling at near-solidus temperatures, in particular when low-melting and mechanically weak phases form and occur over a wide range of temperatures. To check for susceptibility to the liquation cracking caused by the low-melting, weak phases, hot tensile testing can be used in combination with a thermal cycle resembling that of real welding. This procedure, which can be executed on a Gleeble Thermal-Mechanical Simulator, comprises tensile testing of a number of cylindrical samples at the temperatures below solidus and determining their hot strength and ductility. An alternative to the hot tensile test during the simulated welding cycle is the Strain-Induced Crack Opening (SICO) test. In my dissertation, physical simulation and mathematical modelization of the SICO test (Strain-Induced Crack Opening) on ZF50 steel grade was performed and the results obtained were validated. On the GLEEBLE system, after the cylindrical specimens that made of ZF 50 steel are prepared, and four thermocouples are welded, I performed short heat treatment cycle, heating up with DC current till 1150 °C hold for 2 seconds then cool down to 950 °C which is the temperature of the experiment when the compression is applied. For the mathematical modelization of temperature distribution, the DEFORM finite element program was used, and for validation, I chose parameters that can be measured in both processes. These two parameters were temperature distribution along the samples and grain orientation after deformation.

*Keywords: Physical simulation, mathematical modelization, weldability, hot cracking, simulation, SICO test*

### 3D nyomtatott ortézisek összekapcsolási lehetőségei

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Kutatás célja egy olyan új 3D nyomtatott alkari törések rögzítésére alkalmas ortézis fejlesztése, mely egyénre szabott, sokkal könnyebb súlyú, kényelmesebb, vízálló és egy gyorsabb rehabilitációt tesz lehetővé a klasszikus rögzítő gipszhez képest. Ennek fejlesztéséhez modern a 3D scannelés és 3D nyomtatás technológiáját használjuk. Az új ortézis modellezése parametrikus eszközzel, digitális térben Rhino-Grashopper program segítségével történik. A napjainkig alkalmazott törésrögzítések több szempontból is elavultnak tekinthetők. Sokszor nehéz, hatalmas a mérete és kényelmetlen is. Előnyük ezzel szemben a költséghatékonyság és az alkalmazásuk mögött álló hosszú tapasztalt. A fejlesztés céljai közé tartozik, hogy a személyre szabott ortézisek költségei is reálisak legyenek.

Előadásomban azokat a rögzítési formákat igyekeztem sorra venni, amik alternatívákat jelenthetnek ezen ortézisek kettő vagy akár három darabból álló részeinek összekapcsolásához. A vizsgálat kiterjed az eddig fejlesztett 3D nyomtatott ortéziseknél alkalmazott megoldásokra és más tudományterületeken használt kapcsolási megoldásokra is. A kapcsolatok modellezése szintén parametrikus eszközzel történik, ami már a kiinduló modell kialakításánál is fontos, szem előtt tartandó szempont. Fontos megjegyezni még a szóban forgó ortézisek kialakításánál az egyik legnagyobb megoldandó feladatot, miszerint a törést rögzítő merevítés elemeinek egymáshoz való kapcsolása csak az orvos számára lehet csak oldható és zárható, a páciensnek nem.

Kutatásom eredményeként egy olyan listát szeretnék felállítani, ami a lehetséges megoldásokat tartalmazza, esetleg alternatívát kínál más területekről átvett megoldások használatára. Mindenképp egy irány kijelölése a cél, ami a fent említett kritériumokat figyelembe veszi és lehetőséget biztosít a tovább haladásra.

*Kulcsszavak: 3D nyomtatás, 3D scannelés, ortézis, kapcsolatok*

# **Társadalom- és természetföldrajz**



# **Human and physical geography**

## The situation of the villages near the border in Vas County

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Our study was created in connection with a PhD-thesis which is about the opportunities of the small villages in Vas County to develop. Small villages are those with population under 500. The main question of the study is that what the reason of the growing population in some small villages is, in particular the villages near the border. On the 1 January 2019 there were 136 villages from the 216 settlements in Vas County whose population was under 500. We analysed the changes of the population from 1990 - when the political system changed in Hungary – until 2019, with using census and other data of the Hungarian Central Statistical Office (KSH).

We focused on the group of villages near the Austrian-Hungarian border area and beside that we examined the suburbanization process around the county seat Szombathely. We analysed the 39 settlements which are part of the Szombathely district. Being located close to the border is an important factor regarding the small villages. Another important point is commuting which is very widespread in the border area. Many graduated people commute to Austria and work for higher salary but at lower level than earlier in Hungary.

In the third part of our study, we analysed the villages which are not further than 10 km from the Austrian-Hungarian border. Beside the population change we studied the migration balance, the ageing indicator, the rate of the tax payers and the number of cars among all 42 villages located in the analysed area. During our comparison we used three categories: bigger villages (12) with more than 500 inhabitants, smaller and growing villages (11) with less than 500 inhabitants and smaller and decreasing villages (19) with less than 500 inhabitants.

The smaller and growing villages have the strongest migration balance value but the bigger villages have good values, too. The order was the same when we looked at the results of the ageing indicator. The difference between the values about the rate of tax payers was not relevant for the three groups. Looking at the number of cars the order was the following: smaller and growing villages, then smaller and decreasing villages and finally bigger villages – but their value was even higher than the county's average and much higher than the national one.

**Results:** We compared those 42 villages which are located not further than 10 km from the Austrian-Hungarian border. We found that the closeness of the border has a strong effect on the migration rates of the smaller villages.

**Conclusions:** In Vas county there are two very important factors which could strengthen the growing of the population: closeness of the county seat and mainly for the smaller villages the proximity of the Western border. We could conclude that the impact of the border is the strongest among the smaller villages which attract people from other regions with the opportunity of commuting, appropriate infrastructure and high living conditions for younger couples and families.

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*Keywords:* villages, Vas county, commuting, border, population

## LGBTQ Tourism from the Receiver Perspective. A Study among Hungarian University Students

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**Introduction:** The following research aims to investigate LGBTQ tourism offerings in Hungary on infrastructural and suprastructural levels. Two main questions will be answered: Is there a correlation between existing common knowledge of LGBTQ people and LGBTQ touristic offerings? Secondly, why did not Budapest develop to a typical LGBTQ destination unlike other European capital cities such as Madrid or Berlin?

The present research adds a touristic perspective to existing investigations about the perspective of general social acceptance of LGBTQ people.

The survey was conducted among mostly Hungarian university students or people with university degrees in an urban population. The degree of people with at least a high school qualification was 33%. In terms of age, 88% were between 18 and 39 years old. It should be noted, that 92% of the respondents know at least one LGBTQ person. The survey took place before the coronavirus outbreak in late 2019 and received a total of 912 responses.

**Results:** Overall, by presenting the most important supply elements concerning gay tourism - or LGBTQ tourism, one can get a current snapshot of the actual situation in Hungary. The influencing factors and their roles such as state involvement, politics, non-governmental organizations, marketing strategies, social attitude is also examined. From a legal point of view, Hungary is among the accepting and secure countries, but this is not reflected in everyday life, considering its recent political manifestations and media appearances. A further result is, that the social attitude towards the pride event of Budapest, lags far behind the level of general acceptance. Regarding the responses of the examined sample, the social acceptance of LGBTQ tourists is higher than the level of acceptance, measured in previous sociological research. A possible reason can be traced back to the composition of the sample, and the placement of the issue in a tourist context.

**Conclusions:** Overall, it can be concluded, that the problem is not with social acceptance, but with complex political, cultural and historical reasons. The present research provides an insight into the attitudes of potential LGBTQ tourists, not those living here, but those travelling here. Due to all this, it can be stated that Budapest is not a typical LGBTQ destination at the moment and there are several indications that this will not change in the near future.

*Keywords:* gaytourism, pinktourism, LGBT, LGBTQ, gaygeography, sexualgeography

## Electoral Support of Sweden Democrats: A Spatial Analysis

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The geographical environment has been shown to play a significant role in shaping voter behaviour and party preference, so researchers therefore recommend examining contextual factors also in addition to individual, compositional effects. In this research, I use OLS models (with contextual effects such as ethnic diversity, unemployment rate, and crime data of the Swedish municipalities) to determine which variables influence the electoral support of the radical right Sweden Democrats party. Later I tested the best-fitting model with spatial analysis. The results show that the municipalities where the model underestimates, are clustered spatially (especially in Skåne county) and therefore OLS models are biased. As a possible solution for resolving the spatial dependence, I included the halo effect in the model, which I calculated as the spatial lag of ethnic diversity. To improve the spatial autocorrelation of the model, I used a spatial error model, which eliminates clustering by introducing a new variable. Based on the spatial diagnostics, some variables can be nonstationary, so I made a Geographically Weighted Regression (GWR) and then plotted the individual coefficients on maps.

**Results:** In addition to individual variables, geographical contextual effects also have an impact on the election results of the Swedish Democrats. One such factor is the ethnic diversity of the municipalities, based on the models, the dynamic change in diversity significantly influences the support of the Swedish Democrats. The existence of the halo effect has also been proven, so support for the radical right was also higher in the neighbourhoods of rapidly diversifying municipalities. Due to spatial autocorrelation, it was necessary to introduce a spatial error model. This has eliminated the clustering in Skåne County, and the remaining extreme residuals became spatially dispersed. The GWR model has become the best-fitting model based on the AICc, and apart from education, the other variables have a significant effect only in some areas of the country.

**Conclusions:** In the course of electoral geography studies, in addition to the OLS models, there is also a need for spatial analysis, which makes it possible to get to know spatial processes that significantly influence the results of individual parties. The theory of ethnic competition arising from diversity was confirmed in every model, highlighting the importance of change over time. However, the GWR model shows that the ethnic factor does not have a significant impact on the country as a whole, nor is the sign of diversity's effect stable. Although the difference in Skåne county cannot be defined with an exact variable, the spatial error model can still represent this fact, and the GWR model can help to understand regional processes.

*Keywords: Sweden, radical right, spatial analysis, spatial regression, GWR*

## Visitor's feedback on Study Trails of Bakony-Balaton Geopark

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The regional initiation of Bakony-Balaton Geopark Group has many tourism products, including the latest trends that can find a place on the global market by a well-positioned strategy. Recently, some innovative product types, such as eco-tourism and geotourism calls the most adequate clientele to explore and observe the geological formations of this diverse territory, for that reason, on-site presentation is an essential and inevitable form of experience. The acquaintance of these recreational sites with their natural beauty and added value is essential to create harmony between nature and man.

**Results:** To make a point of view, the task of the geopark is to build and maintain a living conception of sustainable development for present and future generations. The research study concentrates on the visitor's feedback based on their personal observation related to the study trails, viewpoints, and infrastructure. Evaluating the visitor's satisfaction provides a useful perspective for tourism development strategies (e.g. in case of study trails, path reconstructions, protected geological sites).

**Conclusions:** Balaton Uplands National Park can provide a great variety of recreational facilities, where not even nature but also society illustrates the wide range of geodiversity. Geopark's foundation in 2012 was based on nature protection, sustainable tourism, and environmental education. Geotourism, as an innovation helps to explore the non-living geological formations, so it seems to be increasingly involved not only in the scientific literature but also in public perceptions [1]. According to Newsome and Dowling [2], geotourism is a type of nature tourism that focuses on the geology and landscape diversity of a given area. Thus, in addition to the geosite's preservation, management would like to strengthen the geopark-conception through the understanding, promoting, and acceptance of earth sciences [3]. Information panels of various geo-learning trails and viewpoints, guided tours, and other educational activities, as well as visitor centres, contribute to broadening the knowledge of geosciences.

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*Keywords:* Bakony-Balaton Geopark, geotourism, study trail, visitor feedback



## Life Cycle Assessment in Municipal Waste Treatment as a Supporting Tool for GHG Mitigation on City level

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Waste treatment is one of the most complex challenge for a settlement and contributes its GHG emissions significantly. The introduction and application of circular economy need changes in waste treatment technologies and methodologies as well. When searching for new ways of waste management the GHG mitigation issue is unavoidable. Although with limitations, the generally accepted LCA is also suitable for the analysis of complex processes with high material and energy flows, therefore it is a suitable tool for studying municipal waste treatment processes and their possible scenarios.

Using openLCA (v.1.10.2), during the H2020 REPAiR project in the Pécs case we compared GHG emissions (IPCC GWP 100a) of possible scenarios - so called Eco-Innovating Solutions (EIS) - of treating organic waste streams occurring through food trade and consumption as well as to residential and urban green waste generated in the region (Pécs Focus Area) with GHG emissions caused by the current practice.

EIS "Kitchen" aims the separate collection of kitchen waste followed by centralised composting or Anaerobic Digestion. In this solution ca. 5.0E+5 kg of household kitchen waste is planned to be collected separately and composted. Beside this, ca. 3.678E+6 kg of selectively collected household kitchen waste is planned to be transported for treatment into the local Anaerobic Digestion Plant. EIS "MenzaTurbo" is a food waste minimising solution through increasing quality of food offered in canteens of educational institutions. EIS "FoodRescue" is a waste prevention solution and involves the collection of meals and foodstuff suitable for human consumption from restaurants, shops and markets, and allocation to those in need through official charity institutions.

**Results:** The results achieved are well comparable among the EISs and the status quo. In EIS Kitchen, where significant product and / or energy production (saving) occur from the redirected waste due to composting or anaerobic fermentation, GHG emission is reduced by an order of magnitude compared to the current level of emissions. Similarly, the EIS FoodRescue with the waste prevention principle removes 1.39E + 6 kg of food from waste treatment path, shows GHG emission reduction in an order of magnitude.

**Conclusions:** The comparison of the GHG emissions caused by the status quo and the introduction of a solution can be successfully and understandably performed by the life cycle assessment method, therefore it is an objective tool for supporting strategical decisions on GHG mitigation solutions within urban context.

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**Acknowledgements:** This research was conducted as part of the REPAiR (REsource Management in Peri-urban AREas: Going Beyond Urban Metabolism) project funded by European Union's Horizon 2020 Research and Innovation Programme, under grant agreement no 688920.

**Keywords:** *Life Cycle Assessment, GHG mitigation, municipal waste management*

## Urban area monitoring using multispectral satellite imagery

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**Introduction:** The primary purpose of this research was to explore the possibilities of open data and software offered by the European Space Agency, in order to detect rapid urban area changes over a short period of time. The area of interest was Karachi, Pakistan, as it is one of the world's fastest growing cities with a population of nearly 20 million people, stretching over about 3500 km<sup>2</sup>. The conducted work was based on satellite imagery which was obtained by the 13 channel multi-spectral instrument (MSI) of the Sentinel-2 (S2) mission. Due to spatial limitations of the sensor, enhancing the images with spectral indexes was an evident solution in order to achieve any successful classification. After thorough validation the final products gave conclusive and measurable results, showing continuity with statements found in scientific literature about the recent dimension changes, growth rate, and general structure of the city.

**Methodology:** Two image pairs were obtained and processed from 2015 and 2019. After re-sampling, mosaicking and clipping the files, K-means clustering and Random Forest (RF) classification was applied. Substantial validation was carried out with 300 randomly selected points and high-resolution Google Earth Engine data. Further improvements of these intermediate results were implemented by applying the Index-based Built-up Index (IBI) [3], which method takes advantage of three already existing indexes, namely the MNDWI [2], the NDBI [4], and the SAVI [1] respectively.

**Results:** The K-means clustering proved to be the more accurate classification method from the two tested solutions. Reaching accuracy values of 0.92 compared to the 0.85 of the RF, I have calculated the results based on the former method. It showed quantifiable enlargement of the city area, and clearly detected the new expansions over peri-urban areas. During the observed period, the area of Karachi expanded by 14385 hectares of built up area, while for various reasons lost 5185 hectares of it. The detected changes were conspicuous mostly at the outer districts, but I also managed to observe the densification of the inner-city as well. Consequently, the strength of this practice is the detection of new urban expansions. However, I also observed some weaknesses, sparsely occurring at the outer districts, where individual buildings fade into their rural surroundings. Nonetheless, given the spatial resolution of the sensor, the overall results are more than adequate.

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*Keywords:* Remote sensing, urbanisation, Sentinel-2, spectral indexes

## Connate water saturation determination with a mathematical method – in case of Hungarian tight gas reservoir samples

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**Introduction:** The determination of connate water saturation is of paramount importance in the exploration of hydrocarbons. The aim of the publication is to introduce and describe a procedure for connate water saturation determination in case of unconventional reservoir samples from sample preparation to result evaluation. The investigated cores, drilled from Szabadkígyós – 1 well, had a potency to form 20 tight sand samples which gave a strong basis for a measurement protocol and the application of a mathematical method.

**Results:** By using Purcell's [1] method, it has been calculated that the samples have significant connate water saturation which means that the values change between 66 to 94%. Such high values regarding saturation make hydrocarbon production difficult or even impossible. A strong relationship between pore-throat distribution, porosity and saturation has been also shown.

**Conclusions:** Determining connate water saturation of unconventional hydrocarbon reservoirs can be a complicated and challenging task in general, but the introduced method is simplifying the process. It is relatively fast and cheap and gives the possibility to determine saturation not only from prepared laboratory samples, but from drill cuttings also which has an irregular geometry. Such opportunity is important to possess, since coredrilling is expensive, and as a result of this, they are slowly getting barely accessible.

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*Acknowledgements:* The research was carried out in the framework of the GINOP-2.3.2-15-2016- 00010 “Development of enhanced engineering methods with the aim at utilization of subterranean energy resources” project of the Research Institute of Applied Earth Sciences of the University of Miskolc in the framework of the Széchenyi 2020 Plan, funded by the European Union, co-financed by the European Structural and Investment Funds.

*Keywords:* Connate water saturation, Tight gas, Pore-throat distribution, Unconventional reservoir

## Evaluation of detecting landscape peaks in Ethiopia, Tigray region using open-source GIS

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**Introduction and aims:** Observing those peaks gives space to find the possible traces of previous terrain surfaces. By examining the current forms of landscape we gain insight into the changes of the paleoclimate since traces of paleosurfaces still can be found in the landscape appearing as peaks and summits. In order to detect these forms, using openly accessible data and GIS software is a key, throughout providing wide range of mathematical and statistical methods. Knowing that many well-developed traces of previous climate changes can be found on the edges of the Ethiopian Highlands, in this research we approach to detect these forms to better understand the connection between climatic and surface changes.

**Materials and methods:** Based on numerous DEM evaluations [1] the SRTM1 DEM with its 30 meters resolution proved to be appropriate to examine the study area. The research was carried out by the open source GIS softwares therefore r.denoise algorithm was used to filter DEM of the study area then r.geomorphon [2] and r.param.scale [3] modules were utilized to characterise the landscape and detect its positive forms. After that descriptive statistics and histograms were created to evaluate both modules' outcome data. By examining the data's frequency similarly behaving group of peaks can be separated. Finally, terrain and hydrological maps were created to observe the separated groups related to elevation and position.

**Results and conclusions:** According to the statistical results the two modules' outcome data proved to be altering in the respect of the total number of elements however the tendency of the histograms were similar. After random sampling of the outcome data  $r = 0.979$  correlation was calculated. The created maps were examined with visual interpretation thus at least six groups of peaks were easily distinguishable. Also there are several less visible groups on the higher elevation area however those forms are more eroded due to its age and the greater effect of external forces. In conclusion both modules gave analogous outcome. The r.param.scale module proved to be more sensitive in lower altitudes which resulted in unjustified growth of peaks in the corresponding region. While r.geomorphon gave a more detailed depiction of the landscape also it obtained six times more data which in this case, came out to be unnecessary.

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*Keywords: geomorphometry, paleosurfaces, open-source GIS, Ethiopian Highlands, geomorphology*

## Szuburbanizáció és helyi politika – Az új lakosság politikai aktivitásának vizsgálata a budapesti agglomerációban

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Az 1990-es évek óta a szociológusok és a társadalomföldrajz kutatói is figyelemmel kísérik a magyarországi várostérségek társadalmi változásait jelentős mértékben meghatározó folyamatot, a szuburbanizációt. A kiemelt figyelem oka, hogy a folyamat magában foglalja a nagyvárosokon belüli és a várostérségeken belüli térbeli-társadalmi szerkezet változásait és a két terület közti kölcsönhatásokat is.

Ehhez a kutatási irányhoz kapcsolódva a budapesti agglomeráció példáján vizsgálom, hogy a fővárosból kiköltöző lakosság milyen mértékben kapcsolódik be új lakóhelyének politikai életébe. Ezen belül, jelen kutatásban a hangsúly azon van, hogy mennyire jellemző, hogy az új lakosság közül a helyi önkormányzatokba képviselőket választanak. A kérdés a települések fejlődése szempontjából azért fontos, mert a korábbi és az újabb lakosság településről alkotott képe közti különbség ilyen módon a döntéshozatalban és a település fejlődési irányában mutatkozhat meg.

A kutatás során a budapesti agglomerációba tartozó 18, a legutóbbi 2011-es népszámlálás szerint legfeljebb 10 ezer lakosú település képviselőtestületeiről gyűjtött adatok alapján válaszolom meg a következő két kérdést.

1. A rendszerváltás óta hogyan változott az agglomerációs övezet településeinek önkormányzati képviselőtestületeiben a fővárosból kiköltöző lakosok aránya?
2. A szoci-demográfiai jellemzők milyen mértékben magyarázzák e tekintetben a települések közti különbségeket?

**Eredmények:** Az elemzett adatok alapján megállapítható, hogy egyre több olyan település van, ahol az önkormányzati képviselők többségét a beköltözők teszik ki. Ennek oka részben, hogy folyamatosan nagy számú új lakos érkezik a fővárosból az azt övező településekre. Ennél azonban jelentősebb eredménye a kutatásnak, hogy a települések szocio-demográfiai jellemzőivel és azok változásaival nem lehet egyértelműen magyarázni a települések közti különbségeket a szerint, hogy milyen arányban vannak új lakosok az önkormányzati képviselőtestületekben.

*Kulcsszavak: budapesti agglomeráció, szuburbanizáció, önkormányzat*

## Késő-pleisztocén és holocén homokmozgások idejének, valamint a kormeghatározásra használt kvarc frakció OSL érzékenységének összehasonlító elemzése magyarországi futóhomok területeken

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Az OSL (optikailag stimulált lumineszcencia) segítségével a negyedidőszaki homokmozgások vizsgálatánál a homok üledékek képződésének korát közvetlenül meg lehet adni [1]. Azonban a magyarországi futóhomokterületek teljes körű összehasonlító elemzése a lumineszcens koradatok fényében nem történt meg korábban. Emellett a futóhomok mozgások térbeli kiterjedése is kérdéses, mely jól jelzi a klíma mellett az egyes múltbéli kultúrák antropogén hatását is [1]. Az OSL kormeghatározás során vizsgált kvarc szemcsék nem csak a kor, de az üledékes előtörténet vizsgálatára is lehetőséget adnak. Ugyanis az OSL érzékenység, mely az ásványi kristályok egységnyi dózisra adott lumineszcens válaszainak nagysága több esetben is összefüggést mutat a vizsgált üledék származási területével, illetve az üledékes ciklusok számával, azonban befolyásoló tényezőinek jelentősége kérdéses.

**Célkitűzés:** A kutatás célja a homokmozgások kiterjedésének vizsgálata Magyarország területén a késő-pleisztocén és a holocén egyes fázisaiban a fellelhető OSL adatok összesítésével. Emellett a homokmozgási időszakok és az egyes régészeti kultúrák jelenléte közötti kapcsolatok feltárása. Továbbá Magyarország főbb futóhomok területeiről származó minták OSL érzékenységének meghatározása és összehasonlítása, lehetséges összefüggéseinek feltárása a kor, terület és a kvarc kristályok szerkezetének vonatkozásában.

**Módszer:** A vizsgálatok során OSL koradatok felhasználása mellett OSL érzékenység és XRD mérések történtek duna-tisza-közi, nyírségi és belső-somogyi futóhomokmintákon, a kvarc frakció felhasználásával.

**Eredmények:** Az OSL koradatok alapján legnagyobb kiterjedésű homokmozgás a szubatlantikus fázisban történt. A Duna-Tisza-közén és a Nyírségben a holocénben, a Belső-Somogyban a késő-pleisztocénben volt a legintenzívebb áthalmozás. A vizsgált tájegységek közül elsőként a Duna-Tisza-közén, a neolitikum kezdetével, a klimatikus háttérrel szemben az antropogén hatás válik meghatározóvá. Az OSL érzékenység a korról nem, a mintavételi területekkel gyenge kapcsolatot mutatott, míg a kristálytani paraméterek közül a kristályossági fokkal hozható összefüggésbe. Duna-Tisza-közén a minták tengerszint feletti magassága és OSL érzékenysége szintén gyenge korrelációt eredményezett. A kristálytani paraméterek gyenge kapcsolatban álltak a vizsgált területekkel.

**Következtetések:** Az OSL koradatok átfogó képet adnak a homokmozgási időszakokról és azok intenzitásáról. A régészeti kultúrák és egyes homokmozgási időszakok kapcsolata kimutatható. Az OSL érzékenység mintaterületekkel és kristályossági fokkal való összevetése mutat relációt a későbbi kutatások számára, melyekben nagyobb mintaszám bevonása szükséges.

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*Kulcsszavak:* futóhomok, lumineszcencia, OSL, érzékenység, röntgen-pordiffrakció

# **Műszaki kémia**



## **Technical chemistry**

## Synthesis and Characterization of Yttrium doped strontium titanate ( $\text{Sr}_{1-x}\text{Y}_x\text{TiO}_3$ ) nanopowders by sol-gel route.

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Perovskite oxides have been extensively studied due to their wide range of applications in electronics, catalysts and energy storage [1]. Strontium Titanate ( $\text{SrTiO}_3$ ) is a perovskite-type oxide that possesses unique physical and chemical properties such as thermal stability, superconductivity, high dielectric constant and good photocatalytic activity. These properties are highly dependent on the morphology and crystal size and can be further tailored by compositional design, making  $\text{SrTiO}_3$  one of the most adaptable and functional perovskite oxide materials. Recent studies have shown great interest in the cubic morphology of  $\text{SrTiO}_3$  as it provides larger surface areas [2], interfaces, active sites for reactions and act as ideal building blocks for complex device fabrication.

To date, several approaches have been explored to synthesize nanosized  $\text{SrTiO}_3$  particles. Methods ranging from hydrothermal/solvothermal reactions, sol-gel processes to molten-salt synthesis and combustion. Although these methods have been proved successful in the synthesis of nanocubes, the adequate control of the particle size and morphology remains one of the major challenges.

**Results:** In this work the preparation of pure and Yttrium (Y) doped  $\text{SrTiO}_3$  ceramics by sol-gel process is reported. The thermal, structural and morphological properties of the samples were investigated using Thermogravimetric analysis and Differential thermal analysis (TGA/DTA), X-ray diffraction (XRD) and Scanning Electron Microscopy (SEM). XRD results show that the samples are crystallized in the pure perovskite structure when calcined at relatively low temperature (1000 °C) for 3 h, without the presence of secondary phases. The doping composition of Yttrium were set to 0%, 4%, 10%, 15% weight percent. The TGA/DTA analysis shows that the phase formation temperature of Y-doped  $\text{SrTiO}_3$  ceramic is 1000 °C. The Rietveld analysis of XRD data using MAUD Software confirms that the increasing value of Yttrium doping composition will reduce the lattice parameters of  $\text{SrTiO}_3$ .

**Conclusions:** The results obtained show increasing in the lattice parameters and the crystallite size after the doping with Yttrium, Y (4 to 15%)-doped  $\text{SrTiO}_3$  samples can be used in many optoelectronic applications shown better properties.

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Keywords: Ceramics, Sol-gel, doping, SEM



## Effects of alkaline treatments on coconut fiber reinforced biocomposites

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**Abstract:** Recently, natural fiber reinforced composites are becoming popular for the lightweight, biodegradable, and low cost features. Researchers are working with lots of natural fibers [1-3] throughout the globe among which coir is one of the most significant natural fiber [4]. However, the compatibility of natural fiber is a challenging issue that is needed special attentions before producing the biocomposites. There are several physical, chemical, and biological methods of natural fiber treatment. But we have investigated the effects of alkaline pretreatment on coconut fibrous chips and long coir fibers in this research. Later on, multilayered biocomposites were prepared from both types of composites. The mechanical properties have exhibited superior increase into the strength after the treatment of the fibers. The morphological investigations were also performed by using a scanning electron microscope (SEM). This research would provide a better solution towards multilayered sustainable biocomposites from pretreated coconut materials.

**Methodology, Results, and Discussions:** The coir materials were kindly provided by Pro Horto Ltd. (Szentes, Hungary) for research purposes. The coir materials were pretreated by alkaline (5% NaOH) solutions (Equation 1). The treated fiber materials were then reinforced with melamine-urea-formaldehyde (MUF) resins of different concentrations. The thickness of the produced composites was 8 mm. The Siempelkamp hot press machine was used for composites production. The applied pressure was 7.1, 4.7, and 3.2 MPa, whereas the temperature was 180 °C. The mechanical, physical, and thermal conductivities were investigated and found satisfactory.

Coconut - OH + NaOH → Coconut - O- Na + H<sub>2</sub>O - Equation 1

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**Keywords:** Coir fiber, Coir fibrous chips, Pretreatment, Compatibility, Biocomposites

## Hybrid process treatment of industrial wastewater: Optimization of distillation and pervaporation system

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In fine chemical industries, especially in the pharmaceutical industry, production technology generates large amounts of liquid waste and industrial waste solvents. Separation of various organic substances used in industry, such as alcohol, from industrial wastewater is an essential task of environmental protection. The use of distillation and pervaporation membrane is developing rapidly in wastewater treatment as well as water supply. The distillation technique proves to be an appropriate solution in many cases. However, in the case of mixtures with high water content and few volatile components [1], this process is often not cost-effective due to its high steam consumption, and it's also the case of azeotropic mixtures. Hybrid distillation-pervaporation process is an efficient method for the removal or recovery of an azeotrope, volatile organic compounds from aqueous mixture. In this study, the hybrid distillation-pervaporation is introduced as an alternative for the treatment of low-alcohol industrial wastewater [2]. Hybrid distillation process with hydrophilic and organophilic pervaporation membranes is modelled and optimized using CHEMCAD software.

**Results:** It's observed that combination of distillation and pervaporation is suitable for the separation of binary aqueous mixture with low ethanol content. The hydrophilic membrane removes ethanol and water in better purity, but its heat requirements is higher than the organophilic membrane.

**Conclusions:** To summarize our work, the hybrid distillation-pervaporation system was found to be efficient for the separation of the ethanol-water azeotropic based industrial wastewater. It can be obtained two products: ethanol-rich product from membrane and water-rich product from distillation. Thus, it can be stated that in addition to ethanol enrichment, almost pure water can be obtained in parallel as the bottom product of distillation.

*Acknowledgements:* This research was supported by OTKA 128543 and 131586. The research reported in this work and carried out at the Budapest University of Technology and Economics has been supported by the National Research Development and Innovation Fund based on the charter of bolster issued by the National Research and Innovation Office under the auspices of the Ministry for Innovation and Technology.

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*Keywords:* industrial wastewater, ethanol-water separation, pervaporation, hybrid operation, hydrophilic membrane, organophilic membrane

## Technical aspects of medical implants

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An overview on the procedure of creating the right medical implant is discussed in this paper. The focus is on the latest updates in the medical implants industry. The research sheds the light on the materials used in the implants, and it gives a general idea on the manufacturing processes used in the medical field. A brief introduction has been made on the currently used software to perform a simulation study and FEM analysis on the designed medical implants. The optimization of cost and material saved by the topology optimization is also discussed. With all the ideas suggested, the paper concludes the best way to choose or create the medical implant that best fits the patient in need.

**Results:** The main finding of the research is the procedure of preparing the right medical implant. The paper shows the latest methods used to evaluate a good implant or to create a better one. Moreover, it focuses on the effect of the lattice structure of the implant on its endurance by mentioning some of the researches recently made.

**Conclusions:** The technical overview provided by the article states that choosing the right medical implant is dependent on many factors. The procedure for the medical prosthesis should start with choosing the material suitable for the implant in question. Then the design that best fits the patient. When the initial design is ready, here comes the simulation part using one of the software described above to verify the endurance of the implant shape and material. The lattice structure also helps save some cost and ease the manufacturing process.

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*Keywords: topology optimization, lattice, finite element, FEM Finite Element Method*

## **Thermal analysis and simulation of PCM based cooling of Li-ion battery cell**

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The spread of battery energy storage systems (BESS) contributed to the need for accurate estimation for thermal behavior of the battery cells. There are two reasons behind this necessity. The first one is the economic side of the problem, as thermal conditions are closely related to the state of health (SOH), indicating the replacement of an old battery with a new one. The other side of is the safety concerns especially in case of e-mobility applications, since thermal runaway poses a serious threat to the whole system. Therefore, in our paper we briefly overviewed the factors contributing to battery degradation and the possible cooling solutions in case a battery system before our experiments and simulation. The experiments were conducted on a SONY 18650 cell, with constant 2C and 4C discharges in case of different passive cooling method. The analyzed cooling methods were air cooling and PCM-sleeve overlay. The acquired cell temperature results were compared to developed simplified model. Then the simulated results were examined from the point of view of potential e-mobility applications.

**Results:** In our measurements battery with PCM sleeve was compared to air cooling. The results show that with PCM the battery temperature elevation on the surface is less than with air cooling. The simulation results give a fair accuracy, with the advantage of calculation speed.

**Conclusions:** The presented model is suitable for applications where the computational capacity is limited, and the speed of the algorithm is an essentially important criterion. It is possible to use this simulation parallel with a more complex algorithm, where the thermal management system calculates an estimated value as fast as possible to decide whether intervention is necessary or not.

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*Keywords:* Li-ion battery, thermal analysis, battery cooling, energy storage, PCM

## Determination of the shear modulus of PVC coated technical textile for an updated elastic phenomenological material law

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Structural design requires effective models to describe the all-important material parameters in the analysis. Woven technical textiles, which are used for tensioned membrane structures in architectural engineering, have significant geometric and material nonlinearities which are handled in different ways from the micro to the macro level. In textile composite engineering, phenomenological modelling is an effective method to describe the highly nonlinear behaviour of the material on the macro level. However, existing material laws concentrate only on the normal stiffness in the orthotropic yarns and simplify the shear effect because of the two orders of magnitude difference between shear and normal stiffness. To incorporate the shear function into the existing phenomenological model, uniaxial tensile test was carried out in seven different yarn directions between 0°-90° angles. The investigated test strip specimens material were PVC coated polyester fibre.

**Results:** In this study, the shear stress-strain diagrams indicated the same nonlinear characteristic as a previous result of the normal stress-strain diagrams. [1] In addition, the tests have underpinned the orthotropic behaviour of the coated fabrics during loading. Based on the results, an updated phenomenological material model for shear behaviour was introduced with parameters determined by a previously used data fitting method [2].

**Conclusions:** This material law as extension of our elastic orthotropic material law, takes into consideration of the nonlinear behaviour of the yarns and the geometric nonlinearity of the fabric. As it fulfils all the requirements of the constitutive laws, the existence of a strain energy function, the positive definiteness and material objectivity, this new material law can be a useful tool in the advanced structural analysis of textile structures.

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*Keywords:* technical textiles, nonlinear constitutive law, uniaxial test, shear modulus

## Improving the Water Resistivity of Starch by Using Plasticization and Crosslinking as Modification Techniques

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Starch is a widely available renewable biodegradable polymer with properties very poor to replace the conventional plastics for packaging purpose [1]. Modifying starch to improve properties has become a timely issue in response to the environmental pollution restrictions all around the globe [2]. Modification of corn starch was done under plasticization and crosslinking agents glycerol and citric acid respectively. The modification was made under different pH, heat of reaction, curing temperature and time; and slightly different ratio of glycerol and citric acid. Two different techniques of crosslinking were also used. Water absorption, FTIR, DMA, DSC and SEM tests were undertaken to characterize the thin film samples.

**Results:** Samples prepared at 3, 6, and 12 pH to evaluate the influence of pH on the degree of crosslinking shows that esterification of starch molecules is better done at lower pH level. The effect of curing the film samples at 165°C for 10 minutes produces a negative effect on the degree of crosslinking. A sample prepared in a new and innovative method to crosslink the surface of the TPS film immersing it in to a solution of citric acid and alcohol at about 70°C; has shown no significant change in property compared to the uncrosslinked TPS sample. Samples prepared to evaluate the effect of glycerin on the degree of crosslinking resulted that availability of glycerin is a critical factor for the crosslinking and plasticity property of the film. Citric acid has increased the water resistance of starch crosslinking the chains starch molecules and reducing the amount of hydroxyl group.

**Conclusions:** Citric acid has increased the water resistance of starch; crosslinking the chains of starch molecules and reducing the amount of hydroxyl group. The thermal property of the crosslinked starch film samples indicated that the inclusion of citric acid as a cross-linking and/or as impurity has affected to the increase in the melting point of starch films.

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**Keywords:** Citric acid, Crosslinking, Starch, biopolymers

## **Numerical study on flexural buckling behavior of steel hot-rolled section columns under elevated temperatures**

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This paper presents a numerical investigation on the buckling capacity of axially loaded steel columns with hot-rolled I cross-sections subjected to elevated temperatures. To this aim, a geometrically and materially non-linear finite element model using ABAQUS software has been used to determine the buckling resistance of steel columns. The ABAQUS model was validated using experimental results available in the literature. The validated numerical model has been used to generate the database of load carrying capacity of columns with varying model parameters those are the slenderness, the temperature, the residual stress and the material model. The influence of these factors on the load capacity of steel columns subjected to elevated temperatures was evaluated. Furthermore, the simplified calculation formula presented in EN1993-1-2 was verified with the numerical results. Furthermore, the results given by the simplified calculation formula presented in EN1993-1-2 was compared with the numerical results. By this way, new conclusions were drawn concerning the accuracy of the standard formula related to the load capacity of columns subjected to elevated temperature.

*Keywords: Fire design; column; steel; Elevated Temperatures; buckling.*

## Recent third generation advanced high strength steels for the automotive applications

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**Abstract:** The modern vehicles demand a better fuel economy, decrease in ozone harming substance outflows, and superior safety requirements led to a new development of steel grades with higher strength and good formability. Third generation of advanced high strength steels is the next stage for the automotive companies in steel sheets development. The principle concept of third generation of AHSS is to reap the mechanical properties benefits from first and second generation of AHSS at cost neither too high nor too low. The steel industry is currently associated with the development of the third generation (3-GEN) AHSS, where the excellent combination of strength and ductility can be achieved by an employment of the transformation-induced plasticity (TRIP) effect - the transformation of a large amount of metastable retained austenite to martensite during straining. This beneficial phenomenon takes place during forming operations with a global ductility such as deep drawing. The current work reviews the main types of this new generation including quenching and partitioning (Q&P), TRIP bainitic ferrite (TBF), medium manganese, density reduced TRIP ( $\delta$ -TRIP) and nano steels for the modern automotive industry, with emphasis on their main characteristics, processing and applications. Furthermore, the TRIP effect, well known as the main strengthening mechanism operating during straining of this steel group, will be elucidated in detail.

*Keywords:* AHSS, mechanical properties, automotive industry, microstructure



# **Pszichológia II.**



# **Psychology II.**

## Gifted students in Hungary: their satisfaction with life, self-esteem and social background

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**Introduction:** Studying the gifted youth has a rich academic heritage (Terman 1922). Researchers today are interested in the role of social factors in gifted kids' life as well and not only in their intellectual and creative abilities. Gifted education programs are focused on the kids' as individuals, their mental health, their social relations, as well as their skills. In this study selected gifted education programmes in Hungary will be presented, questionnaires are taken from students participating the gifted education programmes.

**Method:** Near demographics questionnaires about their self-esteem (Rosenberg, 2015), aspirations (Kasser and Ryan, 1996), parental bonding (PBI – Parental Bonding Instrument, Parker, Tupling, Brown, 1979) and satisfaction with their life (Diener et al, 1985) were taken.

**Aim:** We wanted to explore the effect of their socio-economic background on their motivation, goals, life-satisfaction. We presumed that socio-economical status (being disadvantaged) has an effect on the measured factors of the gifted students.

**Results:** We found that students from disadvantaged families has the same aspirations, but lower self-esteem and satisfaction with life. It was proven that the sociocultural background, especially the mother's education has an effect on the student's self-esteem and the satisfaction with life.

**Conclusions:** The results support that the sociocultural background of the student, the education of the mother (only the mother, not the father) highly effects the gifted student's self-esteem and satisfaction with life. The study is planned to be longitudinal to measure the long-term effects and relations between these factors.

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*Keywords: gifted education, self-esteem, sociocultural status, satisfaction with life*

## Should you listen to background music? An investigation into the effects of music by comparing real-life and empirical findings

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**Introduction:** Although listening to background music is widespread, there is no clear consensus in the literature about its effects on performance. The effect of background music depends on factors such as (i) the difficulty and nature of the task, (ii) parameters of the music, and (iii) individual differences (in e.g., baseline physiological arousal level). In order to disentangle previous seemingly contradictory findings in the literature, there is a need for a more comprehensive theory that incorporates these factors mediating the effect of music. The present pilot study provides the first step in that direction by investigating people's real-life experiences with background music listening.

**Aim:** The aim of the present study was to explore the scenarios in which people listen to background music, the types of background music they choose, and their reasons for listening to the music. Specifically, the study aimed to increase understanding of the effects of background music by investigating whether people's background music listening habits in real-life align with findings from the literature.

**Method:** The current study was an online survey advertised on social media sites. The survey included 14 multiple answer music-related questions asking about people's background music listening habits in everyday scenarios. In total, 197 participants completed the survey, 43 males and 154 females between the ages of 18 and 62 ( $M = 22.78$ ,  $SD = 6.29$ ), 128 of whom had had previous musical training and 69 who had not. All of the participants reported listening to background music during at least some activities.

**Results:** Results showed that most participants listen to background music during sustained attention or vigilance tasks such as monotonous tasks and driving, and less do during working memory (i.e., WM) tasks such as reading or studying. In fact, out of the 75 people who reported avoiding music during some activities, WM tasks were the most common and almost no one reported avoiding music during vigilance tasks. Secondly, there was a clear difference in the types of music people choose for the different activities: while non-lyrical, slow music was chosen the most often for WM tasks, almost none of the participants chose that for vigilance tasks. Instead, during vigilance tasks they mostly reported listening to a combination of lyrical-non-lyrical and slow-fast music. The reasons for listening also varied; while enjoyment and energising were the two most common factors for vigilance tasks, responses for WM tasks were more heterogenous with task-focus, calming down and getting into the right mood all being equally important factors.

**Conclusions:** This study aimed to explore the scenarios and reasons for listening to background music in real-life. Importantly, the results showed convergence with previous empirical findings suggesting that background music can positively affect attention and performance on simple vigilance tasks<sup>1</sup> but can lead to distractions and decreased performance on WM tasks. In all, these findings highlight the importance of taking the potential mediating factors (the music, the task, the individual) into account when considering listening to background music.

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*Keywords:* music, background, performance, attention

## Group Priming in the Flashnews: The Mobilization of Anxiety through the Consumption of the News

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The focus of the research is the analysis of the mechanism of political communication in Hungary from 2015, through the analysis of the Flashnews (also known as Egy perces hírek). The research gains insight into an aspect of the broad political campaign on migration of previous years. Flashnews are one-minute long news sessions containing four news topics communicating the narrative frames of political communication in a condensed fashion. Due to its rapid pace and sudden appearance in commercial breaks of non-political media products, Flashnews can hardly be avoided by the media consumer. Therefore, its impact is analysed within the theoretical framework of media effect and priming. The research measures the change of attitudes toward migration in an implicit (or pre-conscious) and in an explicit fashion. The departure point of the research is that the broad political campaigns of the late 2010s targeted the emotional and unconscious mechanisms of the recipient audience in order to achieve political mobilization. As a result, migration related associations and knowledge constructs are activated through the Flashnews.

The experimental method of the research examines whether the Flashnews is capable of activating existing associations in relation to migration. The hypothesis of the research is that among people with different demographic and media usage attributes, the fear from the loss of personal security, socioeconomical or sociocultural status, increases the susceptibility of change in political attitude after activation. The demographic data and media usage are measured with a survey as well as the moderating factor on the fear of the loss of security and status. The activation process is triggered with a stimulation. This is the dependent variable of the research and it is calculated from the measured implicit and explicit attitudes before and after the stimulation. The explicit attitude is measured by a survey referring to the humanitarian and securitization debate of migration, while the implicit (pre-conscious) attitude is measured with an Implicit Association Test. The stimulation is a video block consisting of Flashnews topics previously broadcasted in television.

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*Keywords:* priming, Flashnews, political communication, social psychology, experiment

## **Influence of object-relations theory on the development of the Kestenberg Movement Profile**

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The presentation introduces a theoretical research on the foundations of the Kestenberg Movement Profile (KMP) with specific focus on the psychoanalytic and object relations theory tradition in which Judith S. Kestenberg embedded her developmental theory within. Judith Kestenberg developed a complex method of movement observation and analysis that synthesizes elements of drive theory, ego-psychology, self-psychology and object-relations theory [1]. Studying the early writings of Kestenberg and her correspondence with leading professionals in psychoanalysis and infant observation at the time I'm looking to position Kestenberg and the development of the KMP within the dynamic, emergent fields that branched out of psychoanalytic thought between 1950-1980 in the United States. Within the presentation I allude to influences from M. Mahler, D. Winnicott, K. Abraham and Anna Freud on the development of the dynamic theory practice of the Kestenberg Movement Profile. Furthermore in this presentation I attempt to describe notions of object-relations theory like transitional object, good-enough mother and holding [1] and illustrate these notions with examples of somatic interactions between mother and infant through the embodied framework of the Kestenberg Movement Profile. The presentation further discusses issues of intersubjectivity through lenses of the KMP; looking at clashing, matching and affined qualities of movements between mother and infant with emphasis on the role of these early interactions. Within the KMP framework muscle-tension flow is understood to serve self-regulation, needs-satisfaction and drives discharge and shape-flow patterns provide the structure for interactions. Affinity between movement patterns within these subsystems are crucial for development of intrapsychic and interpersonal processes such as stable object relationships and self-formation [2].

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*Keywords: object-relations theory, movement analysis*

## The educational-therapeutic work of August Aichhorn with juvenile delinquents

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The classical psychoanalytic theory was opposed to the concept of Cesare Lombroso's criminal atavism. According to Sigmund Freud, all individuals are born with destructive instincts. Therefore the development of criminal behaviour depends on how successfully the individual can learn to control his instinctual life. In this psychoanalytic perspective, the formation of antisocial personality is rooted in the psychosexual dynamics of the family.

In the late 1910s, Sigmund Freud's idea was introduced into a new educational-therapeutic situation by August Aichhorn, an Austrian educator and psychoanalyst who became the head of the Oberhollabrunn Institute – a reformatory school – in 1918. Aichhorn did not just emphasize the preventive function of proper parental care but also tried to elaborate a new re-educational method based on Freudian psychoanalytic theory. This research focuses on his unique interdisciplinary attitude towards juvenile delinquency which highlighted the advantages and limitations of both pedagogical and psychoanalytic techniques.

Aichhorn's new humanistic approach attempted to balance the power relations among educators and inmates. He concentrated on the subjective narrative of young offenders and interpreted its unconscious meanings instead of punishing them. Case studies with young delinquents also draw attention to the fact that the concepts of normality and deviance are not severely isolable categories, and determined by complex social and economic circumstances.

*Keywords: psychoanalysis, criminal psychology, corrective education, pedagogy, juvenile delinquency, normalization, August Aichhorn*

## What is Psychology as a Science? Difficulties in the Classification of Psy-Sciences

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**Introduction:** Modern psychology and its branches had started to emerge during the 19th century, however, it still struggles to define its own scientific identity. Unlike most disciplines, in psy-sciences there has never been one consensus among professionals on where are the boundaries of the discipline lie, what are the main subject matters of it, what methods are suitable for their research, and what could be those official therapeutic procedures that follow its theoretical results. According to Csaba Pléh, psy-sciences are still fluctuating among natural scientific and human scientific viewpoints. It seems that the most dominant paradigm nowadays had become the cognitive and neuroscientific perspective, therefore the discipline is more committed to natural sciences. Consequentially, present-day psy-sciences seek to define the human being and its behavior primarily through biological aspects rather than social and cultural prerequisites.

However, the status of psy-sciences is questionable, as its subject - the human being and its behavior - is influenced by both physical and societal elements. According to the critiques of the natural scientific perspective, explanations of the behavior that is mainly based on physical factors are incapable of the subtle apprehension of the complexity of our psychic existence if it puts social determinations to the second place. Consequentially, many theoreticians suggest that psy-sciences should put more emphasis on other scientific perspectives, such as sociology, anthropology, critical theory, or even philosophy. While these disciplines have got more speculative methodology than natural sciences, they could help to create a profound picture of our psychic structure. The purpose of the presentation is to analyze the societal, scientific, and therapeutic aspects of psy-sciences from the critical perspective presented above.

**Method:** The presented research has applied a critical psychological view that uses elements from the branches of humanities for its investigation. From this critical perspective, societal, political, and even economic aspects, that are seemingly external to the discipline of psychology, are equally important to the understanding of our psychological functions.

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*Keywords: critical psychology, psychology, psy-sciences, science demarcation, philosophy of science*

## Inconsistency in the *Theaetetus* of Plato

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In my presentation, I am planning to examine the *Theaetetus* of Plato, more specifically, the passages where Socrates explores an important question concerning the existence of false opinion. Socrates sets out herein a three-part examination about the possibility of false opinion. In all three cases, he encounters major difficulties that is why the proof cannot be successful: he cannot explain why we create false opinions. In my view, the reasons why Socrates did not have a correct answer for this question are related to each other in respect of one point. This is a short of “state” in the soul, a problem that necessarily goes together with the argumentation and inseparable from that. In relation to Layne, I will call this problem the problem of the *soul inconsistency*.



## From Theosophy to astrology – Ervin Baktay’s inquiries at the turn of the 20th century

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The aim of this lecture is to present a short historical summary about the connections between Theosophy and modern Western astrology with the aid of the famous Hungarian painter, writer, art historian, orientalist and astrologer, Ervin Baktay’s (1890-1963) biography and relevant works. Baktay started to read books on Theosophy as a child, and in 1909 attended the 5th Theosophical Congress in Budapest [1] which likely had a major impact on his later interest in the culture and religion of India. Although over time his enthusiasm for the philosophical-religious system of Theosophy subsided and he turned his attention more and more toward the roots of Eastern doctrines [2], his openness to esoteric practices remained; he began to practice astrology in 1932 [3], which resulted in a book a decade later: in 1942 “The Book of Astrology” (*A csillagfejtés könyve*) was published and became one of the most popular and most frequently used textbook in Hungary for those interested in learning astrology, and has remained so to this day. Among the authors on which the work is based, Baktay cites several theosophists [4], which is not surprising given that the beginning of modern Western astrology can be linked to figures like Alan Leo (1860-1917), Dane Rudhyar (1895-1985) and Marc Edmund Jones (1888–1980) [5], who were also prominent members of the movement. The fact that Baktay did not prefer the traditional approach to astrology [6] is also evident from the shared goals between him and the mentioned authors: they intended to use the birth horoscope as a means of self-knowledge, more from a spiritual-psychological perspective instead of divination. This lecture attempts to illustrate through the example of Ervin Baktay how people of that time were affected by the various intellectual, religious or pseudo-scientific movements that occurred at the turn of the 20th century as a result of modernization efforts [7], how the growing spiritual interest led to the occurrence of Theosophy, and how the nature of astrological interpretation has changed as a result.

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*Keywords: Baktay Ervin, Theosophy, astrology, The Book of Astrology, 20th century, esotericism*

# **Közgazdaságtan II.**

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## **Economics II.**

## Changes in the pricing patterns on the Danish housing market

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**Introduction:** Based on data publicly available on the Danish housing markets from 2016 and 2017, we looked at the sale process of the property with additional data related to housing market supply and liquidity [1]. In the meantime, the end of 2019 and 2020 brought new challenges in the form of the COVID-19 pandemic, which – without doubt – will have an impact on housing market trends as well. It is interesting to see how the economic cycle and different shocks along the economic cycle may impact the price patterns. In our follow-up study, we examine the behaviour of the seller of the property. We focus on how urbanites perceive the market differently than country folks and how this perception is reflected in the pricing mechanism. With the help of quantitative relationship methods [2], we analyse 2019 Q4 data promoting an evidence-based approach in building knowledge on economic markets.

**Results:** Based on the 2017 and 2018 data, we found that there is a relationship between the initial listing price and the actual sale price. This relationship provided proof that the perceptions of property sellers in urban areas are different from property sellers from rural areas. We quantified the underlying factors which determine the perception of the seller. We found that based on 2019 data, this relationship is still valid. 2020 brought the first signs of changes.

**Conclusions:** The analysis underlines that property markets are dependent on local factors so intensively that we cannot use a one-size-fits-all solution to describe, analyze, or for that matter to regulate them.

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*Keywords:* Empirical analysis, Housing market supply, Seller's perception, Property type, Location of housing, Initial listing price, Actual sale price, Real estate sale process, COVID crisis

## Impossible Trinity and Economic Growth in high-income countries

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**Introduction:** Growth of open economies seems to be influenced by the interaction of the international environment and domestic processes and policies. The empirical relationship between growth and financial measures of openness is often investigated without having achieved consensus in the literature. In the current paper openness is measured by the three different financial variables of Mundell's trilemma: capital account openness, exchange rate stability and monetary policy independence.

**Aim:** The aim of this article was to examine the effect of Mundell trilemma on economic growth in high-income countries.

**Methods:** We have modified the standard growth equation based on the Solow growth model by adding trilemma indexes and run the ordinary least squares regression (OLS) in STATA. The first part of our equation includes a standard set of control variables typically used in the empirical growth models, such as: initial levels of per capita real GDP, average real investment, average level of education and population growth, the data for calculation of variables are taken from Penn World Table 9.1 [1]. The second part of the equation includes our additional variables of impossible trinity such as: average of exchange rate stability index, average of monetary independence index and average of free capital movement index, which were calculated based on findings of Aizenman, Chinn and Ito [2]. We tested the relationship among our variables more formally by estimating 45 high-income countries in the period of 1996-2016, which captures the Great Recession of 2007-2009 and Oil crisis of 2014.

**Results:** All additional control variables of impossible trinity are significant for growth regression. Growth rate of GDP per capita depends positively on the average of free capital movement index, this variable has a high significance (p-value is less than 1%). At the same time, the growth rate of GDP per capita depends negatively on the average of monetary independence index (p-value is less than 10%) and on the average of exchange rate stability index (p-value is less than 10%).

**Conclusions:** The capital openness is associated with higher growth for the high-income countries whereas exchange rate stability and monetary policy independence are not.

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*Keywords:* Mundell's trilemma, Solow growth model, high-income countries, monetary independence, exchange rate stability, free capital movement.

## Establishing a framework to evaluate power exchange liquidity and development

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Liquidity and efficiency are of the most hot-topic regarding the power exchanges. Almost all energy policy measures in the world, and in the European Union affect the issue of energy markets directly or marginally, thereby affecting the liquidity of the market as well.

Liquidity and efficiency are closely intertwined concepts and neither can exist without the other. However, there is a possibility to differentiate them, because while liquidity is a measurable indicator, efficiency is a feature which is a consequence of the high liquidity. Based on the latter statement it is also true that low liquidity results in an inefficient energy market. Thus, it can be said that a market with higher liquidity is more developed and efficient than another with lower liquidity.

**Results:** My goal with this paper is to determine the liquidity of electricity markets according to a novel and complex methodology so that they become comparable with each other. The complex methodology is important because if we evaluate particular energy markets individually, it is difficult to compare them. The liquidity of HUPX DAM, HUPX IDM and HUPX PhF/HUDEX has increased since the launch of these power exchange segments, but in the 2020s we have to prepare the challenge which is based on the renewable integration.

**Conclusions:** The comparison of the energy exchanges is extremely important because European power exchanges can be considered as competing entities. The monopoly of each country's energy exchanges is only guaranteed for a limited period of time, so there will be real competition between power exchanges. For this reason, it is important that power exchanges take appropriate market development measures in order to make the market operate as liquid and efficient as possible and thus gain an advantage in the above-mentioned competition.

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*Keywords: power exchange, liquidity, day ahead market, intraday market, derivative energy market*

## Environmental sustainability in the case of the Veszprém-Balaton 2023 European Capital of Culture programme

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In 2018 Veszprém successfully applied for the title of the European Capital of Culture (ECoC) for the year of 2023 defeating two other Hungarian settlements, Győr and Debrecen. The basic aim of the ECoC project is to highlight the richness of Europe's cultural diversity and to increase European citizens' sense of belonging to a common cultural area. In addition to these, this project also focuses on the sustainability issues. The ECoC programme has serious sustainability requirements for the applicants and for the winner cities as economic, environmental and social sustainability are compulsory elements of the planned programmes and events.

The main of this research is to introduce the environmental sustainability aspects of the Veszprém-Balaton 2023 ECoC programme by carrying out structured interviews among the stakeholders of the project and by creating a content analysis based on the available documentation of the project (e.g. BID Book, application).

The Veszprém-Balaton 2023 ECoC project has already expressed its commitment to the different issues of sustainability as the organizing committee plan to create a special event organization methodology and organizational operation system that will have a long-term positive environmental impact on the stakeholders. Within the framework of it, they will develop a set of criteria that could increase the event organisers' commitments to specific environmental issues during the planning, implementation and monitoring stages [1].

The ECoC programme is a preferred research topic as many researchers deal with it ([2];[3];[4]). Unfortunately, its environmental sustainability impact is a rarely studied area, however there is a big potential in it.

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*Keywords:* ECoC, environment, sustainability, culture

## Health tourism during a pandemic - the impact of COVID-19 in Hungary's health resorts

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One of the most important parts of Hungary's tourism offer is health tourism. A significant part of our health tourism supply is generated by the qualified health resorts and the settlements connected to them. The range of their offer is really wide since that contains spa-, wellness-, and other tourism services. In most of these settlements, it can be said that health tourism plays an important role both economically and socially.

The crisis following the new coronavirus epidemic has had a severe impact on all sectors of the economy, with a significant impact on health tourism and its key sites, health resorts. The travel restrictions introduced worldwide, including Hungary, made the situation of domestic spas difficult, but the pandemic also changed the travel habits of consumers in a short time. The new rules designed to control the epidemic have also brought significant changes to the operation of health tourism providers and the process of producing tourism services.

The research aims to assess and analyse the situation in Hungarian health resorts during the new coronavirus epidemic and its potential future outcomes. A huge part of the health tourism destinations and service providers were closed down or introduced completely new methods of guest catering. With the help of online questionnaires, it was examined how the guests reacted to the new pandemic situation, how they evaluated the measures taken by the service providers and what expectations they had. It was also assessed how guests' travel habits and their preferences for choosing a destination have changed.

The COVID-19 epidemic created a completely new and unknown situation within the field of health tourism. Some of the methods and experiences that have proved their worth in previous years have become inapplicable, and some of the tourists have become insecure about the trip.

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*Keywords:* health resort, health tourism, COVID-19, pandemic

## **The Amazon basin in search of a sustainable development model**

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In 2019, the whole world's attention was focused on Brazil in connection with the forest fires in the Amazon, one of the most important areas of the world in terms of ecological services, biological and cultural diversity. At a time when global public concerns about climate change have peaked, the destruction of rainforests quickly became a global political issue and sparked intense debates about the complex interrelationships between politics, the economy and the environment. Between 2000 and 2010, commercial agriculture accounted for 70% of the destruction of the Amazon forests [1]. Large-scale industrial agricultural production involves deforestation activities such as extensive cattle breeding or the rapid expansion of soybean, oil palm, rice, and corn plantations. Additionally, land speculation, illicit crops, mining (oil, gold, iron, diamonds, cobalt, copper, chromium, etc.) and logging have caused serious environmental damage in the region.

The currently prevalent development model based on the massive exploitation of natural resources needs to be revised and replaced by a sustainable development model supported by innovative and ecologically viable forms of land use. This presentation aims to show the importance of the Amazon basin for humanity, the historical characteristics of human intervention and the problems of the prevailing development scheme in the present, including the negative consequences of industrial farming. Besides, I argue that agroforestry is a type of land use, both ancient and modern, that can offer solutions to the contradictions between economic interests and forest conservation.

This initial phase of my research was carried out using mainly qualitative and analytical methods, using written sources on the historical, sociological, political, and ecological aspects of Amazonian development, complemented by interviews with local South American experts.

**Conclusions:** Despite increased pressure of international public opinion, these countries evidence poor advance concerning the struggle against deforestation and the adaptation of sustainable agrienvironmental models, according to latest data. Current results evidence an insufficient State policy support and inadequate economic regulations in the mentioned countries, in order that agroforestry have a widespread positive impact regarding the efficient and sustainable use of natural resources.

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## **International student mobility and the future of higher education in the European Union – Influential factors of decision on participation among University of Pécs students**

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**Introduction:** International student mobility has become a favourite topic for analyses recently. Defining determinants of participation and making difference between the intension of mobile and non-mobile students serves as a prior aim of this present study. It is organized to explore possible influential factors concerning international student mobility among University of Pécs students at the moment of decision-making about whether to participate or not.

**Aim:** Focus points are selected to demonstrate research questions and answer them. Is there any evidence to illustrate that confident knowledge of foreign language skills encourages students to spend a period abroad? Is it confirmed that better socio-economic background supports students to study abroad? Is it reinforced that international experience as a benefit of mobility programmes makes students to consider participation?

**Method:** Specific reasons behind international mobility participation has been explained with a guide of online questionnaire and research outcomes are provided by 173 University of Pécs students anonymously. The questionnaire includes the relation between the institution and the student, investigates previous international experiences, delivers questions about the linguistic background, concentrates on socio-economic background, collects plan of entering to labour-market and carries out an illustration of some demographical data.

**Results and Conclusions:** Investigation reveals results that confident language skills play a remarkable role of participating in international student mobility programme. Furthermore, it is merely stated that there is a tight connection between a student's socio-economic background and participation willingness. Finally, professional benefits of international student mobility programmes also increase participation.

*Keywords: international student mobility, University of Pécs, Erasmus, motivation of participants*

**Szociológia**

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**Sociology**

## Discoursing Dhaka with Disability and Development

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Sustainable Development Goal 4 (SDG4) is set up with the vision of ensuring inclusive and equitable quality education and promote lifelong learning opportunities for everyone by 2030. Recurrently, Goal 10 aims to reduce inequalities within and among countries under the target 4.a which entitles as “build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all”. This paper aims to recognize the predicament status of special children living in the Dhaka City, Bangladesh in case of institutional learning and how educational institution contribute to their development process. The research was done through qualitative data collection method followed by case study technique. The research area was Dhaka, the capital city of Bangladesh. All the respondents targeted by snowball sampling strategy. The name of the special school institutions and name of the respondents will remain anonymous as this is still a sensitive issue in Bangladeshi culture. The whole research was conducted for 6 months periods based on the time and availability of the respondents.

**Results:** Though recently Bangladesh Government has been showing an increasing attention for the development of persons with disabilities and to work together with the non-governmental sectors through public-private partnership, this research found that it is high time to move in the direction of larger pull-out, teachers, caregivers and other facilitators who need to realize the comprehensive structures of child development as well and how children learn and response to the service providers, to activate a proper monitoring cell over the taken projects and repetitive evaluation.

**Conclusions:** The theoretical notion of Honneth’s Recognition theory is significant in Bangladeshi societies where special children living in the societies are treated as source of maximizing profits (running an institution for financial gain) for some social actors where special children lack at least love, care and respect in their social arena which can never recognize them as deserving citizen of a nation but force them to survive in the society till death. In addition, Honneth’s theory claims that all children living in the same society should be treated both through the horizontal (love, respect and esteem) and vertical relations of recognition for a better society.

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*Keywords:* disability, sustainable development goal, recognition, children, society

## International mobility of students with disability and students with disadvantaged background

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**Introduction:** Internationalisation in Higher Education (HE) holds a strong position in the globalized world [1]. Mobility programs offer a wide range of study, internship and volunteer scholarships to students. The benefits manifested on the personal and institutional level too. Students gain higher foreign language communication skills [2], build multicultural professional network [3] and have advantage on the labour market [4]. Besides, the HE institutions establish international research and scientific cooperation, create knowledge transfer, wider the cultural and economic possibilities [5]. Participation in mobility scholarship is one field where students with special needs are explicitly underrepresented. It is important that students with special needs also have the access and can benefit from the opportunities as their peers.

**Aim:** The aim of the pilot research is to explore a less researched area, the international mobility of a narrow student population, which is currently underrepresented in the Hungarian HE. The target group recognised as students with special needs, the students with disabilities and students with disadvantaged background using the snowball sampling method.

**Methods:** Semi-structured interviews were conducted with students with special needs (n=3) and with professionals from the field of international mobility, higher education (n=2). The questions covered students' motivation for mobility, the application process, travelling, support systems and challenges. In addition, document analysis was performed amongst the relevant institutional documents.

**Results:** Findings show the support systems offer monetary scholarships but other major elements are prerequisite for successful mobility. The existence of supportive family background, appropriate technical conditions (e.g. accessible NEPTUN system), disability-specific services and inclusive environment. Essential element is the institution of peer support in organized and spontaneous ways. Inclusive approach can help students with special needs to dare ask for help and to fellow students to be open to provide assistance.

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## Experience and interpretation of trauma in the individual memory. The shed of Mrs. Szabó.

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Social theories of different knowledges, the social behaviour and several motivations originating from this are dealt by more sciences, like sociology or cultural anthropology. Today memory isn't determined as a storing tool, but the store-house of such kinds of functions which connect to each other. What we name memory nowadays it is a complex, temporal didactics as the view of the philosophy: while life creates such kinds of events which form the future, the present has the roll to form the past all the time.

Present article deals with the question of experiencing and interpretation of trauma within the frames of a dissertation researching work, the goal of the researcher is finding out and analysing that the trauma of suffering connected with the time of crop appropriation in Nyésta in 1950s, how it appears in the memory of individuums who experienced it long time ago, how they inherited the memory pictures for their children, and what kind of motivations have been created by them in their lives.

The field of study case, Nyésta can be found in Cserehát, which area is the most desolated and the most neglected place of Hungary. In the region there are very small villages, it doesn't really have a so-called center, and the biggest problem means the old people, who are supported in a social way by only some sources. Village of Nyésta lies at the brook of Mánta and its population is very aging, presently only forty inhabitants live there. During the six years of researching work it has come to light that most memories of the community originate in the historical events of Hungary, and the people living in the village are not only willing, but very motivated to talk about their memories and have shared them with the anthropologist with pleasure.

The focus of researching method is the context centered research work, namely the researcher carries out every interview more times, while she changes its context, either takes the interviewee to the place, where the told life event used to happen, or ask him/her to tell the story in the circle of other people from the village who also experienced this event. Other researching method is the photo anthropology which can be a good base for recalling memories of the individuums.

**Results:** Result of the reseach workt shows us definitely that life events and stories of 1950s in Hungary have remained in the memory of the old people living in Nyésta, and have had a big effect on the community, motivate them to pass the messages of the suffering and teach their children not to allow anybody to happen again. On the other hand we could say that context changing researching method can help very much with memory researching, it can be a good tool for interviewees to recall the little parts of such life events which they consider a trauma in their lot.

*Acknowledgements:* I would like to express my acknowledgment for Zoltán Ilyés (†), who encouraged me to start doctoral studies with this topic, and supported my activities to assist solving social problems in the aging area of Cserehát.

*Keywords:* memory, identity, context, communication

## A qualitative study of adaptation experiences of Kazakhstani international students in Hungary

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Regardless of recent increasing studies on adaptation of international students in Hungary, there is a lack of clarity on adaptation journey of students, coming from Post-Soviet countries. The goal of the present study was to examine Kazakhstani students' experiences of psychological and socio-cultural adaptation and to explore the underlying concepts and themes. Semi-structured interviews in-depth were conducted with 20 Kazakhstani students and analyzed by thematic analysis to reveal underlying patterns.

**Results:** Overarching themes could be identified within the data in five large topics: (1) challenges and difficulties during adaptation in Hungary, (2) concept of family, marriage and gender egalitarianism, (3) perceived differences among countries, (4) factors influencing social networks, communication and friendship preferences, (5) in pursuit of better opportunities abroad.

**Conclusions:** International students reported that they were frustrated because of the unfulfilled high expectations upon their arrival. The results showed that the first months were vulnerable in terms of having challenges, and difficulties during their adaptations. Difficulties abroad were buffered by the support of family and with interactions with co-nationals in the host country. It was revealed that there were sufficient cultural differences in gender egalitarianism, relational ties, obligations towards family, and differences in cultural values between two cultures. Additionally, it was found that some students faced the difficulties with a new educational system and few of them showed dissatisfaction with respect to their studies. However, despite the language barrier, cultural differences and having challenges in adapting to a new cultural and academic environment, Kazakhstani students stated that they are happy to be in Hungary.

*Acknowledgements:* We would like to thank the Kazakhstani international students who agreed to participate in the study and share their experiences. Our gratitude is also extended to the doctoral consortium at Eötvös Loránd University (ELTE), Hungary, Budapest.

*Keywords:* international students, Kazakhstan, adaptation, gender roles, cultural differences, values, social contact

## Homelessness: A Sociological Perspective on the Pathways of Young Rough Sleepers & Street Children in Nigeria

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**Introduction:** Being a general phenomenon, this research understudies the global conceptualisation of homelessness thereafter, sociologically focusses on the pathways of Young Rough Sleepers and Street Children in Nigeria. Study aims the entry and exit route of Youth homelessness and tries to understand the socio-economic conditions of the Young Rough Sleepers and Street Children in Nigeria. Study conceptualises the phenomenon from the global and local perspective from top to bottom. However, the research's main focus dwells upon the Sociological Perspective on the Pathways of Young Rough Sleepers and Street Children in Nigeria (ages 10-25) as the main case study.

**Method:** The study is qualitatively inclined using primary and secondary data collection methods. Ethnographic field study is applied wherefore, Narrative interviews would be acquired from clients who are either currently homeless or with lived experience of youth homelessness. Relevant experts from NGOs, religious Organisations and government agencies would be interviewed. Grounded theory would be applied for the analysis, memos would be made, themes would be created for easy coding and ATLAS application would be used for data recording.

**Results:** Findings indicates that homelessness is conceptually varied and its nature is often contextualized differently among different nations. Pathways into youth homelessness in Nigeria includes natural disasters, terrorism, religio-cultural Ideology, system failure, eviction, family violence, urbanisation, addiction, insanity and poverty among others. Pathways out of youth homelessness rest upon the supportive shoulder of NGOs, Foundations, Religious initiatives, individual philanthropy and the clients themselves.

**Conclusions:** It is clear that insecurity, natural disasters and religio-cultural ideology, system failure, eviction and violence are the main route into homelessness in Nigeria. Government policies should address these issues and government should collaborate with housing experts, security agencies, social workers and other relevants agencies to finding a lasting solution.

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*Keywords:* young rough sleepers, street children, displaced, roofless, homeless, adequate housing, homelessness

## Értékkutatások a nevelésszociológia tükrében - szakirodalmi áttekintés

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Az értékkutatás a társadalomtudományokban bekövetkező változások hatására az 1980-as években került az érdeklődés középpontjába. A szociológia, kulturális antropológia és a marketing által egyaránt érintett terület, ami a terület interdiszciplináris voltát igazolja [1]. Az értékek mentén alakítjuk az életünket a legapróbb döntésektől kezdve, a fogyasztásunkon keresztül, a mindennapjainkig bezárólag. Az értékrendszer témakörének jelentőségét igazolja, hogy a társadalomban domináló értékhierarchiák „(az iskolán keresztüli közvetítéssel) generációk szemléletét befolyásolják, alakítják vagy éppen meghatározzák” [2]. Durkheim álláspontja szerint a társadalmi értékek és normák átörökítése az intézményes nevelés keretein belül valósul meg [2]. A nevelésszociológia az oktatás-nevelés kérdéseit a társadalmi szerkezetből kiindulva vizsgálja: az oktató-nevelő munka jelenségeit, a belső világukat, így azt mondja a szakirodalom, hogy ez a munka a szocializáció egy intézményesült és szervezett formája [3]. Ebben a folyamatban van szerepe a pedagógusnak, akinek az értékek és a normák közvetítésében van szerepe. A neveléstudomány és a nevelésszociológia közötti kapcsolatot a gyakorlatban való alkalmazás adja és egymásra épülését és jelentőségét az állandó és sokasodó pedagógiai problémák igazolják [2]. Jelen kutatás a nemzetközi szakirodalom releváns munkáinak szintetizálásával az értékfogalmak különböző meghatározásainak ismertetését, nemzetközi összehasonlítását, a módszerek bemutatását, majd a nevelésszociológia keretben való elhelyezését tűzte ki célul. Munkánk során magyar és angol nyelvű, bírálati rendszerű folyóiratok empirikus munkáira támaszkodtunk. A szemlézett kutatásokban alkalmazott adatgyűjtési megközelítéseket, módszereket is vizsgáltunk.

**Eredmények:** A szakirodalom áttekintése alapján főbb témakörökbe rendeztük a felhasznált forrásokat. A feldolgozott szakirodalmak alapján az értékrendszer vizsgálatának meghatározó állomásai az 1970-es évektől: Rokeach-féle, List of Values (LOV), Hartman-féle értékkutatás.

**Következtetések:** A tanulmányok alacsony száma szemlélteti, hogy az értékkutatás és nevelésszociológia összefüggésében alulkutatott területnek számít, mindössze egy-egy jól körül határolható témában találhatunk elemzéseket.

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**Kulcsszavak:** értékkutatás, nevelésszociológia, neveléstudomány, értékrendszer, szakirodalmi áttekintés



## A hazai HIV-gondozás kihívásai

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A Magyarországon kiszűrt HIV-fertőzések, valamint AIDS megbetegedések, és az azzal összefüggésben álló halálesetek száma évről évre emelkedik, annak ellenére, hogy a vírus kezelésének eszközei ismertek és elérhetőek hazánkban is. Tekintettel arra, hogy ezt a folyamatot csak célzott és hatékony prevencióval lehet megtörni, felmerül a kérdés, mennyire hatékony a hazai HIV-prevenció, különösen annak tercier szintje, mint a vírusterjedés megfékezésének, és az AIDS-stádium megelőzésének gyakorlata?

Előadásomban áttekintem a HIV jelenségvilágát, a vírus működését és terjedését, továbbá az érintettek egészségügyi, érzelmi, és szociális állapotára gyakorolt legfontosabb hatásait. Ennek tükrében bemutatom a Magyarországon megvalósuló HIV-gondozás gyakorlatát.

Kutatásom során vizsgáltam a hazai gondozás kialakulását, tartalmát, az ellátásban résztvevő szakmai stáb összetételét, klienstapasztalatait, a HIV-centrumok kapcsolati hálóját, valamint azok jövőképét. A vizsgálat során keresztmetszeti, kvalitatív technikát, az interjú eszközt választottam az információk megszerzéséhez, ezen belül kevert típusú, azaz félig strukturált interjút alkalmaztam. Az interjúk a Magyarországon működő HIV-centrumokat képviselő szakorvosokkal készültek, mint a gondozás gyakorlati megvalósulásáért felelős szakemberekkel. Minden intézményből egy, azaz összesen öt fővel, ezzel lefedve a hazánkban elérhető, HIV-gondozást biztosító intézmények teljes rendszerét.

**Eredmények:** A kapott eredmények ismeretében rámutatok, hogy a hazai gondozás kizárólag a vírus fizikai aspektusai reagál, az érzelmi-, és szociális nehézségek pedig kezeletlenek maradnak, ezáltal nem csak a tercier prevenció eredményességét veszélyeztetve, de a primer prevenció hatékonyságát is kockáztatva.

**Következtetések:** Hangsúlyozom, hogy a jelenleg domináns biomedicinális szemlélet helyett időszerű és szükséges egy bio-pszicho-szocio fókuszú, komplexebb ellátás megvalósítása.

# **Irodalom- és kultúratudományok**

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**Literature and culture**

## Performance as Performativity in the work of Marina Abramović

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Marina Abramović's influence is a remarkable example of performing art, being a pioneer of performance as a visual art form. Since the early 1970s Abramović constantly stepped over the accepted limits of body and explored the complex relationship between artist and audience. In her performances, language, text, and trauma repeatedly played a substantial role. Her performance guidelines are more than just stage directions, but they work as pieces of poetry and imaginary narratives. Performances of Abramović put a strain on referentiality through the reality of her own body, where the essentially unavailable Real projected into the figurative level of artistic images and narratives. Abramović, in her performances, in Walter Benjamin's and Paul de Man's sense of the term, attempts a radical translation. The performance is a framed event (except when the frame is broken by spectators), an activity of pretensions of being art. Its source, however, that background *Setzung*, the one that is translated through a kind of *Übersetzung* into artwork operates through aggressive, death instinct or sexual-erotic but always traumatic body-processes. It has an impossible, antagonistic poetics because the metaphorical intention of understanding, the situation, image projected, the symbolic level of artistic expression always creates an unsuccessful translation as the Imaginary and Real references constantly deconstruct the result, the act of performance. My paper interprets the series of "Seven Easy Piece", a 2005 Guggenheim Museum "re-staged" documentation of early iconic performances from the 1970s. The project radically questioned the possibility of redoing, preserving the "performing art form" which is by nature, ephemeral and always already in the past even if we just are watching it "now". In my lecture, I attempt the deconstructive analysis of the "Seven Easy Pieces" with a mixed-method built on the theories of Jacques Derrida, Paul de Man, and the psychoanalytic formalism of Jacques Lacan.

**Results:** Interpretation of the performances of Abramović and the clarification of the theatrical nature of performance.

**Conclusions:** Abramović works radical reshape the genre of performance, creating a more complex theatrical appearances and also reforming the theoretical understanding of performance.

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**Keywords:** performance, performativity, figurativity, Marina Abramović

## **The Relationship Between Posthumanis, Theatre, and Design**

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The aim of the paper is to interpret the robotic theatre projects under variable disciplines as posthumanism, theatre, and design. Posthumanist projects can also be examined in the fields of design, robotology, and other progressive disciplines, but the appearance of robots in theatrical performances indicates an interpretation of theatrical theory terms, rethinking concepts such as presence, acting, artistic presence, autonomy, performance, and performativity. Contemporary Japanese theatre can be considered a pioneer, but the english based robotic theatre's innovations are also an example in theoretical works. The theoretical experiment is a must because humanoid robots generate questions along with ethical considerations and from the direction of conventional acting. As a result of the technological development, humanoid robots and robotic theatre experiments go beyond the mentioned technological frontiers: how the appearance of lighting has changed the theatrical reception experience is no longer a question, but how non-human actors change theatrical experience and acting.

*Keywords: posthumanis, theater, art, design*

## Nagy Ignác vitái az 1842-es folyóiratok tükrében

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Nagy Ignác 1837-ben jelenik meg elsőként az Athenaeum munkatársai között, s innentől folyamatosan írja tárcáit, életképeit a lap olvasói számára. A megszűnt Világ utódként létrejövő Budapesti Híradó, valamint a Jelenkor melléklapjában, a Társalkodóban is rendszeresen jelennek meg írásai, mindemellett vígjátékait is ebben az évtizedben kezdi írni. Nagy Ignác sokat írt, sok helyen jelentek meg írásai, s jelen előadásomban arra a szűkebb keresztmetszetre kívánok fókuszálni, melyben az 1842-es évben kirobbanó Garay János és Nagy Ignác közötti vita folyik főként az Athenaeum hasábjain, hiszen Garay János – aki inkább a Pesti Divatlap munkatársa volt – néha írt egyszer-egyszer az Athenaeum számára is. Kettejük vitájának fő témájaként szolgált a közös téma, tudniillik az, hogy mindketten a Pest-Budai élet fonákságairól írtak, s viaskodásukat felhasználták saját maguk hírnevének növelésére is. Vitájuk fő témája így tehát a plágium tárgyköre, Garay megtámadja Nagy Az Athenaeum hasábján megjelent (1842/I./54. sz.) *A' házi úr* című életképét, melyhez állítása szerint az ő, néhány nappal korábban megjelent azonos című írását használta fel (Pesti Divatlap 1842/I./34. sz.). Témám tehát a kettejük között húzódó vita feldolgozása, s arra tett kísérletem, hogy egy nagyobb kontextusban is értelmezhetővé váljék.

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*Kulcsszavak:* Nagy Ignác, életképek, tárca, vita, Garay János, Athenaeum, Regélő Pesti Divatlap, reformkor

## A kizárólag vidéki intézményekben megtalálható kéziratos énekeskönyvek szentekről szóló szövegei

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Eddigi kutatásaim során a 17–18. századi magyar nyelvű népénekekben megjelenő szenttisztelettel foglalkoztam, és a munka során világossá vált, hogy a választott téma feldolgozásához elengedhetetlen olyan kéziratos gyűjtemények vizsgálata is, amelyek kizárólag vidéki könyvtárakban és levéltárakban érhetőek el. Előadásom fókuszába ezeket az énekeskönyveket állítom, és elsősorban arra keresem a választ, hogy milyen arányban szerepelnek bennük olyan szövegek, amelyek semmilyen más korabeli kéziratban vagy nyomtatványban nem olvashatóak.

**Eredmények:** Az általam meglátogatott intézmények, az Egri Érseki Levéltár, az Esztergomi Főszékesegyházi Könyvtár, a Sárospataki Református Nagykönyvtár és a Váci Egyházmegyei Könyvtár eddig feltáratlan népénektárai mind a 18. századból valók. A helyszínek kiválasztásában *Az 1800 előtti magyarországi katolikus népénekek és énekeskönyvek bibliográfiája* [1] nyújtott segítséget, amelynek egyes tételeinél már az énekeskönyvek címéből látható azok megkerülhetetlensége. Az autopszián alapuló tanulmányozásuk során beigazolódott, hogy nem elhagyható ezek ismerete sem; annak ellenére, hogy a témához kapcsolódó tudományos munkák a legtöbb esetben csak a Budapesten hozzáférhető anyagra támaszkodnak.

**Következtetések:** A szentekről szóló szövegek sokszínűsége és variabilitása rámutathat olyan szövegtörténeti folyamatokra és vallásantropológiai sajátosságokra, amelyek – kifejezetten a kéziratokra koncentrálna – újszerű eredményeket hozhatnak. A régi magyar énekkincs teljesebb feltárásához és a korabeli vallásos lelkület megértéséhez közelebb vihet, ha az unikális szövegek felé kétféle irányból, a konkrét szentek, valamint az énekeskönyvek felől közelítünk, mivel egy adott szent tiszteletét más megvilágításba helyezheti, ha sok párhuzamos előfordulás nélküli szöveget lehet róla regisztrálni, de egy énekeskönyv jelentőségét is felerősítheti tartalmának nagymértékű egyedisége.

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*Kulcsszavak:* népének, népnyelv, kézirat, 18. század, szenttisztelet

## Játékos irodalomtanulás kooperatív projektmunka keretében

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Napjaink pedagógiai gyakorlatában kiemelt fontosságú tényezőként jelenik meg a különböző munkaformák alkalmazása a tanulók aktív részvételének növelése, megfelelő motivációinak kialakítása és fenntartása, valamint a nevelési-oktatási célnak való minél hatékonyabb megfelelés érdekében. Gyakran kerül említésre a pedagógiai diszkurzusban a kooperatív csoportmunka és a projektoktatás is, melyek implementálása a tanítás folyamatába innovatív megoldásokat, néha a tanórai kereteken is túlmutató energiabefektetést követel meg diáktól és tanároktól egyaránt. Előadásomban e két eszköz összekapcsolásának egy lehetőségére, a csoportos projektmunka pedagógiai folyamatban történő hasznosíthatóságára teszek kísérletet egy hatosztályos gimnázium hetedik osztályában magyartanárként megalkotott és végigkísért, Petőfi Sándor életművéhez kapcsolódó társasjátékprojekt bemutatásán és értékelésén keresztül.

A Petőfi-életmű tárgyalása a hatosztályos gimnáziumi képzésen kétszer is előkerül, először hetedik, majd tizenegyedik évfolyamon, a tananyag mennyisége és az életmű vizsgálatának fókuszja ennek megfelelően más-más helyre kerül, az elvégzett projekt hetedikesek számára nyújt több lehetőséget a téma élményszerű és kreatív feldolgozására, lezárására.

A projekt célja egy szabadon választott társasjáték elkészítése, mely kapcsolódik a Petőfi-életműhöz (megjelennek benne a tanórákon tárgyalt témák és tartalmak: rövid életút, tájversek, az 1848-as szabadságharchoz kapcsolódó adatok és költemények)

A projekt célja továbbá, hogy a diákok kreatív, játékos módon összegezzék a Petőfi-életműről tanultakat, a saját készítésű társasjátékok kipróbálásával a tanegység lezárását az élménypedagógia és a játékosítás/gamifikáció gyakorlata hatja át, ezáltal a tanulók pozitív attitűdöt alakíthatnak ki még az olyan kanonikus, talán már nehezebben megközelíthető témák tanulása iránt is, mint Petőfi Sándor életműve.

**Eredmények:** A projektben két, hetedik évfolyamon tanuló osztály 16-16 diákja vett részt, osztályonként 4-4 csoportban készítve közös társasjátékot. Az elkészült projekt munkák többsége kreatív ötletre épült (meglévő társasjátékok aktualizálása, átdolgozása), kivitelezésük aprólékosága és esztétikai minősége híven tükrözi a projekt elkészítésébe fektetett munka mennyiségét, a tanulói motiváció magas fokát. A diákok reflexiói is megerősítik azt a korábbi sejtést, hogy az élménypedagógia és a játékosítás alkalmazása pozitív hatással van a tanulók tanegység iránti motivációjára.

**Következtetések:** A kooperatív csoportmunka során a diákok jobban bevonódnak a közös termék létrehozásának folyamatába, mint a hagyományos tanórai feladatok elvégzésébe. A csoportmunka teret ad a differenciált oktatásnak a tanulók egyéni lehetőségeihez és képességeihez igazított részfeladatok elvégzésével. Az elvégzett projektmunka – bár időigényes, és megvalósításában meghaladja a tanórai foglalkozások kereteit – az ismereteket élményszerű módon rendszerezi, elősegíti a diákok közötti interakciók révén a hatékonyabb szocializációt, elmélyíti a munkamegosztás és a közös célért tevékenykedés fontosságának tudatát.

*Kulcsszavak:* irodalmi nevelés, műveltségközvetítés, projektmunka, kooperatív csoportmunka, gamifikáció, élményközpontú irodalomtanítás

## Sikermutatók vizsgálata a Nép Barátja című néplapban

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Kutatásom magában foglalja a Nép Barátja (1848–1849) című néplap megszületésének, működésének és bukásának körülményeit. A kérdéskörhöz kapcsolódó tényezők vizsgálatát a sikeresség mutatóinak figyelembevételével vetem össze, valamint az 1848–1849-es éra politikai helyzetének beemelásával fogom tágabb kontextusba helyezni [1]. A Nép Barátja tanulmányozása több más tényező mellett azért vált elsődlegessé, mert a politikai eseményeket mutatta be, tükrözte és magyarázta a köznépek. Ezek a tényezők például a lap működésének időszakában zajló történelmi események sodra, a lap tematikáját alapvetően befolyásoló Vas Gereben és a szerkesztői feladatokat ideiglenesen vállaló Arany János ellentétes és egyre élesedő viszonya, a népies nyelvről és stílusról vallott nézeteik különbsége, a lapnak az adott időszak politikai propagandájában vállalt szerepe stb. [2].

A lap sikerességének mércéjét kvantitatív és kvalitatív kutatások, a megjelent cikkek tartalom-elemzésén alapuló vizsgálatok alkalmazásával kívánom bemutatni, amely a fennálló magyar kormány által közvetíteni kívánt nézőpont, és a lap közvetítette hírek összevetését foglalja magában. Célom olyan teljességre törekvő kutatás, amely nemcsak a sajtótörténet, de a történelem, a politika- és az irodalomtörténet tudományterületeit tekintve is egy meghatározó kép kialakítására törekszik a korabeli sajtó és a hatalom együttműködésének sikerességi mutatóit vizsgálva [3].

**Eredmények:** A sikeresség vagy sikertelenség mutatóit a választott sajtóanyagra összpontosítva kívántam összegezni. Ez alapján ideértendő a hatalom és az adott orgánum kapcsolata, a hatalom által kiadott intézkedések és/vagy jelentős események lapokban történő megjelenítése, terjesztése, propagálása, a népek szoló tolmácsolás, illetve ezek megítélése a korabeli források alapján. Lényeges a lapokban közreműködő szerkesztők kapcsolati hálója s közmegítélése is. Eszerint rendkívül érdekes például Vas Gereben szereplése, aki a magyar kormány intézkedéseit értelmező Nép Barátja mellett olyan orgánumokban is publikált, mint például az inkább radikálisabb irányt követő Marczius Tizenötödike. Kutatásomban fontos volt a sikerességet-sikertelenséget megőrkítő, igazoló és bizonyító anyagok felkutatása, rendszerezése és értelmezése a megjelent cikkekben, korabeli lapokban, (magán)levelezésekben, pénzügyi kimutatásokban stb. A kapott adatokat össze lehet vetni a nem túl sok mentalitástörténeti és olvasásszociológiai vizsgálatokkal is. Az említett néplap keletkezésének, működésének, majd megszűnésének körülményein és bemutatásán át a lap tulajdonképpeni sikertelenségének okait, magyarázatait analízáló kutatást végeztem.

**Következtetések:** Ezeket a – reményeim szerint – teljesen új és ismeretlen alap kutatási eredményeket lehet rávetíteni és összeolvasni a siker kutatás elméleti kérdésfeltevéseivel, majd megadni saját értelmezésemet, mely mind a XIX. századi irodalomtörténet, mind a XIX. századi sajtótörténet, mind a tömegkultúra- és hálózat kutatás eredményeit gazdagítja.

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*Kulcsszavak:* Nép Barátja, sikerkutatás, Arany János, Vas Gereben, sajtótörténet



## Látványtörténetek – Térszerkezetek Bodor Ádám A részleg című művében és annak filmes adaptációjában

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Bodor Ádám prózateri elsősorban azért kaphatnak poétikai relevanciát, mert a szituációk és a szereplők leírásának variációs ismétlődéseivel szemben egységes topográfiai képet nyernek. A művek esetében nem csak arról van szó, hogy a deskriptív részek megszakítják a cselekményt, hanem hogy a nem identikus iteráció által újra és újra szerveződő történetcsírák, fabulamorz�ák mellett a szenzuális ábrázolások, erős plaszticitással rendelkező sűrű képek által megkonstruálódó tér(kép) az, ami cselekménnyé, (látvány)történeté lényegül át. Tértörténetről azért beszélhetünk a Bodor-próza esetében, mert a táj nem pusztán a melléknevek sűrű szövedékéből tör elő, hanem az ige vagy a melléknévi igenév vizualitásában fejeződik ki, a képvilágban kifejezést nyerő érzékszervi ingerek olykor cselekménybonyolító mozzanataként jelentkeznek. Bodor képei ezáltal nem pusztán „látszanak”, hanem megtörténnék.

Tanulmányomban azt vizsgáltam, miként konstruálódnak meg ezek a látványtörténetként leírható terek Bodor Ádám A részleg című művében, s hogy ezek milyen viszonyban állnak a Gothár Péter által rendezett A részleg című Bodor-adaptációjával, a szerző látványpoétikája milyen filmnyelvi megoldásokat hív életre, mennyiben és milyen eszköztár segítségével képes megteremti az irodalmi művek nyelvi mibenlétének filmes transzformációját, újraalkotni inhereens jellemvonásait.

Az adaptációk elemzése a film és tér kapcsolatát kifejezetten a filmnyelv működésének szintjén vizsgálja, és arra keresi a választ, miként jönnek létre, milyen eljárások révén konstruálódnak a filmelbeszélés során a cselekmény terei. Mivel az adaptációk elemzését alapvetően a filmes kifejezőeszközök működésének felfejtése érdekli, ennél fogva a térképzés elemzése gyakran kapcsolódik össze az időkezelés problémáinak vizsgálatával, valamint, hogy miként mozgósítja a film a tér érzékelését és felfogását a történetmesélés, a dramaturgia céljaira.

**Eredmények és következtetés:** Gothár Péter A részleg című filmje Bodor Ádám novellája nyomán ugyan kísérletet tesz eloldódni a reáliáktól, elvonatkoztatott képekkel az út belső megélési folyamatát, az utazás metaforikus dimenzióját hangsúlyozva, a „lebegő tér” konstruálása azonban nem járhat teljes sikerrel, hiszen ahol nem egy konkrét társadalmi környezet történelmi vagy politikai bemutatását keresi, a környezet ott is erős társadalmi miliőt idéz föl. A filmben megragadott terek eleve társadalmi sajátosságokkal bírnak, s ekképp lépnek be a filmbe. A film így nem csupán a novella sűrű képeit, elhallgatásaiban rejlő feszültséget, de a Bodor-szövegekre jellemző heteronóm jelentéspotenciált sem volt képes vászonra fogni.

*Kulcsszavak: adaptáció, film, komparatív elemzés, térszerkezet, látványtörténet*

# **Interdiszciplináris természettudományok**



# **Interdisciplinary natural sciences**

## Closure and Interior Operations in Relator Spaces

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A family  $\mathcal{R}$  of relations on a set  $X$  is called a relator on  $X$ , and the ordered pair  $X(\mathcal{R}) = (X, \mathcal{R})$  is called a relator space. Relator spaces of this simpler type are already substantial generalizations of not only ordered sets and uniform spaces, but also topological, closure and proximity spaces [4].

As it is usual, for any  $x \in X$  and  $A \subseteq X$ , we write

- (1)  $x \in \text{int}_{\mathcal{R}}(A)$  if  $R(x) \subseteq A$  for some  $R \in \mathcal{R}$ ;
- (2)  $x \in \text{cl}_{\mathcal{R}}(A)$  if  $R(x) \cap A \neq \emptyset$  for all  $R \in \mathcal{R}$ ;
- (3)  $\text{res}_{\mathcal{R}}(A) = \text{cl}_{\mathcal{R}}(A) \setminus A$ .

Moreover, we may also naturally define

- (4)  $\mathcal{T}_{\mathcal{R}} = \{A \subseteq X : A \subseteq \text{int}_{\mathcal{R}}(A)\}$ ;
- (5)  $\mathcal{F}_{\mathcal{R}} = \{A \subseteq X : \text{cl}_{\mathcal{R}} \subseteq A\}$ ;
- (6)  $\mathcal{E}_{\mathcal{R}} = \{A \subseteq X : \text{int}_{\mathcal{R}}(A) \neq \emptyset\}$ ;
- (7)  $\mathcal{D}_{\mathcal{R}} = \{A \subseteq X : \text{cl}_{\mathcal{R}}(A) = X\}$ .

**Results:** By using the arguments of Kuratowski [2] we prove that if  $\mathcal{R}$  is a topologically filtered relator on  $X$  to  $Y$ , then for any  $A, B \subseteq Y$  we have

$$\text{cl}_{\mathcal{R}}(A) \setminus \text{cl}_{\mathcal{R}}(B) = \text{cl}_{\mathcal{R}}(A \setminus B) \setminus \text{cl}_{\mathcal{R}}(B)$$

Moreover, if  $\mathcal{R}$  is a topologically filtered realtor on  $X$ , then for any  $A, B \subseteq X$  we have

$$\text{cl}_{\mathcal{R}}(A) \cap \text{int}_{\mathcal{R}}(B) \subseteq \text{cl}_{\mathcal{R}}(A \cap B)$$

Furthermore, by modifying an argument of Levine [1] we also prove that if  $\mathcal{R}$  is a nonvoid, topological relator on  $X$ , and  $A \subseteq X$  such that  $\text{cl}_{\mathcal{R}}(U) = \text{cl}_{\mathcal{R}}(A \cap B)$  for all  $U \in \mathcal{T}_{\mathcal{R}}$ , then

$$A \in \mathcal{D}_{\mathcal{R}}$$

In addition to the latest result, we also prove that if  $\mathcal{R}$  is a topologically filtered, topological relator on  $X$ , then for any  $U \in \mathcal{T}_{\mathcal{R}}$ , we have

$$\text{res}_{\mathcal{R}}(U) \in \mathcal{F}_{\mathcal{R}} \setminus \mathcal{E}_{\mathcal{R}}$$

**Conclusions:** We show that some basic facts on interior and closure operations can be much better treated in relator spaces than in generalized topological and closure spaces. The above results are under publication in a joint paper with Themistocles M. Rassias and Árpád Száz [3].

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*Keywords:* Generalized uniformities, interiors and closures.

## Solutions of a Generalized Markoff Equation in Fibonacci Numbers

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The Diophantine equation

$$X^2+Y^2+Z^2 = 3XYZ$$

in positive integers  $X \leq Y \leq Z$  is called the Markoff equation, which may was deeply studied by Markoff [2] demonstrating a relationship between its integer solutions (so-called Markoff triples) and Diophantine approximation. He obtained many interesting results related to the Markoff triples. He showed that there are infinitely many Markoff triples, which can be generated from the fundamental solution (1,1,1) and the branching operation presented by  $(X,Z,3XZ-Y)$  and  $(Y,Z,3YZ-X)$ . This equation has been generalized by several authors. For instance, Rosenberg [3], studied the integral solutions of the equation

$$AX^2+BY^2+CZ^2 = DXYZ$$

This equation is often called the Markoff-Rosenberg equation. The Markoff-Rosenberg equation was generalized by Jin and Schmidt [1] in which they determined the solutions  $(X,Y,Z)$  in positive integers of the equation

$$AX^2+BY^2+CZ^2 = DXYZ+1$$

Jin and Schmidt showed that the latter equation has a fundamental solution if and only if

$$((A, B, C, D) \in \{(2, 2, 3, 6), (2, 1, 2, 2), (7, 2, 14, 14), (3, 1, 6, 6), (6, 10, 15, 30), (5, 1, 5, 5), (1, b, b, 2b)\}, \text{ with } b \text{ is a positive integer.}$$

**Results:** In this talk we focus on investigating the solutions of the Jin-Schmidt equation for which  $(X, Y, Z) = (F_I, F_J, F_K)$  where  $F_n$  denotes the  $n^{\text{th}}$  Fibonacci number for any integer  $n > 1$ .

**Conclusions:** Our technique is very successful to study such special solutions of any Diophantine equation of the form

$$AX^2+BY^2+CZ^2 = DXYZ+E$$

for certain non-zero coefficients.

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*Keywords:* Markoff equation, Fibonacci numbers

## Topological loops having solvable Lie groups as their multiplication groups

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A set  $L$  with a binary operation  $(x, y) \rightarrow x \cdot y : L \times L \rightarrow L$  is called a loop if there exists an element  $e \in L$  such that  $x = e \cdot x = x \cdot e$  holds for all  $x \in L$  and for each  $x \in L$  the left translations  $\lambda_x : L \rightarrow L, \lambda_x(y) = x \cdot y$  and the right translations  $\rho_x : L \rightarrow L, \rho_x(y) = y \cdot x$  are bijections of  $L$ . A loop  $L$  is proper if it is not a group. The permutation group  $Mult(L) = \langle \lambda_x, \rho_x : x \in L \rangle$  generated by all translations of  $L$  is called the multiplication group of  $L$ . The stabilizer of the identity element  $e \in L$  in  $Mult(L)$  is called the inner mapping group  $Inn(L)$  of  $L$ . T.Kepka and M. Niemenmaa gave a purely group theoretical criterion for a group  $G$  to be the group  $Mult(L)$  of a loop  $L$  (cf. [2]): A group  $G$  is isomorphic to the multiplication group of a loop  $L$  if and only if there exists a subgroup  $K$  such that the core of  $K$  in  $G$  is trivial and there are left transversals  $A, B$  and  $K$  in  $G$  such that for every  $a \in A$  and  $b \in B$  one has  $a^{-1}b^{-1}ab \in K$  and  $G$  is generated by  $A \cup B$ . In this case the subgroup  $K$  is the group  $Inn(L)$  of  $L$  and the transversals  $A$  and  $B$  correspond to the sets of left and right translations of  $L$ , respectively.

A loop  $L$  is called topological if  $L$  is a topological space and the binary operations  $(x, y) \rightarrow x \cdot y, (x, y) \mapsto x \setminus y = \rho_x^{-1}(y), (x, y) \mapsto y / x = \lambda_x^{-1}(y) : L \times L \rightarrow L$  are continuous. We study connected topological loops having a Lie group as the group topologically generated by their group that does not have a natural (finite dimensional) differentiable structure. The condition that the group  $Mult(L)$  is a Lie group gives a strong restriction for the group  $Mult(L)$  and also for the loop  $L$ : For every proper 1-dimensional connected topological loop  $L$  the multiplication group  $Mult(L)$  has infinite dimension. If the multiplication group  $Mult(L)$  of a 2-dimensional connected simply connected topological proper loop  $L$  is a Lie group, then it is an elementary filiform Lie group of dimension  $n \geq 4$ . Such a loop  $L$  is called an elementary filiform loop.

In this paper we wish to describe the structure of the solvable Lie groups which are the multiplication groups  $Mult(L)$  for 3-dimensional connected topological loops  $L$ . In particular we find the solvability of the multiplication group  $Mult(L)$  of  $L$  forces that  $L$  is classically solvable. Moreover,  $L$  is congruence solvable if and only if either  $L$  has a non-discrete centre or  $L$  is an abelian extension of a normal subgroup  $\mathbb{R}$  by the 2-dimensional non-abelian Lie group or by an elementary filiform loop. We determine the solvable Lie groups of dimensions  $\leq 6$  which occur as the groups  $Mult(L)$  for 3-dimensional loops  $L$  and we show that these loops are centrally nilpotent of class 2.

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*Keywords: topological loop, multiplication group of a loop; classical and congruence solvable loop; solvable Lie group; abelian extension*

## Nonadiabatic tunneling in plasmonic photoemission

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Our work investigates strong-field processes in the vicinity of nanostructures with characteristic size of a few hundred nm. In particular, we use few-cycle laser pulses from a Ti:sapphire femtosecond laser oscillator to excite localized surface plasmons on different gold nanoparticles. Such nanoparticles can localize the light field to nanometric volumes, while also enhancing the fields strength. We determine the enhancement by measuring the kinetic energy spectrum of the electrons that are photoemitted from the surface of the nanoparticle as a function of incident laser intensity [1]. From the shape of the energy spectra, and the retrieved field enhancement values, we are able to follow the transition between two regimes: the first is characterized by multiphoton emission, while in the second (at higher intensities), tunneling of the electrons through the potential barrier distorted by the laser field is more pronounced. There have been studies of these two emission regimes for select systems, but little is known about the transition region between them.

**Conclusions:** Upon increasing the laser intensity, the photoelectron spectra develops a characteristic plateau region. The plateau contains electrons accelerated in the laser field and rescattered from the surface of the nanoparticles, a phenomenon that is switched on by increasing the intensity. Calculating the field enhancement enables us to pinpoint the transition intensity and calculate its corresponding adiabaticity (Keldysh) parameter. The transition behavior of the electron spectra, the acquired field enhancements and the Keldysh value [2] for the transition are in good agreement with numerical calculations.

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*Keywords: light-matter interactions, plasmonics, ultrafast phenomena*

## An Analogue of a Theorem of Steinitz for Ball-polyhedra in $\mathbb{R}^3$

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**Introduction:** A *ball-polyhedron* is defined as the intersection of finitely many but at least three closed unit balls in  $\mathbb{R}^3$  with non-empty interior [1]. A ball-polyhedron in  $\mathbb{R}^3$  is called a *standard ball-polyhedron* if the intersection of any two faces is either empty, or one vertex or one edge, and every two edges share at most one vertex [2].

A fundamental result of Steinitz (see, [3]) states that a graph  $G$  is the edge-graph of a 3-dimensional convex polytope if and only if  $G$  is simple, planar and 3-connected. In [4], it is shown that the edge graph of any standard ball-polyhedron in  $\mathbb{R}^3$  is simple, planar and 3-connected. Solving an open problem posed in [4] and [5], our main result shows that the converse holds as well.

**Theorem 1.** Every 3-connected, simple planar graph is the edge-graph of a standard ball-polyhedron in  $\mathbb{R}^3$ .

**Preliminaries:** Let  $G$  be a 3-connected plane graph and  $K_3$  be a triangular face (resp.,  $K_{1,3}$  be a degree three vertex and its neighbors) of  $G$ . A *simple  $\Delta Y$  reduction*, replaces  $K_3$  by  $K_{1,3}$  that connects the same vertices or vice versa, such that a pair of edges incident to a vertex of degree 2 is replaced by a single edge and a pair of parallel edges is replaced by a single edge. To specify the direction of the reduction, then we will call it a  $\Delta$ -to- $Y$  reduction, respectively a  $Y$ -to- $\Delta$  reduction. There are four different types of simple  $\Delta$ -to- $Y$  and  $Y$ -to- $\Delta$  reductions [3].

**Results:** Our main contribution follows.

**Theorem 2.** Let  $G'$  be a 3-connected planar graph and let the graph  $G$  be derived from  $G'$  by a simple  $Y$ -to- $\Delta$  reduction. If  $G$  is the edge-graph of a standard ball-polyhedron in  $\mathbb{R}^3$ , then so is  $G'$ .

To prove Theorem 1, we prove Theorem 2, and show how it implies Theorem 1.

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**Keywords:** Steinitz's theorem, polyhedron, ball-polyhedron

## Analysis of Readers' Response and Experiential Mining Regarding Electronic Literature Reading

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In the era of technological innovation learners are generating high engagement in the e-learning platforms and digital libraries. Ease in accessibility of a plenty of literature makes e-reading highly preferable. But there are some hitches also; as the quality of content, authenticity of content, level of comfort in reading etc which must be taken care of [1,2]. The study is investigating these positive and negative flanks of e-reading. In the study, a systematic survey was conducted on students, learners and teachers from University of Debrecen. The study is mining the experiences of e-readers and their feedback has been analyzed to improve the quality of e-literature. Quantitative data was analyzed by simple statistics while qualitative data was analyzed by keyword in context (KWIC) approach. Present Study gives a clear understanding about readers' feedback for both kinds of readings, which will guide the future researches.

**Results:** Study found approximately 8% of people complained about advertisement Pop-ups and 74% with distraction when they follow electronic reading. Survey also depicts that 53.4% of people reported print-mode of reading helps them to remember things for a longer time. Content authenticity is a major concern in electronic media; in the study 71% respondents share their opinion as they deal with the problem of not verified content. 62% of people think it's difficult to carry reading for a long time and it needs extra attention in an e-literature reading environment.

**Conclusions:** Qualitative analysis of data inferred that network issues, eye stress, authenticity of content and distractions are some crucial things which needed to be catered in the e-literature reading. Despite some non-ignorable concerns, the domination and acceptance of e-literature reading in academics cannot be denied. Technically popup, distraction and reference divergence are non ignorable hitches that must be treated well. The authenticity can be solved by setting benchmarks or content standards for e-literature [3]. Time, availability and vast scope of e-reading are the supportive statements given by the respondents. The work is giving a solid direction to improve the quality of electronic reading to get more engagement.

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**Keywords:** e-reading, digital library, e-learning, content authenticity, e-readers



## Automatikus programjavítás JavaScript-ben - kihívások és eredmények

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Bár a szoftver minőségmérés egy igen jól kutatott terület, nem tudjuk biztosítani, hogy egy program hibamentes legyen. A minőség meghatározása persze elég szubjektív, mégis manapság egy jól bevett gyakorlatnak számít a szoftvertesztelés a kitűzött cél eléréséhez. A tesztelés elsődleges célja a defektusok felismerése, hogy később ezeket a hibákat ki tudjuk javítani. Mindazonáltal a hibák javítása emberi erőforrást igényel és általában időigényes feladat, így igen költséges. Az automatikus programjavítás pontosan erre próbál megoldást kínálni azáltal, hogy a tesztelés során lokalizált hibákat emberi beavatkozás nélkül javítja ki. A legelső nagy hatást keltő automatikus programjavító eszköz a -Genprog- 2012-ben készült el C nyelvre, ezzel egy merőben újszerű tudományágat indítván útnak. Azóta számos más eszköz is publikálásra került, melyek egy része továbbra is C/C++ programok javítására specializálódott, míg mások Java-ra esetleg Python-ra. Az előadás során először egy olyan eszközt mutatok be, amely hibás JavaScript programok automatikus javítását képes elkészíteni. Az általa felhasznált algoritmus nagyban hasonlít az eredeti Genprog-ban használt genetikus algoritmusra, így kapta a GenprogJS nevet. A hagyományos megközelítésen felül azonban néhány újabb eszközben alkalmazott megoldások is beépítésre kerültek, valamint a rendszer tervezésekor a JavaScript nyelvre jellemző elemek figyelembevételén is komoly hangsúly volt. Emellett még egy fontos kérdésre kerestem a választ: mikor mondhatjuk egy elkészült javításra, hogy helyes? Mivel a genetikus algoritmus pusztán a tesztesetekre támaszkodik a patch szintetizálása során, könnyen elképzelhető, hogy a javítást erre illeszti. Hogy ki tudjuk szűrni az ilyen hibás javításokat egy szóbeágyazásra alapuló megközelítést mutatok be, mely jó eséllyel képes megtalálni ezeket a patch-eket.

**Eredmények:** Az elkészített automatikus programjavító eszköz a BugsJS adatbázison kerül kiértékelésre, ahol 11 egysoros hibát sikeresen javít, amelyek 4 különböző projektből származnak. A patch-ek validálásához készült megközelítés segítségével a helytelen programok több mint felét sikerült kiszűrni.

**Következtetések:** Egyszerűsége ellenére a genetikus algoritmus alkalmasnak tűnik programok automatikus javítására. Az ezen elven alapuló eszköz sikeresen javít valós hibákat. Az elkészült javítások „jóságának” eldöntésére pedig a patch-ek beágyazása során létrejött vektorok között mért hasonlóság bizonyult hasznos mérőszámnak.

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*Kulcsszavak:* automatikus programjavítás, APR, JavaScript, szoftver karbantartás, mesterséges intelligencia, szóbeágyazások, genetikus algoritmus

## **Polgári és munkajog**

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**Civil law and labour law**

## The conceptual basis of the employer's right to control

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As in all legal relationships, the parties have different rights and obligations in the employment relationship. However, these rights and obligations vary in the employment relationship, creating a sub-ordinated personal relationship between the employer and the employee. This dependent relationship draws a strong line between the civil law relations and the employment relationship.

Perhaps the easiest way to present entitlements of different weights is through the employer's authority, which is in the focus of my research. This right has several components, as it completely permeates this legal relationship. The main examples are the right of instruction and the closely related right to control. In the initial phase of my research, I aim at a comprehensive analysis of these two pillars in order to create a suitable basis for exploring the content of the rights on the employer side.

In this presentation, I would like to lay down the foundations of the right to control and defining its framework. In addition to reviewing the relevant legal environment and related legal positions, this requires presenting some practical problems that can perfectly illustrate the biggest challenge in exercising this right: finding the thin line, if any, that safeguards employees' rights from employer excesses, but stable enough to protect the interests of the employer as well.

**Conclusions:** Overall, in my presentation, I would like to point out that one of the most labile areas of labour law is the right to control of the employer, because the boundaries of this power are difficult to establish. We can tell, that this limit is mainly due to the requirement to respect the rights employees' rights (such as the protection of personal rights), but we can't forget to protect the interests of the employer at the same time.

*Keywords: labour law, employer's right to control, protection of rights relating to personality, employer's authority*

## **Freedom of Assembly as Human Rights and Its Protection Through ECtHR Case Laws**

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The foremost purpose of holding an assembly is to communicate a message. States should protect and facilitate peaceful assemblies and not interfere with their message. However, in some exceptional situations where this message constitutes incitement to violence or rejection of democratic principles, State authorities may interfere with the content of expressions during an assembly in compliance with their human rights obligations. Content that constitutes destruction of rights are outside the scope of protection, and some particular messages trigger positive obligations of States to interfere. This paper will analyse some of the ECtHR case laws with relevant legislations to find the legitimate aims of restriction on the right to freedom of assembly to grasp in which extent it is protecting the right to freedom of peaceful assembly in accordance with the international human rights law standards and obligation.

*Keywords: ECtHR, freedom of assembly, human rights, peaceful assembly, positive obligation*

## Labor Market Regulations in EU

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Labour market is a vital role of the migration and essential to employers and workers. In my presentation, the European labour market regulations and how the role of migration for labour market will be pointed out and presented[1,2,3,4]. Among the policies of EU labour market, Active Labor Market Policies and single labour market mainly will be expressed[3,5,6,7,8,9]. My aim is to know and evaluate the EU labour market nature and regulations especially from the perspective of migration.

**Results:** I have two hypothesis questions. They are (1) How is the role of labour market for migration? (2) Should the labour market be regulated with the flexible rules?

**Conclusions:** The aim of labour market is to fill the gaps in the employments and to balance the labour supply and labour demand. European Union emphasizes the labour market to integrate the economic growth and to lead to the single labour market among member states. Their intention of the single labour market in EU is to go on with the common policies, common service, common goods, and the free movement of workers. Active labour market policies are to reduce the unemployment rates and to increase the skillful workers for the promoted productivity and employments. The labour migration is allowed in terms of the free movement of workers within EU. Although the workers can find the job opportunities through the European labour market, they have the jobs which are in the agricultural, dangerous places, etc.

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*Keywords:* labour market, European, Labor migration, workers, employers.

## Effectiveness of online age verification and its impact on the privacy of children

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Due to the anonymity and openness of the Internet, it is quite possible for someone to show themselves at any age in the cyber world. In order to register such websites with adult content, children can easily lie about their age. As long as online age verification consists of simply writing a date of birth or ticking a box for registration or usage of websites, one may argue against the effectiveness of these methods.

Our aim is to seek a response to questions whether these existing age verification techniques will protect children from inappropriate content without harming their privacy. The study is mainly based on reviews of the literature and legal documents on age verification procedures and analysis of existing practice and their legal policies, for example on Facebook and Instagram. These reviews are conducted using a comparative method based on practices in the European Union and the United States.

**Results:** The threshold age for taking the parent's consent to access the information society services in Internet is thirteen under the COPPA and is age span of thirteen to sixteen under the GDPR depending on the Member States. The children under the age thirteen cannot have an account in social networks such as Facebook and Instagram according to their data policies. However, the service providers are aware that they have underage users. There are some current age verification procedures are examined in the study namely self-certification, reliance on e-payment services, reliance on credit cards, use of data aggregation services, identity document scanning and eID systems. New and emerging methods of age verification, such as voice or face recognition, have been reviewed and criticized for children's privacy. Present and expected age verification systems are either not effective or gather more data than is required and threaten privacy. Therefore, these systems need to be improved to properly verify the age of children.

**Conclusions:** Children above the age of the threshold are exempt from both legal documents. New options for teenagers need to be found in legal documents as well as in the data policy of information society service providers. The enforcement of these websites and applications with COPPA and GDPR should be more strictly monitored and the breach of children's privacy and personal data should not be ignored by the supervisory authorities. Last but not least, service providers, educators, policy makers and parents should work together to ensure that children benefit from technology while protecting them from unintended consequences.

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*Keywords:* Children's privacy, Data protection, COPPA, GDPR, Age verification

## Islam in Hungary - Marriage habits of Muslims living in Hungary

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Islam was already present in Hungary at the time of the founding of the state, because Muslim Kabar tribes probably arrived in the Carpathian Basin during the conquest of the territory. Later throughout history, the country continued to be affected by Islamic influence. The best-known period is the era of the Turkish Ottoman occupation. From this period, several mosques have survived until today in Hungary. It is not a widely known fact that at the beginning of the 20th century, in 1916, Hungary was one of the first countries with a non-Muslim majority to officially recognize the Islamic religion. There were political reasons for this move, the aim was to show and maintain sympathy for the Ottoman Empire, which was the ally of the Austro-Hungarian Empire in World War I. At that time, only a negligible number of Muslims lived in Hungary. The number of followers of Islam increased in the 1980s and 1990s, and today the number of Muslims in Hungary is estimated at 30,000. Currently there are two state-recognized Islamic organizations in Hungary, i.e. the Hungarian Islamic Community and the Organisation of Muslims in Hungary. Although the majority of Muslims in Hungary are foreigners, the community is expanding with more and more Muslims of Hungarian citizenship.

The rules of Islamic law (Sharia) concerning family law and marriage still play an important role in Islamic societies. Marriage is a contractual relationship according to Sharia law, from which specific rights and obligations arise. In many cases, the guardian (*wali*) acts on behalf of the bride, but the groom represents himself. The bride can decide for herself who she wants to marry, so the woman's consent is required for the marriage. One of the essential elements of a valid Islamic marriage contract is to determine the sum of the *mahr*. The *mahr* is given to the bride mandatorily by the groom or the groom's father or family on the occasion of the marriage. Contrary to the inseparable bond of Catholic marriage, Islamic law permits divorce, although it is considered an undesirable act. There are several ways of divorce under Islamic law based on whether it is initiated by the husband or wife.

My research focuses on the marriage and divorce habits of Muslims living in Hungary. Based on in-depth interviews with the leaders of Islamic organizations, i.e. those responsible for marriages and divorces, I was seeking answers to questions such as what the role of Islamic marriage is in Hungary, under what conditions someone can marry in Hungary according to Islam, what the sum and the significance of *mahr* is, and how an Islamic divorce takes place. I plan to get to know more about the marriage habits of Muslims in Hungary with the help of an online questionnaire.

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*Keywords: Muslims in Hungary, Islamic marriage law, Islamic marriage, Islamic divorce, mahr*

## Journalism and freedom of opinion and expression in Jordan

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Freedom has always been the goal of humankind from the beginning of history till today. It was always considered as a basic need to be obtained like food and housing. Freedom is inextricably tied to human activity [1]. Freedom of journalism largely reflects the level of freedom of opinion and expression in any country. It is a measure that can be revisited when looking at the level of the processes of democratic transition in both the state and society [2].

**Aim:** This thesis aims to highlight the gap between the Jordanian constitution and international treaties and the national laws and government policies related to the journalists and highlighting the limitations and restrictions facing the journalists in Jordan between 1989-2018. This thesis uses an in-depth qualitative descriptive analysis approach and the legal approach. Data and information collected through primary and secondary resources in which it draws on (a) the case study approach and (b) semi-structured interviews.

**Results:** The press freedom considered as relatively free in Jordan that is mainly due to the national legislations and regulations related to the journalists and the government practices in which both restrict and limit the journalist's freedom in Jordan.

**Conclusions:** As for the conclusion, this research recommended the need to unify the various laws dealing with the press and to make an initiate and immediate measures to amend legal articles which restrict the journalist's freedom, especially that allow the deprivation of liberty and necessity from the government to develop a new media strategy plan, including measurable goals, to promote media and support freedom.

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*Keywords:* journalism, opinion, expression, freedom, restrictions, democracy.



## A felelős üzleti magatartás munkajogi hatásai és szabályozási formái

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**Bevezetés:** Az elmúlt évszázadban a civil társadalom egyre növekvő nyomás alá helyezte a vállalkozásokat a tekintetben, hogy üzleti tevékenységük során átlátható és etikus viselkedést tanúsítsanak és felelősen viszonyuljanak a társadalmat és környezetet befolyásoló döntéseikhez, csökkentsék tevékenységük társadalomra, környezetre gyakorolt káros hatását. A felelős üzleti magatartás (RBC) mindazon értékvállalásokat, gyakorlatokat, stratégiákat jelenti, amelyekben a vállalatok önkéntesen szociális és környezeti szempontokat érvényesítsenek üzleti tevékenységükben és a partnereikkel fenntartott kapcsolataikban.

**Célkitűzés:** Az előadás a tárgykörben született PhD kutatásom eredményeit kívánja meg bemutatni. Céлом, egyrészt összegezni és rendszerezni a felelős üzleti magatartásra vonatkozó nemzetközi, uniós és a téma szempontjából alapvető jelentőségű tagállami normákat, másrészt rámutatni az irányadó szabályalkotási trendekre a munkajogi relevanciával bíró tényekre összpontosítva.

**Módszer:** Az előadás alapjául szolgáló kutatás módszertanilag a hazai és nemzetközi szakirodalom feldolgozásán alapul, ezen túlmenően történeti szempontból tekinti át a felelős üzleti magatartásra vonatkozó standardokat, irányelveket, ajánlásokat és jogszabályokat három dimenzióban: nemzetközi, uniós és tagállami szinten, majd három esettanulmánnyal támasztja alá a megállapításokat.

**Eredmények:** A kutatási eredmények rövid esszenciája a következő: A felelős üzleti magatartásra vonatkozóan egyre határozottabban körvonalazódó szabályozási háló szövődik, amely nemzetközi, regionális és tagállami önkéntes és kötelező normák ötvözésével kívánja annak hitelességét és átláthatóságát javítani. A szabályozási törekvések két irányúak: egyrészt a keresztszabályok születnek, amelyek célja a felelős üzleti magatartás felé terelni a vállalkozásokat, másrészt az önszabályozás világából kiragadva egy-egy elvet vagy intézményt – erősebb vagy gyengébb jogerővel, de – azok jogszabállyá transzformálódnak, ezáltal a jelenség gyökereit kemény jogba ágyazódnak. A felelős üzleti magatartás gyakorlata, valamint annak háttér-ideológiájaként létrejött eszközök hozzájárulhatnak a munkajog hatékonyabb érvényesüléséhez.

**Következtetések:** A vállalatok felelősségi kérdéseinek disszonanciájára az RBC jelensége egyfajta önkéntes válaszul szolgálhat. A felelős üzleti magatartás rövid történeti múltat tekint vissza, interdiszciplináris volta okán sokszínű tartalommal jelenik meg, azonban számos gazdasági, társadalmi változás arra enged következtetni, hogy ne múltó hóbortként, hanem a jövőben erősödő, stratégiai szemléletű üzleti gyakorlatként tekintünk rá. A jelenség hozománya, hogy ernyője alatt álló jogok, így egyes munkajogok is, védelemben részesülhetnek. Hazánk témához való viszonyulása, tervei és konkrét cselekvései kiforratlanok, az intenzív globális folyamatok ellenére nem látszik igény és valódi szándék az azokba való becsatlakozásra, azonban egy sajátos magyar út megteremtése nemcsak, hogy szükséges, de egyre sürgetőbb.

**Támogatás:** Az előadás az Innovációs és Technológiai Minisztérium ÚNKP-20-4 Kódszámú Új Nemzeti Kiválóság Programjának a Nemzeti Kutatási, Fejlesztési és Innovációs Alapból finanszírozott szakmai támogatásával készül.

## A beteg közrehatásának jelentősége az orvosi jogi kártérítési esetekben

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A magyar kártérítési jog körében egyre nagyobb hangsúllyal jelenik meg prevenciós funkció vizsgálata, mely szerint a kártérítési tényállásban mindenki szempontjából kedvezőbb, ha egyáltalán nem is következik be károkozás, illetőleg amennyiben mégis, szükséges annak előmozdítása, hogy az a lehető legkisebb mértékben álljon be. A kártérítési szabályoknak így alkalmasnak kel lenniük arra, hogy ezt a célt is szolgálják.

A kármegelőző magatartás azonban nemcsak a károkozó oldalon mutatkozik meg elvárásként, hanem a károsult számára is meghatározza a kárigényének érvényesítési határvonalait, mivel önmagában az a tény, hogy a károsult károsodást szenvedett, még nem feltételezi azt, hogy kárát biztosan át tudja hárítani másra.

Előadásomban az orvos - beteg közötti jogviszonyból eredő kártérítési kérdések figyelembevételével a beteg felróható, illetőleg közreható magatartásának szemszögéből vizsgálom a károsulti kármegelőzési, kárelhárítási, kárenyhítési kötelezettséget. A károsulti közrehatás általános bemutatásának, majd a beteg kötelezettségeinek taglalását követően azt kívánom kifejteni, hogy a beteg felróható magatartása mennyiben befolyásolja az egészségügyi szolgáltatónak az Eütv.-ben foglalt kártérítési, valamint sérelemdíj-fizetési kötelezettségét.

Kutatásommal végső soron azt a tézisemet kívánom megalapozni, miszerint a beteg közrehatásának figyelembevétele alkalmas arra, hogy a beteget rászorítsa az orvosával együttműködésre, így az orvosi ellátás a lehető legnagyobb mértékben képes legyen célját elérni. Egyúttal megerősíti azt a szemléletet, hogy az orvosi ellátás során nem önmagában a beteg önrendelkezési jogának gyakorlása az elérendő cél, hanem orvosra felelős azért, hogy az eset feltárásával és a személyre szabott tájékoztatás nyújtásával hozza olyan helyzetbe, hogy a beteg felelősségteljes, a saját érdekeit ténylegesen szolgáló, de egyúttal korlátozástól mentes döntést hozzon. A beteg önrendelkezési joga csak az orvos szabálykövető, etikus és gondos eljárásával teljesezhető ki.

*Kulcsszavak: felelősség, felróhatóság, kártérítés, orvosi jog, polgári jog*

## **Poszter szekció I.**

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## **Poster Session I.**

## Investigation of physical and chemical properties of soils from different urban grasslands

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In our research, we compared the physical and chemical properties of soils from six urban and six natural grasslands in Budapest. The aim of the study was to assess the impact of a large city on the main properties of soils. For this, four soils from non-urban grasslands were used as control during the examinations.

**Results:** Soils from urban grasslands had significantly ( $p < 0.05$ ) higher artefacts content, pH, salt and  $\text{CaCO}_3$  content, and lower humus and nutrient content than those from non-urban grasslands. Natural grasslands within the city, although to a lesser extent, are also characterized by urban soil features. Soil heavy metal concentrations were the highest in urban grasslands, probably due to the anthropogenic (industrial, transport and household) emissions near study sites. However natural grasslands were also affected by urban emissions, since the concentrations of Cd, Cr, Ni and Zn in these soils were significantly ( $p < 0.05$ ) higher than in controls soils.

**Conclusions:** It was found that soil characteristics of grasslands within the city differ significantly from those of non-urban grasslands. Adverse physical and chemical changes due to human activity can adversely affect many soil functions as well as the natural ecosystem of the soil. The results of our study may provide information for environmental scientists and regulators about these changes in soils from grasslands in Budapest.

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*Keywords:* urban soil, urban grasslands, soil properties, heavy metals

## ÉRdeklődés Térkép - Kognitív képességvizsgálat fegyház végrehajtási fokozatot töltő nők körében

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A kulturális szint határozza meg a társadalmi szereplők gazdasági és társadalmi feltételeit, valamint körülményeit (Durkheim, 2000; Revel, 1986; Burke, 1997), melyek révén egy társadalmi csoport magáénak érezhet egy adott reprezentációs rendszert vagy értékrendet (Di Blasio - Ács-Bíró, 2019). Mentalitásukat pozitívan befolyásolja a képzési hatásrendszer, de csak abban az esetben, ha a felnőttoktatás és kompetenciafejlesztés képes eredményesen felvértezni az embereket azzal a tudással, amelynek segítségével le tudják győzni az életük során jelentkező nehézségeket, és meg tudják oldani az újabbnál újabb feladatokat (Harangi 2004). A törekvés ereje és iránya összefügg azzal, hogy mely területen, milyen szintre képes eljutni az egyén, így a képességek fejlődéséhez az érdeklődés, a kitartó tevékenység, és valamely terület megismerésére irányuló belső hajtóerő vezet.

Vizsgálatunkat a Magyarországon fegyház végrehajtási fokozatban szabadságvesztésüket töltő nők körében folytattuk. A cél olyan mérőeszköz alkalmazása volt, mely pedagógus által felvehető, kiértékelhető, a gyakorlatban hosszútávon is jól használható, a börtönoktatás rendszerébe beépíthető. Így került kiválasztásra a Gyarmathy Éva (1999) által bevezetett Érdeklődés Térkép, mely kirajzolja az egyén képességeinek irányát, erősségeit és gyengeségeit, egyben meghatározza a tanulási stílus pszichológiai jellemzőit, s segítséget nyújt az érdeklődésnek megfelelő fejlesztési irányok kijelölésében. Alapvető hipotézisünk szerint a női elítéltek speciális igényeihez nem igazodik a többségi iskola mintáján szerveződő börtönoktatás, valamint a különböző képességfejlesztő tréningek módszertana. Ezáltal a szabadulás után, a társadalomba történő sikeres visszailleszkedés elősegítése a büntetés-végrehajtás prioritizált feladatánaként, nem az elvártak szerint teljesül.

A női fogvatartottak kognitív képességeinek elemzésénél Gardner (1983) többszörös intelligenciák elméletét hívtuk segítségül, mely szerint az egyéni különbségek jelentős mértékűek lehetnek, de sohasem teljesen következetesek. Az emberek különböznek azon képességükben, hogy a gondolkodás segítségével megértsenek bonyolult összefüggéseket, hatékonyan alkalmazkodjanak a környezetükhöz, tanuljanak a tapasztalataikból, különféle akadályokat győzzenek le. Egy adott személy intellektuális teljesítménye alkalomtól, helytől és adott kritériumtól függően változik. Gardner felfogása szerint az IQ fejleszthető, összetett, nem meghatározható, problémahelyzetben nyilvánul meg, és a változatos beteljesítés eszköze. Előadásunkban főként hosszú ítéletes nők kognitív képességeinek eredményeit ismertetjük a Gardner (1983) által meghatározott hét területen - nyelvi, logikai-matematikai, téri, zenei, mozgásos, környezeti, interperszonális és intraperszonális téren. Az eredmények mutatják, hogy jelenleg az iskola funkciója és szerepe hogyan befolyásolja a fogvatartott nők mentalitásváltozását, van-e hatása a későbbi reintegráció sikerére.

*Kulcsszavak: Érdeklődés Térkép, Gardner, börtönoktatás, reintegráció*

## Lipidomic study of mice conceived by in vitro fertilization by mass spectrometry

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**Introduction:** The two basic forms of assisted reproductive technologies are intracytoplasmic sperm injection (ICSI) and in vitro fertilization (IVF). The process is sensitive to changes in environmental conditions, such as those involved in IVF, so often the intervention ends in a failed pregnancy. It is a proven fact that phospholipid metabolism and associated signaling pathways are essential in a successful pregnancy and in embryonic development as well [1]. In our study, we analyzed the mice - born with IVF and normal - in terms of lipid profile and their distribution and identification of IVF-specific changes. We also wanted to study the long-term effects of IVF on the physiology of mice and to map the molecular background of it.

**Methods:** In this study matrix-assisted laser desorption ionization time-of-flight imaging mass spectrometry and histochemistry were used for in-vitro molecular analyses of the cryosections of CD-1 mice uteri. The lipids were identified by liquid and gas chromatography coupled ultra-high-resolution tandem mass spectrometry.

**Preliminary Data:** Our current results were obtained in a positive mode measurement, so we see mainly sphingomyelins (SM) and phosphatidylcholines (PC). On day 8 after fertilization PC 36:4 (16:0/20:4) was enriched in the antimesometrial zone during normal pregnancy, while it was almost completely absent from the IVF uterus. In contrast, PC 34:0 (16:0/18:0) was more detectable in IVF pregnancy in the mesometric zone. On day 10 in normal pregnancy, the intensity of PC 34:2 (16:0/18:2) in the mesometric zone was higher than in IVF pregnancy. On day 12 of gestation, PC 36:1 (18:0/18:1) in the antimesometric zone, PC 34:0 (16:0/18:0) in the mesometric zone, and SM 16:0 in the interim transplantation zones were clearly enriched. As development progresses, some phospholipids show organ-specific enrichment in our imaging recordings. On day 18 PC 34:1 (16:0/18:1) accumulated in all tissues except the gastrointestinal tract. In contrast, PC 38:4 (18:0/20:4) occurred mainly in the heart with greater intensity, while lyso-PC18:0 was more detectable in the liver.

**Conclusions:** These data show a significant spatiotemporal change in lipid profile during embryogenesis, but further research is needed to confirm the biomolecular background. We intend to continue our research in the future, as we want to monitor lipid changes throughout the lifetime. We also plan to perform negative mode measurements of the samples in the near future.

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**Keywords:** lipidomics, embryonic development, IVF, MALDI, mass spectrometry

## COVID-19 and the challenges in residential building in Egypt

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COVID-19 threatens the livelihood and lives of people all over the world. Presently, the disease presents a major health concern in Egypt and the rest of the world. Evaluating the built and physical environment is one solution to reduce epidemic impact before developing its medications. Epidemics have altered our built environment because of the infection fear. As a result, urbanism and architecture will never be the same after the Covid-19 epidemic. However, the current global epidemic poses significant challenges in the built environment at all levels, developing an antivirus-enabled paradigm to stop the spreading of virus or decrease the potential risks will take time. Many unanswered questions require further multidisciplinary studies. This study provides an overview for impact of the current COVID-19 Pandemic on the field of residential architecture and how it will change the built environment architecture.

**Conclusions:** The COVID-19 pandemic has presented the limitations of how we manage our built environment in relation to how we should design, and operate our built environment; however, it has provided us an opportunity to learn. Also, if we harness the security layers to a healing approach that could be implemented in the post-pandemic era, it could help to provide us by more resistant and a sustainable built environment. It can be concluded that the operational decision and robust strategic can reduce spreading virus or mitigate its negative effects. Choosing the optimal antivirus strategy relies on many factors such as the capabilities and abilities of each community and environment. This study provides the measures and decisions that taken by the Egyptian government till new normal period on the perspective of urban built environment It is required to draw lessons from new normal and post-pandemic period to combat present and future challenges. Moreover, Thus, the governments and the people should make concerted and coordinated effort in exploiting the presented opportunities to facilitate renewable and clean energy technologies and developing conducive environment of business to achieve the sustainable development goals and facilitate energy access.

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*Keywords:* COVID-19, Residential Building, Egypt

## **NIL-Strength Temperature and Hot Tensile Tests on S960QL High-strength Low-alloy Steel**

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Temperature dependence crack initiation is a very critical point of the mathematical modelization of a part of mechanical design. Therefore it is crucial to know the temperature dependence of material during the process of mathematical modelization when forming the design. Additionally, the forming limit at a specific temperature is a key parameter to know for the design. Two parallel ways appear to determine the formability limit of a material at a particular temperature. The first way is a physical simulation which is entirely precise. It aims to simulate all the physical circumstances and execute the forming. It also records all the essential parameters such as the force, the strain as well as the temperature as a function of the time. The second way is to find a mathematical model of the forming, starting with all the boundary conditions of the tests and all the needed physical parameters of the material. The best way is to apply both methods in parallel to have the real formability of the material to make the deliberated design. The welding processes have developed a lot thanks to the physical simulation. The poster introduces the connection between weldability and physical simulation, hot-cracking sensibility, the Gleeble 3500 thermo-mechanical physical simulator, respectively, and early experiments on the S960QL high-strength low-alloy (HSLA) steel. Identification of the Nil-Strength Temperature (NST), furthermore the results of the hot tensile tests will be introduced.

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*Keywords:* *formability, physical simulation, mathematical modelization, hot tensile test, simulation, Gleeble, NST, low-alloy*



## Rethinking Modern Housing Crisis in Metropolitan Cities: The Case Of San Francisco

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Since the second half of the nineteenth-century San Francisco witnessed a rapid population growth, becoming one of the 20 fastest-growing cities in the United States [1], escalating population growth is facing a major housing problem. By 2040 It is estimated that San Francisco will need more than 92.000 housing units, increasing the load on housing development sectors and pushing housing prices higher and higher as a result; according to U.S. Bureau of Labour Statistics San Francisco spending patterns the state spends most of their income on housing making it the largest expenditure category for San Francisco – area households reaching to 39.4% of the household budget, notable higher than U.S. average [2]. Accordingly, it is expected that accommodation will become less affordable for mid and low-income families forcing them to settle in inadequate living conditions.

**Results:** This research aims to analyse modular housing unites their development, optimization of modular layout, dimensions, capacity and composition. Studying existing housing paradigm in the case of San Francisco. Also, discusses pros and cons of already proposed solutions for San Francisco housing crisis. This paper displays the design development phases which expound hyperiid design approaches that combine an optimized futuristic housing unit with San Francisco’s existing built environment, which aim to cut costs of housing expenditures and increase space efficiency and effectiveness.

**Conclusions:** The global housing crisis is escalating all over metropolitan cities. Conventional solutions are not valid anymore. Also, in the long term, they help in creating the crisis itself. Consequently, new solutions must be original, comprehensive and edge-leading, not only focus on solving current and foretold problems but rather developed in methods that guarantee to have housing developments that are flexible, adaptable, adjustable in a way that allows them to be compliant to cope with unforeseen future conditions.

*Acknowledgements:* Dr. Zoltán Erzsébet Szeréna, Dr Borsos Ágnes, Dr. János Gyergyák

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*Keywords:* Community Housing, Collective Living, Affordable Housing

## Relationship Between Intercultural Communication and Tourism Activities

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Tourism is centered on the fundamental principles of exchange between people and are both an expression and experience of culture [1]. Thus, intercultural communication takes an important place in tourism-related activities. Good communication is not just transmitting the information, but also a mutual understanding's wishes and needs. Communication may be difficult if one of the parties is dominant and rejects intercultural dialogue, this fact influencing negatively the forms of tourism taking place in a particular destination [2]. It is essential to understand the tourism activities in the context of intercultural communication and find out how to register the cultural and linguistic differences to tourism. This research focuses on the relationship between intercultural communication and tourism and how tourism-related activities get effected by intercultural differences. The present research states that cultural and language differences reflect on tourism. Being a tourist means both traveling to other countries and other regions of your native country. Intercultural communication within tourism starts with the relationship between hosts and tourists. This experience may be positive and negative, depending on different factors including the host country, the duration of interaction, socioeconomic backgrounds, etc. [3] the research aims to understand the tourism-related activities such as marketing, advertising, and so on in the context of intercultural communication. The method of the research is the literature review of tourism from the perspective of intercultural communication.

**Results:** Regarding the results of the present research, it can be stated that different cultures and different language usage affects tourism-related activities and intercultural communication plays a significant role in that context. Tourists may have positive or negative experiences due to intercultural differences and these attitudes can be changed with the training of hosts.

**Conclusions:** Communication is not always a transmission of information between people. Communication changes from culture to culture, language to language. For that reason, from time to time, being a tourist in a foreign country which has different cultural habits can be extraordinarily difficult. Intercultural communication takes part in that context. Host countries should pay attention to intercultural communication and give the essential training to their partners, otherwise tourism activities can be affected negatively.

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*Keywords: tourism, culture, language, intercultural communication*

## **Propolis ethanolic extract has double-face in vitro effect on the planktonic growth and biofilm formation of some commercial probiotics**

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The aim of this study was to determine the effects of propolis ethanolic extract (PEE) on the planktonic cells and biofilm forming ability of five commercial probiotics (BioGaia<sup>®</sup>, Linex<sup>®</sup>, Protexin<sup>®</sup>, Enterol<sup>®</sup> and Normaflore<sup>®</sup>). The susceptibility tests were done according to the CLSI standard microdilution method. Crystal violet assay was used both for the quantitative assessment of biofilm formation and 24 h old biofilm eradication tests.

**Results:** Planktonic cells of probiotics showed varied susceptibility to PEE. The MIC values were 100  $\mu\text{g/ml}$  for Linex and Enterol, 200  $\mu\text{g/ml}$  for Protexin and Normaflore, and 800  $\mu\text{g/ml}$  for BioGaia. However, low PEE concentrations (12.5-25  $\mu\text{g/ml}$ ) significantly enhanced the planktonic growth of Linex and BioGaia microbes. Biofilm studies revealed that Enterol and Protexin were non-biofilm formers, while BioGaia, Linex and Normaflore formed weak biofilms, which were inhibited by 12.5, 25, and 800  $\mu\text{g/ml}$  of PEE, respectively. PEE revealed double-face effect on the biofilms of Normaflore and Linex, which were enhanced at low concentrations of PEE and inhibited at higher concentrations. Interestingly, Normaflore biofilms were shifted from weak to strong, this might be attributed to the prebiotic effect of PEE. The same prebiotic effect was found when low concentrations of PEE were used with 24 h old biofilms.

**Conclusions:** PEE has strain dependent controversial effects on the planktonic growth and biofilm forming ability of the tested probiotics, although high concentrations have inhibitory effect on all of them, low concentrations may have strain dependent prebiotic effect.

*Keywords: Propolis, Probiotics, biofilms, antimicrobial*

## Resilient design of vernacular educational- community center in the Philippines: an investigation in recovery after natural disasters

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An accrescent trend in the phenomenon of natural disasters is expecting that climate change will increase the destructive results of disasters. The severity and recurrence of climate-related extreme events make it critical that buildings after disasters should be recognized through the lens of reducing risk and building resilience, rather than a reaction to the event. Moreover, it is a challenge for designers and planners to create a built environment that is resilient for disasters as millions of lives are in danger. Therefore, the paper introduces a sustainable design of an (academic- social) centre. The new design archives a balance between creating its own identity, providing a flexible space for students, and interactive gathering space for communities recovering from a disaster. The design transforms the school from a traditional learning space into an inviting resilient and flexible space that corresponds with the vulnerable post-disaster environment.

**Results:** The designed simple modular prototype achieved resilience by four criteria; reducing the initial damage to the building, using passive design principles to increase building resilience, reducing the risk for people by implementing a bunker, and the flexibility in the modular design to be replicated and reused with different functions. The passive design principles reflected the community adaptable techniques like natural ventilation, daylighting, using local materials (local bamboo) and flexible walls to create courtyards and open spaces.

**Conclusions:** In vernacular areas, there is a shortage of building materials and public services, so the academic community centre is able to create the connection and transition point between relief phase and post-disaster development phase and be the first project to start recovery. In addition, the strategies and the adaptive design principles of the prototype can be applied in post-disaster design approaches to ensure high resilience ability after a disaster.

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*Keywords:* Sustainability, SDGs, passive design, risk reduction, Building resilience, bunker.

## **The rules of registries agencies in the conflict between domain names owners and trademarks holders**

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When the spider web started working in its early stage, the domain names have led the globalization to its maximum limits in terms of business and commercialization new services in cyberspace. In line with this, the domain names have actually handled this situation as organization identifiers in cyberspace. Because of this, they are currently entering into a dispute with trademarks holders. The common practice of some major domain names registrars' representatives was the main reason of this conflict. This paper will certainly attempt to describe exactly how these practices have actually brought about the problem in between the major stakeholders in the online world.

*Keywords: domain names, trademarks, cyberspace, network solution, conflict*

## **A look at the media in Brazil: the links between covid-19 and corruption**

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It is evident that in the global pandemic scenario, news platforms have become a fundamental tool in the news outlet. In the case of Brazil, the media becomes the focus of disputes and political positions due to its capacity to destroy and build narratives and consequently enhance the country's democratic issues. With that in mind, the paper provides a study of the narrative structure of corruption in Brazilian news portals during the Covid-19 pandemic. The empirical analysis is based on the Content Analysis Method; in which it surveys units of significant texts published in May on news platforms in the country. The objective of the work is to observe how the political dialogue on corruption together with the pandemic scenario are translated by the media in a unique context, the global pandemic. The data survey shows the tendency for corruption to converge with the Covid-19 narrative through three narratives: as a tool that contributes to government instability, as a way of reinforcing the country's crisis, and as one of the means of increasing the perception of corruption.

*Keywords: Brazil, political communication, corruption, Covid-19*

## The effect of biological conditions on silver nanoparticle toxicity: just how important nanoparticle aggregation really is?

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Silver nanoparticles (AgNPs) are one of the most commonly studied nanomaterials owing to their unique cytotoxic and antimicrobial capabilities, however, in living systems, the colloidal stability of nanomaterials can be affected by several factors. With our results, we aim to underline how vital colloidal stability is regarding the biological activity of silver nanoparticles and to show how this sensitive balance can be affected by biologically relevant conditions. In this work, aggregation grade measurements were carried out on different biorelevant conditions (pH, ionic strength, biomolecules) in a time-dependent manner throughout 24 hours, using dynamic light scattering (DLS) and ultraviolet-visible spectroscopy (UV-Vis) on citrate capped silver nanoparticles in three distinct size ranges. Subsequently, *in vitro* viability assays were performed to determine the effect of aggregation on toxicity.

**Results:** Our results show that physiological conditions (mainly ionic strength and to a lesser degree, acidic pH) are capable of inducing AgNP aggregation, which is heavily influenced by biomolecular corona formation. Comparing the different AgNP samples revealed that larger primer particle size can counteract the loss of toxicity due to aggregation to a degree, as larger particles have lower surface energy which would propagate the decrease of specific surface area within a system. On the other hand, relatively small nanoparticles with weak electrostatic stabilization may lose their biological activity completely within a few hours in physiological conditions [1].

**Conclusions:** While smaller particles generally possess stronger catalytic and toxic properties, the aim of creating particles as small as possible, might not be the best approach for biological applications, as their activity is easily compromised in lifelike environments. Larger particles, however, may offer a solution with milder, but more persistent nanoscale characteristics.

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**Keywords:** nanomedicine, colloidal stability, cytotoxicity, antimicrobial activity

## Niche Acceleration in Mexico's wind and solar power development

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Renewable energy as radical innovation requires not just technology substitution, but also fundamental transformation at the system level. That means a change of social elements, such as policies, market rules, regulations for users and producers, and their behaviour. From the literature, energy transitions at a national level must understand evolution in energy markets, energy policies and energy technologies. Thus, the research explored a conceptual framework that consider the three perspectives (techno-economic, socio-technical and political). The system's structural barriers and lock-in can cause a slow diffusion of renewable energy. If system changes are too radical, they may encounter resistance from incumbents. This may lead to failure or even a slower diffusion. This is representative for the case of Mexico, where energy developments and certain policies are encountering significant resistance and produce inconsistent reactions in communities, from economic to social to political. This research lays bare the dilemma between radical structural change (rapid speed) and the shape of directions of sustainability transitions (directionality) from the socio-technical system. The conceptual framework is explored in two contrasting case studies of wind and solar power development in Mexico. One case experienced niche acceleration while the other did not, in consequence both followed different paths. The research findings indicate on how alignment dynamics between levels' actors (niche, regime and landscape) shape niche acceleration. Strong alignment on perceptions of radical innovation between levels, will provide a momentum for rapid speed of the transition dynamics. The research is structured as follows: Section 1 will focus on theory and introduces the three perspectives on national energy transitions to set background; Section 2 will focus on the operationalisation and methodology of the research; Finally, Section 3 will provide the discussion of the results and concluding remarks.

*Keywords: evolution of systems, climate change, energy transitions, socio-technical system, system innovation*



## Changes of Blood PACAP Level in Patients With Parkinson's Disease

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Pituitary adenylate cyclase-activating polypeptide (PACAP) is a neuropeptide with antiapoptotic, antioxidant, regulatory and antiinflammatory effects proved by numerous *in vitro* and *in vivo* studies. In the last few years several studies examined changes of PACAP levels in human samples to show alterations in various physiological and pathological conditions. Plasma PACAP concentrations were significantly increased after acute spontaneous basal ganglia hemorrhage and reduced in the cerebrospinal fluid (CSF) of Alzheimer's disease patients. We showed correlation between patient mortality and PACAP levels in severe traumatic brain injury. Earlier experiments did not show changes of PACAP levels in the CSF of Parkinson's disease (PD) patients. Our aim was to examine the PACAP in blood samples of patients with PD (n=107, control=39). We measured the plasma PACAP38 level of PD patients with sandwich-type ELISA and searched for correlations with clinical parameters such as gender, age, stage and subtype of disease, type of treatment and specified scores for PD [Hoehn-Yahr, Movement Disorder Society - Unified Parkinson's Disease Rating Scale (MDS-UPDRS)].

**Results:** We showed significantly decreased PACAP38 levels in PD patients over 50 compared to younger group and in Hoehn-Yahr scale stage 3 compared to HYS2 group. Elevated levels were found after deep brain stimulation. We didn't find significant correlations between plasma PACAP38 levels and the MDS-UPDRS or the type of pharmacological treatment.

**Conclusions:** Earlier experiments did not find significant changes in CSF PACAP levels of PD patients, however, our experiments showed decreased level in plasma samples. The reduced levels of PACAP found in PD patients and the significant increase after DBS treatment confirm the hypothesis that the neuroprotective effect of PACAP could have a role in PD. Based on our results we assume the possibility of using PACAP as a biomarker to monitor the course of the disease.

## **Karaktererősségek és a reziliencia összefüggései: Karaktererősségeken alapuló intervenciók lehetőségei munkahelyi környezetben**

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Kutatásunk célja feltárni, hogy a magyar munkavállalók milyen módon használják karaktererősségeiket és a rezilienciát, hogy a felmerülő munkahelyi kihívásokat hatékonyan oldják meg. Fő kérdésselvetésünk, hogy hazai vonatkozásban milyen mintázatok, összefüggések állnak fenn a karaktererősségek és a reziliencia faktorok között, továbbá, hogy a karaktererősségeken alapuló pozitív pszichológiai intervenciók milyen kapcsolatban állnak az erősségekkel, valamint a rezilienciával. Pozitív pszichológiai intervencióknak tekintjük azokat a módszereket, tevékenységeket, amelyek elősegítik a pozitív érzelmek, pozitív viselkedés, pozitív gondolatok kialakítását, fejlesztését.

**Eredmények:** A kvantitatív kutatás során 99 fős mintán végzett elemzések alapján elmondható, hogy számos karaktererősség és reziliencia faktor között van szignifikáns kapcsolat. A kvalitatív vizsgálat egy 14 fős mintán végzett intervenció programból állt. A karaktererősségeken alapuló pozitív pszichológiai intervenciók mind erősség, mind fő erény szinten értelmezhető elmozdulást váltottak ki. Továbbá, a reziliencia faktorpontszámokban is történtek értelmezhető változások. A minta jól-lét érzetre vonatkozó átlagpontszáma nőtt a kiindulási állapothoz képest.

A korábbi kutatási eredmények értelmében, a jól-lét érzet számos pozitív hatása érzékelhető a szervezetekben.

**Következtetések:** Jelen kutatás eredményeit tekintve elmondható, hogy a karaktererősségeken alapuló pozitív pszichológiai intervenciók valós változásokat eredményezhetnek, s mivel az erősségek megfelelő használata növeli a jól-lét érzetet, a jövőben ezen összefüggésre alapozva pozitív hatást érhetünk el a jól-lét érzettel összefüggésben álló faktorok (pl. teljesítmény és kreativitás) esetében is.

*Kulcsszavak: pozitív pszichológia, karaktererősség, reziliencia, pozitív pszichológiai intervenció, munkapszichológia*

## Thermal conductivity and size distribution of Yttrium doped Strontium titanate

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Perovskite oxides have been extensively studied due to their wide range of applications in electronics, catalysts and energy storage [1]. Strontium Titanate (SrTiO<sub>3</sub>) is a perovskite-type oxide that possesses unique physical and chemical properties such as thermal stability, superconductivity, high dielectric constant and good photocatalytic activity. These properties are highly dependent on the morphology and crystal size and can be further tailored by compositional design, making SrTiO<sub>3</sub> one of the most adaptable and functional perovskite oxide materials. Recent studies have shown great interest in the cubic morphology of SrTiO<sub>3</sub> as it provides larger surface areas [2], interfaces, active sites for reactions and act as ideal building blocks for complex device fabrication.

To date, several approaches have been explored to synthesize nanosized SrTiO<sub>3</sub> particles. Methods ranging from hydrothermal/solvothermal reactions, sol-gel processes to molten-salt synthesis and combustion. Although these methods have been proved successful in the synthesis of nanocubes, the adequate control of the particle size and morphology remains one of the major challenges.

**Results:** In this work the preparation of pure and Yttrium (Y) doped SrTiO<sub>3</sub> ceramics through sol-gel process is reported. The thermal conductivity and the size distribution of the samples were investigated. XRD results show that the samples are crystallized in the pure perovskite structure. The doping composition of Yttrium were set to 0%, 4%, 10%, 15% weight percent. The lattice parameters produced are 3,909 Å to 3,951 Å so that the crystal structure forms a cubic structure with a crystallite size of 869.520 Å -915.632 Å. Furthermore, we observe an increase in the thermal conductivity of SrTiO<sub>3</sub> due to phonon scattering by the Y dopant.

**Conclusions:** The results obtained in the present work show increasing in the thermal conductivity after the doping with Yttrium, Y (4 to 15%)-modified SrTiO<sub>3</sub> samples can be used in many optoelectronic applications shown better properties. The modification in the thermal conductivity after doping indicates that Y has successfully doped into SrTiO<sub>3</sub> lattice.

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*Keywords:* Sol-gel, Thermal conductivity, doping, Size distribution

## **Sustainability analysis of vernacular earthen domes in northern Syria as responsive refugee shelters**

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The Syrian continuous conflict has started since more than nine years so far. The consequence of this conflict has been disastrous for not only Syria urban areas but also its world heritage and historical sites. Another tragic outcome of the conflict is the displacement of over 13 million people which is more than half the population; including more than 6.1 million internally displaced. The refugee crisis is growing and the Syrian refugees have to face another crisis in the camps due to a significant shortage of supplies and resources. One solution was using earthen buildings that have been a traditional architectural practice in Syria for 11 thousand years. As a part of the cultural heritage, it depends on community participation and achieves environmental and economic efficiency in addition to preserving memory and identity of the place. This research discusses the recreation of sustainable shelters through the revival of heritage vernacular earthen architecture in northern Syria. A comparative analysis was conducted between the humanitarian agencies shelters (HAS) and different historical vernacular dwellings (HDS) from the same region with an arid steppe climate. They were modelled using numerical thermal simulations framework to assess the shelters' building energy demand and indoor comfort quality. The comparison resulted in the superiority of the vernacular dwelling.

## Teaching quantum mechanics through light polarization in secondary school

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Most students are interested in the wonders of modern physics, including quantum mechanics. However, in my opinion learning quantum mechanics deserves special attention not only because of its cultural value, but also because of its role in innovation, in addition it also equips our students against pseudoscience.

Earlier I recognized a curriculum, which discusses quantum mechanics in a new approach [1-3]. In the poster I present the structure of the curriculum and I speak about my experiences.

**Results:** I translated the educational materials into Hungarian, I made an educational experiment in the 19/20 school year, I made suggestion for the curriculum and I made a website for e-learning too [4].

**Conclusions:** My experiment was a pilot project, so it is worth to do more research and I should enrich the curriculum with more ideas and make further research about it.

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*Keywords:* physics education, quantum mechanics, secondary school, teaching

## Information security issues in Kazakhstan

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The article has described issues of legal regulation and current state of information security in Kazakhstan. The aim of the research was identify fundamental legislative and regulatory documents related to security field and recommended four priority tasks for improve information security in the country.

Over the past years the number of measures have been implemented in the Republic of Kazakhstan to improve the state information security system [1-2]. In accordance with the National Security Strategy of the Republic of Kazakhstan the Concept of Information Security was developed and adopted. For the developing this Concept government of Kazakhstan based on experience of the the existing international experience in the field of information security, in particular, America, Great Britain, Canada, the Russia, India and Estonia [2-4].

The regulatory framework of Kazakhstan is not sufficient to ensure information security and need further development. In our opinion the priority tasks of Kazakhstan in the field of information security should be:

I. Establishing the legal status of users of information in Internet; II. Development of special legislative and by-laws on information exchange and protection of information aimed at execution; III. Adoption of special legislative and by-laws on information exchange; IV. Active participation in the development and conclusion of international treaties and agreements.

An analysis of all the fundamental legislative and regulatory documents related to the above problem indicates that the strategy for the development of the information society in Kazakhstan the formation of state policy in this area are closely related to legal regulation. On the one hand the change of such regulation is one of the instruments and directions of policy and on the other hand the policy itself and the forms of its development and implementation are determined by the current legal system in the Republic of Kazakhstan. The tasks we proposed will contribute to the legal protection of information data in Kazakhstan.

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*Keywords: information security, Kazakhstan, legal regulation*

## **Poszter szekció II.**

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## **Poster Session II.**

## Effect of ischemic postconditioning on matrix metalloproteinases and biglycan in *in vivo* porcine model of acute myocardial infarction

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**Background:** Matrix metalloproteinase-2 (MMP-2) has been shown to be activated during myocardial ischemia-reperfusion (IR) injury and degrade cardiac intracellular contractile proteins. In our previous research of porcine model of acute myocardial infarction (AMI), ischemic postconditioning (IPoC) failed to decrease myocardial necrosis, however, significantly reduced the severity of myocardial microvascular obstruction (MVO) compared to ischemic control. Therefore, our aim was to investigate changes in cardiac MMP-2 and -9 activities and the levels of their extracellular substrate, biglycan in a porcine AMI model.

**Methods:** AMI was induced in domestic pigs (25-35 kg) with balloon catheter occlusion of the left descending coronary artery for 90 min. Animals were divided into sham-operated, ischemic control and IPoC (6×30s ischemia/reperfusion after 90-min occlusion) groups. At the end of the 3-hour reperfusion, tissue samples were taken from the right ventricle and non-ischemic and ischemic areas of the left ventricle to determine MMP-2 and -9 activities and biglycan levels.

**Results:** Cardiac MMP-2 activity did not show any difference among the groups, while MMP-9 activity (sham: 573±80, IR: 481±36 and IPoC: 598±33 arbitrary unit ± SEM) was significantly increased in IPoC compared to ischemic control. On the other hand, biglycan levels from IPoC were significantly decreased in left ventricular infarcted tissue compared to ischemic groups (sham: 48.2±4.5 IR: 54.8±10.2 and IPoC: 13.7±4.2 ng/mL), while left ventricular non-infarcted and right ventricular tissues did not show any significant changes among groups.

**Conclusions:** IPoC decreases the MVO and the biglycan level in the infarcted region of the left ventricle, which could be an important contributor to the cardioprotective effect. Increased MMP-9 activity but not MMP-2 could be responsible for reduced biglycan level in infarcted regions following IPoC.

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## Factors affecting provisions of Emergency Obstetric and Newborn Care

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**Introduction:** Emergency Obstetric and Newborn Care (EmONC) is a life-saving approach for mothers and newborns experiencing complications during pregnancy, childbirth, and the postpartum period (1). Like other developing countries, Ethiopia has high maternal and neonatal mortality (353/100,000 live births and 28/1000 live births) respectively in 2015 where the majority of them are due to lack of timely, effective, and accessible EmONC services (2).

**Aim:** The aim of this study is to assess factors affecting provisions of Quality Emergency Obstetric and Newborn Care services in Public health facilities in Dire Dawa, Ethiopia.

**Methods and Materials:** A mixed-method design (MMD) was employed in purposively selected health facilities in Dire-Dawa City. A self-administered standardized questionnaire and health facility survey checklist, an observational checklist, were used for quantitative survey. Information letters, consent forms, and questionnaires were handled to potential participants by research assistants. Data were coded, cleaned, and entered using Epi Info 7 (7.0.9.34) and Analyzed using SPSS version 20 for descriptive and inferential statistics. A key Informant In-depth Interviews and FGDs used for qualitative part. Data's were cleaned, coded, and analyzed using a thematic analytic method, and some important findings were reported with the associated quotations from the extracted discussions.

**Results:** Of nine surveyed EmONC facilities, 73.9% of health centers, and 91.7% of hospitals show readiness for the provision of EmONC services. Of the seven BEmONC facilities, only six (85.7%) were providing all the eight signal functions of BEmONC; and 95.0% of tertiary Hospitals were found to deliver all the ten basic signal functions of CEmONC.

**Conclusions:** Lack of well trained and specialized Maternal and Child Health Care Providers, basic infrastructural installments/amenities, drugs and supplies, and poor health care seeking behaviors of the clients are the major contributing factors for the lack of improvements in the quality of EmONC services in the region. Thus, the findings bear considerable implications for policy and local priorities.

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**Keywords:** Factor(s), Quality, Provision(s), Emergency obstetric and newborn care, Knowledge, Ethiopia

## Simulation of water flux in an unsaturated soil in Boda village, Hungary

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Unsaturated flow processes are in general complex and difficult to describe quantitatively, since they often entail changes in the state and content of soil water during flow. Such changes involve complex relations among such variables as soil wetness, suction, and conductivity, whose interrelations are further complicated by hysteresis as well as by spatial variability [1,2]. Modeling field hydrological processes is vital for improving soil water dynamics for field operations. The HYDRUS (2D/3D) model was used to simulate water flow through a study site surface of silty and silty loam soil in Boda Village, Hungary.

**Results:** The results show that the maximum water penetration depth at the end of the simulation period was high in comparison to the beginning of the period due to rainfall events accruing through the duration of the study which is 225 days. Moreover, the seasonal timing plays an extremely important role in determining the water dynamics and soil properties.

**Conclusions:** The results of the analyses with the help of the measured precipitation, and water content input datum shows that during the study period the water content of the soil is progressively distributed down from the surface to the bottom, especially in the period of the winter, it gives an overview for getting the proper time for the water supply to the crops.

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**Keywords:** Soil Water Dynamics, HYDRUS, Boda Village, water flux, unsaturated zone

## Investigating the relationship between involuntary musical imagery and musical preferences

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Involuntary musical imagery (INMI), also known as “earworms”, is a phenomenon that has been a topic of an increasing amount of research in the past two decades. The aim of the present study was twofold: to investigate the relationship between earworms and a related phenomenon, musical preferences, and to create a method to induce INMI under experimental conditions. Participants (N=46) completed the Scale of Musical Preferences (SMP) in which they heard short musical segments that they had to rate based on how much they liked them - these segments were used to induce INMI. INMI experiences during the experiment and one week later were collected. Information about earworms was collected by completing the Involuntary Musical Imagery Scale (IMIS).

**Results:** The results showed significant correlations between the IMIS and the SMP. During the experiment, 80.43% of subjects experienced INMI, from which 56.52% reported INMI related to SMP-songs. During the one week follow-up, 89.96% reported at least one earworm. The mean preference for the INMI songs was significantly higher than the average value of the SMP.

**Conclusions:** These results imply that 1) there is a significant relationship between involuntary musical imagery and musical preferences; 2) the use of the Scale of Musical Preferences is an adequate tool for experimentally inducing INMI; and that 3) preferred songs become earworms more often. This study provides new, relevant information on the association between musical preferences and earworms, and introduces a novel approach to INMI-induction under experimental conditions.

*Keywords: involuntary musical imagery, earworms, musical preferences, music psychology*

## Early acquisition of a foreign language at home and in the kindergarten

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**Introduction:** Opinions on early foreign language acquisition vary widely. In her books, Judit Navracsecs (1999) explains, among other things, the benefits, and beneficial effects of early foreign language learning. Their biggest advantage is in phonetics, because at this age it is not difficult for children to learn the phonetics and language of a foreign language at all [1]. In one of his studies, Pál Babinszky (1983) gathered the views of many experts and the results of research on the relationship between foreign language and age. Among other things, he writes here about the perception of “the younger the better” and the “older, the faster” [2] [3].

In this context, we examined parental opinions on how they help their preschool child learn a foreign language in a home environment, and what experience they have of showing up in kindergarten. A questionnaire was used for the study, which was analyzed with SPSS software. Our results show that the younger generation is more supportive of early foreign language acquisition, and based on the type of settlement, those living in the county seat support it in the highest proportion. It is also clear that home and kindergarten habits differ in each foreign language acquisition opportunity. Overall, early foreign language is considered important among respondents. In connection with this, the foreign language itself also appears at home, but it can be considered more emphasized in kindergarten life. There is a clear difference between the different modes of practice in home and kindergarten environments, in which different goals are also outlined. The research highlighted that there are significant differences along different background (for example age, education) variables.

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## Being a woman in the 21st century - Social discourse about violence against women in Spain and Hungary

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**Introduction:** Nowadays annually 66.000 women worldwide suffer from the phenomenon called 'femicide' or 'feminicide' in the English literature ('feminicidio' in Spanish), which means the act of homicide committed specifically against women. Although in the Hungarian language the terminology is not well known, still it is a very important and serious problem. Frequently it means the dark and sorrowful end of a long and painful process of coexistence between the aggressor and the victim – with a wide range of acts of violence, maltreatment and abuse. In my research I tried to identify the different forms of maltreatment and violence in Spanish and Hungarian samples, as well as the motives behind the phenomena.

**Results:** According to my findings, there are 8 different forms of violence committed specifically against women: (1) financial, (2) occupational, (3) institutional, (4) psychological, (5) verbal, (6) physical, (7) sexual and (8) symbolic. These 8 types of violence have one feature in common: directly or indirectly they can lead to feminicide. Furthermore, there can be several motives behind the violent acts, such as stereotypes and preconceptions fixated from the youth, a patriarchal social system (especially in the Spanish sample), evolutionary and biological approaches, or jealousy.

**Conclusions:** With the identification of the different forms of maltreatment and violence in Spanish and Hungarian samples, my results can help develop different methods of future prevention and sensitization programs, targeting the importance of the social discourse about equality between women and men.

*Acknowledgements:* The process of the research was supported by the ÚNKP-20-3-I. New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund.

*Keywords:* violence against women, aggressor, victim, feminicide, social discourse

## Case study of an additive manufactured violin

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In 2014, Bay Zoltán Applied Research Nonprofit Ltd. carried out a research within the framework of the “Hungarian Piano Project”, where the aim of the project was to produce a prototype of a novel piano based on Hungarian technical and manufacturing knowledge and to develop its production technology. One essential element was the use of a resonant composed of a wind-reinforced plastic composite, the other was the novel design [1].

Considering the research described earlier and its results, I set the goal to create an instrument with FDM (Fused Deposition Modelling) 3D printing technology, with the right choice of materials, that can compete with its traditional counterparts and is also aesthetically acceptable. My choice of instrument is a violin.

Due to certain advantageous properties of composites, such as high strength, shape retention and (relative to wood) low moisture uptake, there have been several attempts around the world to replace certain originally wooden components with composite in certain instruments. Based on a literature search for 3D printing, the most popular and most commonly used materials are ABS and PLA, so I examined these in more depth to determine which material may be suitable for the violin.

**Results:** The ABS and PLA were measured via tensile test to apprehend the mechanical properties. Based on the measurements, both ABS and PLA may be suitable polymers, as they can withstand the loads of the strings, however I used several types of rods and tubes to strengthen the instrument. In terms of simpler manufacturability, PLA was chosen. By the advice of professional violinists, I made improvements on the violin model. At the final version I further strengthened the violin neck with CPEHG100 filament.

**Conclusions:** The study can be considered a success, as a prototype was created, the sound of which, according to experts, is close to traditional wooden violins. The advantages of a violin made with an additive process are that they provide a unique look, are easily customizable, and are easy to replenish (the body and neck can be replaced separately). In future research, it may be worthwhile to examine other materials as well, replace the current aluminium with a carbon tube, and further refine the printing parameters.

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*Acknowledgements:* I would like to express my gratitude to Fillamentum for sponsoring and helping my project.

*Keywords:* Additive manufacturing, 3D printing, material science, filament, violin

## Media representation of international volunteering in Hungary 2015-2019

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**Introduction:** International volunteering has a history of barely more than 20 years in Hungary. Although its economic role, financial structure as well as the number of international volunteers are all lagging far behind those of other developed countries, the key aspects and characteristics of international volunteering in Hungary (demographic attributes, motivational and organisational background, legislative regulation etc.) represent strong similarity in international comparison. The area's representation in the Hungarian media is, however, occasional, uneven and weak in quantity of coverages.

**Aim:** My research aim is to reveal the media representation of international volunteering in Hungary, disclosing the content and intensity of media coverages as well as identifying the communications environment. I wished to learn what social roles and discourse topics about international volunteering are to be identified in the mediated contents.

**Methods:** I examined the media contents published, broadcast or aired in the Hungarian media between 2015 and 2019. I collected altogether 746 articles and coverages of the printed press, internet news portals, TV and radio channels as well as blog contents. I used quantitative content evaluation and qualitative discourse analysis to identify the social and discourse structures of international volunteering in Hungary.

**Results:** From 2016 on the overall number of coverages has been decreasing. The most frequent topics were the Hungarian medical missions to Africa (having an outstandingly recognizable high profile media presence), the European Voluntary Service (EVS) and Erasmus+ voluntary programmes through the stories and personal profiles of Hungarian volunteers abroad or the experiences of foreign volunteers working in Hungary. The main discourse aspects of international volunteering are its social and personality building possibilities, its role in humanitarian development, its power for international altruism, and also its role for self creation and shaping personal identity.

**Conclusions:** Media representation of international volunteering is highlighting its social roles as self creational and altruistic activity only. Its wide and more complex roles of economic, (geo)political, diplomatic, intercultural and community building effects are yet to be represented, let alone its role in creating transcultural understanding and social tolerance.

*Acknowledgements:* I hereby thank the mediamonitoring company, Imedia Kft., for giving me access to its huge and precious database that I could use for this research.

*Keywords:* international volunteering, voluntary, content evaluation, discourse analysis, media representation

## An analysis of video game trailers

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Video games evolve and spread at an unstoppable pace. The number of gamers rise from year to year, and as a result, there have been a multitude of scientific studies in these last few decades, which are predominantly concerned with the games. There are also some by-products of these however, which have not gotten the same attention from these same researchers, such as video game trailers. The goal of this study, is to comprehensively sort and categorize game trailers, not only based on their properties in content and form, but also the subjective views of both their creators and viewers. While analyzing these properties, one must also not forget to take a look at some aspects of the media history concerning them, such as the technological and genre-related parallels between games and movies, and the constant change in video games in the better part of the last half century.

To begin, the study builds upon multiple analyses which are focused on movie trailers. The most significant of which, is the typology of Lisa Kernan, who split the evolution of movie trailers into three distinct parts, based on her conceptions of the viewer [1]. During the “Classical Era”, the audience was handled by the film industry as a homogenic mass, with no critical thought, completely disregarding the individual persons properties as insignificant. In the “Transitional Era” which started in the early '50-s and lasted till around 1975, the image of the mass has been replaced by the idea of a multitude of individuals, where the individual attributes came into view. Finally, in the “Contemporary Era” the idea of “Global Consumer” is held in the highest regard, which accepts the complex nature of the viewing audience, but the task of signifying the intended audience has been shifted from the trailer, to the movie’s genre itself. This study attempts to line up Kernans theory with the world of video games.

**Results:** From Kernans study, one can easily see the process, during which trailers try ever harder from era to era, to mark out, which is their intended group, who the viewers are, who they are trying to get the attention of. In the case of video games, the trailers of the mainstream games work along the lines of the third era, but, on the other hand, trailers for indie games show the signs of the previous era.

**Conclusions:** The fact, that in the game-industry, the style and properties of two distinct eras exist in parallel, shows conclusively, that Kernans typology explains more than a single evolutionary motive. The audience a trailer can effectively address, is much more influenced by the technological constraints than its content or genre.

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*Keywords:* video game, movie, trailer, target audience, mainstream, indie, media history, technology



## **Does white-collar crime threaten sustainability of regional development in Indonesia? A lesson from reform era**

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After the 1998 reformation in Indonesia, the phenomenon of white-collar crime (corruption) was increasingly rampant. Although in 2004, the ad-hoc Corruption Eradication Commission (KPK) was established, corruption in Indonesia still seems to persist. The perpetrators of corruption came from six institutions namely parliament/local parliaments, ministries, state/local owned enterprises, commissions, provincial governments, and local/city governments. Corruption behavior was clearly related to the state and regional budgets. Therefore, this research aims to analyze the relationship between corruption cases in various regions and the sustainability of regional development in Indonesia. The approach used is descriptive method by choosing Pearson correlation. Statistic show that the highest cases of corruption were in local/city governments. The relationship between corruption cases and economic growth had negative score (-0.36) although not significant. That corruption can treat the sustainability of development in the regions, is a fact, especially when all of the elements of the ruling class are involved.

*Keywords: white-collar crime, institutions, local/city government*

## The influence of composition and sintering temperature on thermal properties of zeolite-alumina composite materials

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This research work provides a technical description of the utilization of natural zeolites in the synthesis of ceramic composite material using mechanical milling and reactive sintering technique. Two commercially available minerals (Natural zeolite from Mád in Tokaj region and MOTIM Al<sub>2</sub>O<sub>3</sub>) were used as starting raw materials, A comprehensive analysis has been conducted for the detailed characterization of raw materials as well as produced products, the analysis combines the mineralogical examination using X-ray diffraction (XRD) together with chemical constituent determination by (XRF) and thermoanalytical studies using (TG/DTA), heating electron microscope and thermal conductivity analyzer to determine the influence of sintering temperatures on the thermal properties of the produced zeolite-alumina composite materials. Based on the results obtained from XRD, XRF and TG/DTA, the authors have found a great connection between the composition, firing temperature and thermal properties of the produced ceramic samples.

*Keywords: zeolite-alumina, composite materials, uniaxial compaction, thermal properties*

## Genetic background of GLUT1 membrane protein expression pattern in type 2 diabetes mellitus

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**Introduction:** Type two diabetes mellitus (T2DM) is one of the most common diseases in the 21st century, and several factors (environmental, genetic, lifestyle) contribute to its development. Most of the genetic variants associated with T2DM have already been described in whole genome studies. However, these studies do not provide information about potential changes in the related protein expression levels.

**Aim:** In the present work I have searched for associations between the pattern of the GLUT1 expression on erythrocyte membrane and the genetic variations that may influence the amount of the protein. These variations may contribute to the development of the disease, thus they may serve as biomarkers in the future.

**Methods:** The quantitative measurement of the level of the glucose transporter 1 (GLUT1) membrane protein is performed using a flow cytometry based method that has been developed by our research group. By using this method, quantitative differences in protein levels, measured on fixed erythrocyte membranes (ghost), can be detected at an individual level. Deviation from the mean expression levels gives reason to analyse the potential genetic background of these changes by sequencing and genotyping.

**Results:** Previous literature data and the flow cytometry analysis helped us to identify 3 single nucleotide polymorphisms (SNPs: rs1385129, rs841848, rs841847) that show a significant correlation with the GLUT1 expression level of the red cell membrane. These SNPs have already been described in association with one of the complications of type 2 diabetes, diabetic nephropathy [1,2].

**Conclusions:** Although the tested SNPs showed no direct association with T2DM, we found significant correlation with the expression level of the GLUT1 protein. We suggest a possible association between the amount of GLUT1, the presence of the variants, and the risk of type 2 diabetes mellitus leading to nephropathy. However, further research is needed in this regard.

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**Keywords:** type two diabetes mellitus, GLUT1, flow cytometry, polymorphism, biomarker

## Extraction of mycotoxins from aqueous solutions by insoluble $\beta$ -cyclodextrin bead polymer

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**Introduction:** Mycotoxins are toxic secondary metabolites of filamentous fungi, and are common contaminants in food and beverages [1]. Ochratoxin A (OTA) and citrinin (CIT) are nephrotoxic mycotoxins, produced by *Aspergillus* and *Penicillium* species [1]. The *Aspergillus*-derived aflatoxins (AF) and their precursor, sterigmatocystin (STC), are hepatotoxic and carcinogenic mycotoxins [1,2]. Cyclodextrins (CDs) are ring-shaped oligosaccharides built up from glucose units [3]. CDs form complexes with several mycotoxins [4]; furthermore, the extraction of certain mycotoxins (e.g., OTA and patulin) from beverages has been successfully performed with  $\beta$ -CD polymers [5,6]. In this study, we aimed to investigate the removal of OTA, CIT, AFB1, AFM1, and STC from aqueous solutions by insoluble  $\beta$ -CD bead polymer (BBP).

**Methods:** Increasing amounts of BBP (0.0-13.3 mg/mL) were added to mycotoxin solutions (each 2  $\mu$ M) in different buffers (pH 3.0, 5.0, and 7.0). After 40 min incubation in a thermomixer, BBP was sedimented by pulse centrifugation then the residual concentration of mycotoxins were analyzed by HPLC.

**Results:** BBP induced concentration-dependent decrease in the mycotoxin content in each buffer applied. Typically, pH 3.0 and pH 7.0 were similarly or less advantageous for mycotoxin extraction compared to pH 5.0. However, the extraction of OTA was the most effective at pH 3.0. Among the mycotoxins tested, the removal of OTA, CIT, and STC was the most successful: approximately 75% of these compounds were extracted by BBP.

**Conclusions:** BBP significantly decreased the mycotoxin content of aqueous solutions, suggesting its potential utilization as mycotoxin binder.

**Acknowledgements:** Supported by the ÚNKP-20-3-II New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation fund.

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**Keywords:** mycotoxin,  $\beta$ -cyclodextrin bead polymer, cyclodextrin, toxin removal, mycotoxin extraction

## Interactions of silymarin components and their sulfate metabolites with human serum albumin and cytochrome P450 enzymes

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**Introduction:** Silymarin is a mixture of flavonolignans in *Silybum marianum* [1]. It is composed of silybin A (SA), silybin B (SB), isosilybin A (ISA), isosilybin B, silychristin (SC), silydianin, and other phenolic compounds [1]. As the active ingredient of several drugs and dietary supplements, silymarin is used in the treatment of liver injury/disorders [1]. Because of its low oral bioavailability, silymarin conjugates appear at high concentrations in the circulation and likely in some tissues [2]. Flavonoids interact with several proteins with pharmacokinetic importance; therefore, we aimed to investigate the interactions of silymarin components (SA; SB; ISA; SC; and 2,3-dehydrosilychristin, DSC) and their sulfate conjugates (silybin A-20-*O*-sulfate, SAS; silybin B-20-*O*-sulfate, SBS; silychristin-19-*O*-sulfate, SCS; isosilybin A-20-*O*-sulfate, ISAS; 2,3-dehydrosilychristin-19-*O*-sulfate, DSCS) with human serum albumin (HSA) and with cytochrome P450 (CYP2C9 and 2D6) enzymes.

**Methods:** Albumin-ligand interactions were investigated employing fluorescence quenching studies [3], while the effects of flavonolignans on CYP2C9 and 2D6 enzymes were tested by *in vitro* enzyme assays using diclofenac and dextromethorphan substrates [4].

**Results:** Each compound tested formed stable complexes with HSA: DSCS binds with the highest while SC with the lowest affinity. The CYP2D6-catalyzed dextromethorphan formation was not affected by flavonolignans. However, most of the compounds induced statistically significant inhibition of CYP2C9; in addition, SA, SB, SC, and DSC proved to be strong inhibitors of the enzyme.

**Conclusions:** Based on the above-listed observations, the consumption of drugs or dietary supplements with high silymarin content may interfere with the albumin binding and/or the CYP2C9-mediated elimination of certain drugs. Therefore, the simultaneous administration of silymarin with other drugs can lead to the development of pharmacokinetic interactions, and consequently may interrupt the drug therapy.

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**Keywords:** silymarin components, sulfate metabolites, human serum albumin, biotransformation enzymes, pharmacokinetic interaction

## Comparison of the efficiency of Vacuum-UV light sources in water treatment: low-pressure mercury-vapour lamp versus Xe\* excimer lamp

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Adequate quality of water is essential to the appropriate quality of life. Due to the water cycle, many toxic compounds, that are difficult to biodegrade, appear in surface waters and drinking water bases. The conventional biological water treatment is a very effective and economically feasible process, but sometimes it is not able to eliminate completely the toxic organic pollutants having a low concentration. These harmful substances can cause serious ecological problems, and also responsible for many public health problems. Consequently, it is important to investigate and develop additive water treatment processes. Advanced Oxidation Processes are a variety of chemical, photochemical, and electrochemical processes that are based on the production of reactive species, especially HO•, and can be used for elimination of organic matter. VUV photolysis, one of these methods, is based on high-energy (wavelength <200 nm) radiation, which is able to cause the dissociation of water molecules and produce HO• and H•. The aim of this study to compare the efficiency of two VUV light sources: low pressure mercury vapour and excimer lamp. The low-pressure mercury vapour (LPM) lamp emits both 185 nm VUV and 254 nm UV photons, while excimer lamp emits only 172 nm VUV photons. A characteristic difference between the two light sources is that while 185 nm of light is absorbed in the 11 nm thick layer of water, a fraction of mm (0.04 mm) is sufficient to absorb 172 nm photons.

**Results:** The effect of dissolved O<sub>2</sub>, the effect of the initial concentration of coumarin (model organic substance) on its transformation rate, and on the formation rate of its hydroxylated products, and the effect of HO• scavenger were determined and compared using both light sources. The recombination of HO• and HO<sub>2</sub>•/O<sub>2</sub>•- in pure water result in the formation of H<sub>2</sub>O<sub>2</sub>. Although the photon flux of 172 nm photons was five times higher than that of 185 nm photons, 40 times higher H<sub>2</sub>O<sub>2</sub> concentration was measured in O<sub>2</sub> saturated water using 172 nm VUV light compared to the 185 nm light irradiated one. At the same time, the initial transformation rate of coumarin was only 5 times higher and practically independent on the dissolved O<sub>2</sub> concentration. The effect of methanol as HO• scavenger, demonstrated the relative contribution of HO• initiated reaction to the transformation of coumarin and formation of its hydroxylated product in both cases.

**Conclusions:** Comparing the aqueous solutions irradiated with VUV light at 185 and 172 nm, we found that the extreme inhomogeneity of the irradiated water at 172 nm greatly influences the quantum efficiency of organic matter conversion.

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*Keywords:* AOP, VUV photolysis, hydroxyl-radical

## A neutrofil granulociták szerepe a vázizom steril gyulladásában és regenerációjában

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A neutrofil granulociták a természetes immunrendszer első védelmi vonalát jelentik a patogénekkal szemben. Jelenlétük azonban nemcsak a kórokozókkal szemben fontos, hanem a steril gyulladás normál immunválaszaiban is szerepet játszanak. Az Mcl-1 anti-apoptotikus fehérje nélkülözhetetlen a neutrofil granulociták fejlődésében, a gén kiütése egerekben drasztikus neutropéniához vezet. A vázizom kiváló szöveti helyreállító képességgel rendelkezik, mégis az Mcl-1 hiányos egerekben lényegesen lassabb vázizom regeneráció figyelhető meg a kontroll állatokhoz képest.

Kutatásunk célja a neutrofil granulociták szerepének vizsgálata a szöveti regenerációban.

Az izomsérülést kardiotoxin kezeléssel indukáljuk a tibialis anterior izomba. A steril gyulladásba került szöveteket a kezelés utáni eltérő időpontokban izoláljuk és feldolgozzuk. Az így kinyert sejteket áramlási citometriás módszerrel analizáljuk.

**Eredmények:** A kétféle egértörzs fenotípusos vizsgálatok az Mcl-1 hiányos egerekben lép-megnagyobbodást, a csontvelőben és a lépben a mieloid progenitor sejtek megnövekedett mennyiségét észleltük. Kétféle izomsérülés modellt összehasonlítva azt tapasztaltuk, hogy a kardiotoxin hatására nagyobb mértékű gyulladás jött létre, mely eozinofil granulociták infiltrációval társult. A kardiotoxin indukált izomsérülést több napon keresztül vizsgáltuk. Az Mcl-1 hiányos egerekben elmaradt a neutrofil infiltráció, viszont megfigyelhető egy elhúzódozó eozinofil migráció. Az izomban megjelenő Ly6C+ és F4/80+ makrofágok száma is alacsonyabb a kontroll állatokhoz képest. A szatellita és fibro-adipogén progenitor sejtek aktivációja és osztódása mindkét egértípusban bekövetkezik és eltéréseket tapasztaltunk a jelenlevő sejtek mennyiségében. Feltételezésünk szerint az Mcl-1 hiányos egerekben a sejtszám csökkenés hiánya a késleltetett regenerációra utal, és ezek a vizsgálatok alkalmasak lehetnek az izomregeneráció egyszerűsített vizsgálatára, ami kiválthatja a körülményesebb hisztológiai vizsgálatokat.

**Következtetések:** Előzetes eredményeink arra utalnak, hogy az Mcl-1 gén kiütése nemcsak a neutrofil granulociták, de a monocita-makrofág képződését is befolyásolja. A neutrofil granulociták hiányában lassabb izomregenerálódás figyelhető meg az egerekben. További kutatásainkban a késleltetett izomregenerációt neutrofil sejtranszferrel szeretnénk helyreállítani és ezáltal jobban megismerni a granulociták szerepét a steril gyulladásban és az azt követő regenerációban.

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*Kulcsszavak:* neutrofil, gyulladás, regeneráció, kardiotoxin, Mcl-1

## Investigation of the properties of PLA (Polylactic-acid) treated with natural fillers

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A major environmental problem today is the production of non-degradable plastics, which are produced in huge quantities worldwide, because they can be produced in a cost-effective manner and greatly simplify our lives due to their ease of use. One of the main goals of his polymer research is to produce new types of polymers that are environmentally compatible, that is, biodegradable and tissue friendly to the demands of our time. Polylactic acid (PLA) has been the focus of research for decades, and its reactions have been studied in the literature for its essential properties. Biopolymers can solve many problems, such as recycling, environmental pollution, as these natural resource-based plastics are decomposed into carbon dioxide, water and humus, and sometimes methane, in the wild or under composting conditions, in the presence of temperature, humidity and microorganisms. It is important to mention that biopolymers can be processed by conventional thermoplastic technologies, but their widespread application is not yet common. In our tests, we have selected household waste as a filler that does not burden the environment after use.. Minden Each composite consists of a basic matrix and one or more additives that influence the properties. Each additive and treatment determines its subsequent use. The basic matrix in this case is PLA, and the fillers are potato peel, egg shell and coffee grounds. The prepared samples were filled with different concentrations to obtain 5%, 10% and 20% polylactic acid samples We analyzed the samples by Shore D harness tester and impact strength test. The highest hardness increase was given by the sample containing 10% of coffee grounds ground above 160  $\mu\text{m}$ , which resulted in a 3.75% increase in the value of the reference sample. For the fraction below 160  $\mu\text{m}$ , the highest value was measured in the sample filled with 20% eggshell, which resulted in an increase of 3.14% for the reference sample. For the fraction below 160  $\mu\text{m}$ , the highest value in terms of toughness was measured in the sample filled with 5% eggshell, which meant an 8% increase. For the fraction above 160  $\mu\text{m}$ , none of the samples had a higher impact resistance, only the sample filled with 5% eggshell approached the polylactic acid sample, as its hardness value was 3.98% lower.

*Keywords: PLA, natural filler, biodegradable polymers, eggshell, potato peel, coffee grounds*



## A fogyatékoság és elfogadás

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A fogyatékoság történelme már hosszú időre tekint vissza[1]. Éppen ezért a különböző korok és kultúrák is más és más módon viszonyultak ehhez a kérdéskörhöz. Úgy, ahogy a mai társadalom is változatos attitűddel rendelkezik, ha a fogyatékoság kérdésköre szóba kerül. A világháborúk után előtérbe került a fogyatékos személyek társadalomban betöltött szerepének hangsúlya, így különböző szervezetek alakultak a támogatásukra, törvényeket és jogokat fektettek le elsősorban az érdekeiket nézve, valamint a hátrányos megkülönböztetés visszaszorítása érdekében.

Az oktatásban való megjelenésük is változásokat idézett elő a társadalom fogyatékosok megítélésének szempontjából. A képezhetőségük érdekében újítások jöttek létre a pedagógia területén is, gyógypedagógusokat képeztek ki, akik egyfajta közvetítői szerepet tölthettek be a gördülékenyebb szocializáció kialakítása érdekében a társadalom és a fogyatékos személyek között. Habár ma is erősen él a szegregáció eszméje a mai magyar társadalomban, azonban megfigyelhető, hogy az inklúzió hazánkban még gyerekcipőben jár a nyugati országokhoz képest, de az integrációs törekvések egyre nagyobb hangsúlyt kapnak[2].

Előadásomban szeretném bemutatni a fogyatékosok megítélését az egyes korokban, valamint ennek a társadalmi csoportnak a jelenkori helyzetét is. Végezetül szeretném bemutatni azokat a törekvéseket, melyek az elfogadás irányába hatnak. Jelenleg kutatást végzek a pedagógusok fogyatékosok elfogadásával kapcsolatban, melynek előzetes eredményeit is bemutathatom reményeim szerint.

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*Kulcsszavak: fogyatékoság, történelem, oktatás, elfogadás*

## **Characteristics and affection of mineral phases on the properties of the lightweight expanded clay aggregates**

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Lightweight aggregates (LWA) are one of the most crucial materials, which can be used in the construction and building materials. And, the most major factors controlling for production lightweight aggregates are expanding, physical and mechanical properties.

The aim of this work is concentrated on studying the effect of mineral phases on all properties of expanded clay minerals. Samples were characterized by, XRD with retiveld method, and SEM microscopy attached with EDAX and heating microscope. In addition, European standards are applied to determine the physical and mechanical characteristics of the aggregates samples.

Results showed, mineral phases in clay can be affected on the expansion, physical and mechanical properties of the aggregates like quartz phase before firing has direct relation with maximum height expansion and that is mean, the increasing in quartz phase can be enhanced the expansion properties. In addition, hematite mineral phase can be enhanced the expansion of the aggregates and decreasing the bulk density and compressive strength.

## **Investigation of voltages induced on the passive side of double circuit transmission lines**

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In terms of reducing the length of powerline route, double circuit system transmission overhead line is often used in Hungary and internationally too. In addition to reducing area and costs, further benefit is that line maintenance work can be performed using conventional working methods on the de-energized system while the other system is still energized. However, due to capacitive and inductive effects, induced voltages and currents appear on the phase conductors of the passive side. The rate of induction depends on the geometry position of each wire, the voltage and current conditions on the active side and the design of the ground.

In my study I present the phenomenon of induced voltage and its influential parameters. My investigations are based on the typical column layouts in Hungary, and then I calculate the capacitively and inductively induced voltages of each case with the help of an algorithm. Comparing the results, I determine the worst cases and make conclusions.

*Keywords: induced voltage, double circuit, capacitive and inductive effect, de-energized system*

**Poszter szekció III.**

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**Poster Session III.**

## Analysis of fast camera measurement from Wendelstein 7-X stellarator with conditional averaging method

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**Introduction:** International research effort aims to utilize the fusion of deuterium and tritium nuclei to produce energy. The focus is on toroidal experimental devices. In these facilities the high temperature fuel is in plasma state and it is confined by a magnetic field. Density fluctuations with filamentary structures are often observed in them. The stellarator is one such toroidal device in which the magnetic field is produced by a complex coil system.

**Measurement circumstances:** The Wendelstein 7-X is a stellarator in Greifswald, Germany, on which an overview camera system was installed [1]. The ten cameras observing the plasma from different views detect visible light. In the 2018 Operational Phase 1.2b one of the views was dedicated to observing the filamentary density fluctuations with a Photron SA-X2 fast camera, measuring with high frame rate. In the examined case an interference filter was used and the line radiation of CIII was measured with 90kHz frequency.

**Method:** To characterize the behaviour of the filamentary density fluctuation structures, the signals of the camera pixels are analysed using the conditional averaging method. To put focus on the events of interest only those parts of the signals were selected as a sample which satisfied a specific condition. The prerequisite of the selection was that at the selected time point there had to be a peak with a deviation from the average of the signal larger and/or lower than the standard deviation of the signal multiplied by a given constant. Then two-dimensional conditional average images were produced by plotting the conditional average values of the pixels versus the coordinates of the pixels. The conditional average value is calculated for a given pixel as the average of the samples at a given time point relative to the peak time. Then specific pixels were selected considering the magnetic field geometry and the time evolution of their conditional average values was investigated.

**Results:** There are magnetic field regions where coherent filamentary structures are noticeable in the conditional average images. These structures show various kinds of behaviour and rotate in different directions depending on their location in the magnetic field. Also, there are regions where no coherent filamentary structures are observed.

**Conclusions:** The conditional averaging technique was used to analyse fast camera video measurements from the Wendelstein 7-X stellarator. The application of the method in the investigation of coherent filamentary density fluctuation structures are presented. The differences in the behaviour of the structures depending on the plasma region the light is detected from are shown.

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*Keywords:* fusion plasma physics, conditional average, filaments

## Laboratory scale steam gasification of char and oil obtained from RDF pyrolysis

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There are several countries nowadays where most of the municipal solid waste (MSW) still ends up on landfills. In order to reduce the landfilling rate non-recyclable wastes should be utilized by energy recovery. Pyrolysis and gasification provide an opportunity to turn these waste materials into value added products (e.g. synthesis gas). After syngas production through pyrolysis the remaining char still has high carbon content, which makes it suitable for further syngas generation through steam gasification. In this study RDF derived pyrolysis char and oil blend gasification was investigated. The experiments were performed in a laboratory-scale system, including a stainless steel tube as reactor and two electrical furnaces. The material was gasified at 900 °C using steam as gasification agent. The pyrolysis gases from the heating period, while steam was not introduced into the system were also analysed. In the first stage of the experiment the LHV of the gas was higher, than during gasification, while the H<sub>2</sub>/CO ratio increased significantly after steam was introduced into the reactor. The weight of the material reduced by 49,1% and the carbon conversion reached 95,3% by the end of the experiment.

*Keywords: pyrolysis, gasification, RDF, syngas*

## Various aryl halides reactivity in the palladium-acetate catalyzed P–C coupling reactions

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The first P–C coupling reaction between vinyl- or aryl halides and dialkyl phosphites in the presence of Pd(PPh<sub>3</sub>)<sub>4</sub> catalyst was discovered 40 years ago by Hiraio [1-3]. Later on due to the sensitivity and the high cost of Pd(PPh<sub>3</sub>)<sub>4</sub>, the use of various Pd-precursors (e.g. Pd(OAc)<sub>2</sub> or Pd(dba)<sub>2</sub>, and added mono- and bidentate P-ligands was a better choice, where the active catalyst was formed *in situ* [4]. Moreover, the Keglevich group found that under MW conditions, the Hiraio reaction may take place in the presence of Pd(OAc)<sub>2</sub> without addition of expensive P-ligands, if the P-reagent is used in an excess [5]. They also evaluated the catalytic cycle by quantum chemical calculations [6]. In this work, we investigated the reaction of various aryl halides and diphenylphosphine oxide.

Phosphorylation of PhI with Ph<sub>2</sub>P(O)H at 100 °C was complete after 1 hour, but in the case of PhBr under the same conditions there was no reaction, so to promote the coupling, we added KI additive. At 120 °C we studied the kinetics of the coupling of PhBr and Ph<sub>2</sub>P(O)H [7]. 1-bromo-3-chlorobenzene and 1.15 equiv. of Ph<sub>2</sub>P(O)H resulted in the formation of only the Cl-substituted product. In the case of 1,3- and 1,4-dibromobenzene, both the mono- and the biphosphorylated products were formed. To replace both bromine, the use of 2.15 equiv. of P-reagent was required.

The order of reactivity PhI > PhBr > PhCl was confirmed, the coupling of Ph<sub>2</sub>P(O)H and PhBr was successfully enhanced by KI additive at 100 °C. An induction period took place at 120 °C. The coupling reaction was extended in a selective manner to disubstituted derivatives.

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**Keywords:** Hiraio reaction, P–C coupling, Microwave, Palladium, P-ligand-free

## The synthesis of new $\alpha$ -hydroxy-ethylenebisphosphonate derivatives on the surface of the alumina

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The  $\alpha$ -hydroxyphosphonates and their derivatives are of importance due to their biological activity [1]. These compounds are primarily considered to be enzyme inhibitors [2], but also include antibacterial and antifungal agents, as well as antitumor molecules [3]. Preparative methods for  $\alpha$ -hydroxyphosphonates are mostly based on the Pudovik reaction, which is the addition of dialkyl phosphites on the carbonyl group of oxo compound. There are many examples in the literature for the synthesis of  $\alpha$ -hydroxyphosphonates, most of them use different catalysts and solvents. Our research group studied the preparation of  $\alpha$ -hydroxyphosphonates under microwave conditions without the use of any solvent [4], and later by using acetone on conventional heating [5].

In view of the protection of the environment, as well as the efficient production, an attempt was made to prepare  $\alpha$ -hydroxy-ethylenebisphosphonate derivatives on the surface of the alumina [6]. Diethyl-(2-oxopropyl)phosphonate was selected as the starting material and reacted with five different dialkyl phosphites and diphenyl phosphine oxide. We optimized the conditions including the acidity of alumina, the relative quantities and temperature.

The conclusion is that the acidic surface  $\text{Al}_2\text{O}_3$  and a sufficient amount of potassium fluoride are needed to prepare  $\alpha$ -hydroxybisphosphonate derivatives in good conversions and in suitable yields. The new products revealed unique  $^{31}\text{P}$  features (shifts and  $J_{\text{pp}}$  couplings).

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**Keywords:**  $\alpha$ -hydroxybisphosphonate, Pudovik reaction,  $\text{Al}_2\text{O}_3$



## Building Design for People with Dementia

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The growth of the percentage of elderly people is seen as one of the greatest social accomplishments of the 20th Century. However, in an ageing society that is also an increase in the number of people with dementia. Although dementia mainly affects older people, it is not a normal part of ageing [1]. Alzheimer's disease is the most common form of dementia and, according to the World Health Organization (2012) it possibly contributes to 60–70% of the cases. Until this moment dementia has no cure and it is a continuous process. People living with dementia are extremely limited in their daily competence and are in need of an increasing support for their daily life. In the architecture field, it is necessary to create and develop appropriate infrastructure that includes alternative environments for healthcare with a greater concern regarding the needs and expectations of people with dementia which it could improve their well-being and increase their ability to be more independent and self-confident. The main objective of the study is to identify and analyze architectural design aspects adopted in order to enhance the quality of life and well-being of people living with dementia in a building. For the study it was analyzed well-known case studies and a specific literature review.

**Results:** As a result aspects of building design were categorized. Among the findings are humanized spaces, wayfinding, plan layout, materials, colors and contrast. These are the main aspects that should be taken into consideration while designing specifically for people with dementia.

**Conclusions:** The knowledge about design aspects while working for people with dementia is fundamental to understand the needs, expectations and difficulties of occupants in the physical environment. Buildings can also work as a supportive environment, offering a better quality of life for the users, specially when dealing with a disease such as dementia.

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*Keywords:* People with dementia, architectural design, built environment, literature review, case study

## Contemporary multimedia in exhibition communication

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For the last few decades, central elements of museums communication were the knowledge transfer in exhibition communication through object labels, which are mostly text-based[1]. However, the digital revolution affected museums and changed the habits of museumgoers. Contemporary multimedia technology redefines relationships between exhibitions and museumgoers. My analysis will hopefully contribute to understanding the use of AR/VR as parts of the museum experience and intends to help experts in the field of museum communication to better understand and use these new technologies in their work.

This comparative study is based on participant observation of 31 exhibition applications in 11 countries. Interactivity, technical standard, authenticity, communicative value, and receptive experience enhanced through them, will be assessed and presented, highlighting both some ‘good practices’ and some partially or wholly unsuccessful applications.

The applications will be considered using the communication model developed by J.W. Carey[2]. The Carey Model describes communication as a series of processes and symbols aimed at the production, maintenance, repair, and transformation of reality. Carey considers communication as a form of secular ritual that supports sharing, participation, fellowship and association[3]. AR and VR are powerful vehicles for the creation of the “museum ritual”.

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*Keywords: virtual reality, augmented reality, digital transformation, exhibition communication*

## The behavioral role of the GABAergic neurons in the median raphe region

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Gamma-aminobutyric acid (GABA) is a well-known inhibitory neurotransmitter of the central nervous system implicated in numerous physiological and pathological behavior including anxiety. Dysregulation of a serotonergic nucleus, median raphe region (MRR) is also, characterized by the rise of anxiety issues. Because the vast majority of the MRR cells are GABAergic our aim was to clarify the behavioral role of these cells.

We used pharmacogenetic technology in mice containing Cre enzyme under the promoter of the GABA transporter. With the help of an adenoassociated virus, artificial receptors (DREADD, stimulatory, inhibitory as well as control mCherry) were injected into the MRR. Few weeks later they were stimulated by the artificial ligand (clozapine-N-oxide, 1mg/10ml/kg) given 30 min before the experiments, where locomotion (open field/OF), anxiety (elevated plus maze/EPM), social behavior (sociability; social interaction; resident-intruder) and short-term memory (y-maze) were studied.

Stimulation of the GABAergic cells of the MRR induced no difference in locomotion nor memory, however it displayed an increased social interest in both sociability and social interaction test. In the EPM test, stimulatory group displayed lower latency when entering the open arm, suggesting an anxiolytic-like tendency. The inhibition of the GABAergic cells did not provide any change in behavior.

All in all, our experiments confirm the role of MRR GABAergic cells in promoting social interest. We can assume that these cells are not homogenous and different subpopulations (e.g. long vs short projecting, neuropeptide containing) might have different role in the observed behaviors, which may remain hidden in our experiments. Further studies with more specific subgroups are required in this field.

## Prevalence of pathogens and nutritional value of raw meat based diet for dogs

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**Background:** BARF (Biological Appropriate Raw Foods) is a raw food diet alternative for dogs [1]. Dog owners following BARF intend to meet their dogs' nutritional needs by providing a diet containing only biologically and microbiologically appropriate raw and uncooked muscle meats, bones and organ meats – most typically of domestic animals, fishes and game – as well as raw milk products (cottage cheese) and raw eggs [2].

**Objectives:** The microbiological quality control of the BARF food brands commercially available in Hungary as well as the examination of their nutrient content on the basis of randomly selected samples.

**Materials and Methods:** In our study we analysed 12 samples of commercially available BARF dog food products which were submitted to Kaposvár University's Food and Feed Safety Laboratory for analysis. We asked for a bacteriology analysis of 11 samples testing to the presence of *E. coli*, *Salmonella* (NT), *C. perfringens* and we also requested the detailed investigation of the contents and the definition of the amino acid profile of a raw food product qualified by its manufacturer as complete.

**Results:** The examined BARF products showed 54% positive test results to *E. coli* (6 cases), *C. perfringens* was revealed in 2 samples while all samples were free of *Salmonella* infection. The results of the amino acid analysis indicate that the amino acid contents are below the NRC guidelines [3]. The examined feed contains half of the recommended values of leucine, isoleucine, threonine and valine and a third of the recommended values of the methionine and phenylalanine.

**Conclusions:** We can conclude that the majority of BARF diets are microbiologically not appropriate raw foods due to the presence of facultative pathogens. Using the BARF method requires dog owners to be well aware of their dogs' nutrient needs. The support of veterinary and nutrition experts is essential for this.

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**Keywords:** BARF, biological appropriate raw foods, raw meat based diet, raw feed dog, nutrient requirements of dogs, *E. coli* raw diet

## The connection between individual differences in visual attention and executive function in one-year-old infants

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**Objective:** Several previous studies indicated a connection between executive functions and attentional performance in preschool years. However, there are just a few studies investigated how early visual attentional processes influence emerging executive functions at an early age.

The aim of our study was to measure whether infants' look duration in Early Childhood Vigilance Task is associated with cognitive processes. We designed our study in a large population of infants.

**Methods:** In our examination 210 neurotypical infants participated. They were 12 months old when we measured them. This study was a home-visit examination. To measure executive functions, we used the A-not-B task, working memory task, and inhibition control test in special infant friendly situations. Attentional performances, we measured the looking time design of the Early Childhood Vigilance Task.

**Results:** We used two methods to encode the videos. On the one hand, two independent expert raters coded and evaluated the infant attentional task videos. On the other hand, we applied additional eye-tracking software analysis also.

Our findings indicated that there is a relationship between executive functions and looking time in an attentional vigilance task. Based on our results, we found that infants with shorter looking time predicted better performance in inhibition control.

**Conclusions:** Our results highlight the relationship between 1-year-old attentional ability and executive functions. Based on our research, we can see that measuring infants' visual attention is important in understanding early attentional and cognitive processes.

*Keywords: individual variations, executive functions, visual attention, looking time, infants*

## The effectiveness of extinction training in male rats: temporal considerations and brain mechanisms

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**Introduction:** Fear extinction suppresses traumatic fear memories and is of utmost importance on avoiding the development of different mental disorders, such as Posttraumatic stress disorder (PTSD). The present study examined the efficacy of three extinction protocols focusing on their temporal aspects and specific neuronal activation patterns.

**Methods:** Male Wistar rats exposed to inescapable electric foot shocks were used as animal models. After trauma, the extinction training was initiated at different time points (1 or 28 days after electric shock). Hormones were measured repeatedly at the end of extinction trials. Following the termination of the extinction training c-Fos immunohistochemistry was performed to detect trauma context-induced activation of the prefrontal cortex (PFC), hippocampus (HC) and amygdala.

**Results:** Conditioned fear was rapidly and efficiently extinguished by all the protocols investigated. However, when these extinction protocols were started one day after fear training, conditioned fear spontaneously reinstated four weeks later. By contrast, no reinstatement occurred when extinction trials were started 28 days after conditioning. Hormone measurements performed by the end of extinction trials suggest that ACTH levels, but not corticosterone response, resembles behavioral extinction without any sign of relapse. When extinction training started one day after fear conditioning an increased activation of the medial prefrontal cortex and a decreased activation of the amygdala was detected. On the other hand, only the activation of the hippocampus decreased by the last training session when extinction started 28 days after fear conditioning.

**Conclusions:** These findings demonstrate that the extinction of remote fear memories is more effective than that of recent ones, possibly because of the temporal changes in the neuronal networks underlying fear expression.

*Keywords:* trauma, extinction, hormones, c-Fos

## **Poszter szekció IV.**

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## **Poster Session IV.**

## Comparison of the efficiency of mercury vapor lamp and LED light sources in the case of heterogeneous photocatalysis of sulfonamides

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**Introduction:** Due to the intensive development of optoelectronics in recent years, the use of light emitting diodes (LEDs) radiating in the UV region has become increasingly popular. This makes it possible to improve the efficiency of additive water treatment methods based on photochemical processes. UV LEDs radiating in the 300-400 nm range can be used for heterogeneous photocatalysis, an efficient and widely studied process for the removal and mineralization of hazardous organic matter from water.

**Aim:** The main goal of our work was the comparison of two light sources (mercury vapor lamp (MVL) emitting 300-400 nm light, and LED light source, which emits 398 nm light) in the conversion of sulfonamides as hazardous pollutants using heterogeneous photocatalysis. TiO<sub>2</sub> and ZnO semiconductors, the most commonly used and commercially available photocatalysts were applied. The comparison of the efficiencies of the light sources and photocatalysts was based on the rate of conversion and mineralization of sulfonamides, the apparent quantum yield of their conversion, and the electrical energy required to reduce the concentration by an order of magnitude ( $E_{EO}$ ).

**Results:** The photon flux of the light sources were determined by ferrioxalate actinometry and found to be  $4.83 \times 10^{-6}$  molphoton s<sup>-1</sup> for the MVL (15 W), and  $5.12 \times 10^{-6}$  molphoton s<sup>-1</sup> for the 398 nm UV-LED (4.6 W).

Both TiO<sub>2</sub> and ZnO photocatalysts were effective in transforming sulfamethoxypyridazine (SMP) and sulfamethazine (SMT) for both light sources, but the apparent quantum yield of the conversion was significantly higher for the Hg vapor lamp compared to the LED light source.

Another point of view of the comparison was the electrical energy required to reduce the concentration of SMT and SMP by one magnitude ( $E_{EO}$ ). For SMT, there was no significant difference between values determined in TiO<sub>2</sub> and ZnO containing suspensions, radiated with Hg vapor lamp. The  $E_{EO}$  value determined in LED irradiated suspension was two times higher using TiO<sub>2</sub> instead of ZnO, due to the better absorption properties of the latter photocatalyst at 398 nm. In the case of SMP the combination of TiO<sub>2</sub> with LEDs was the most efficient. When electrical energy requirement for mineralization was compared, the TiO<sub>2</sub> photocatalyst and Hg vapor lamp was found to be the best combination in the case of both sulfonamides.

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**Keywords:** heterogeneous photocatalysis, TiO<sub>2</sub>, ZnO, sulfonamides, LED



## Immunomodulatory effects of embryonic exposure to $\beta$ -glucan in zebrafish embryos and larvae

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**Background:** It has been reported that the administration of microbial polysaccharides, including  $\beta$ -glucans, can result in non-specific long-term protection against infectious agents via positively modulating the innate immune system (IIS) in different species. However, there are many gaps in our knowledge about the underlying IIS-related adaptive mechanisms.

The zebrafish embryo is a useful vertebrate model to independently investigate the IIS-related processes from a functionally mature adaptive immune system. This study aimed to assess the immunomodulatory effects of embryonic exposure to  $\beta$ -glucan using local and systemic inflammation models in zebrafish embryos and larvae.

**Methods:** 4 hours post-fertilization (hpf) embryos were exposed to 150  $\mu\text{g}/\text{mL}$   $\beta$ -glucan up to 48 or 72 hpf, then kept under control conditions until the end of embryonic development (120 hpf). To evaluate transcriptional changes induced by  $\beta$ -glucan exposure, we first measured the mRNA level of immune- and inflammation-related genes with RT-qPCR at 48, 72, and 120 hpf. Next, we investigated the impacts of the different  $\beta$ -glucan pre-exposures on neutrophil-mediated inflammatory response and tissue regeneration at 120 hpf in a tail fin transection model using neutrophil-specific transgenic zebrafish line. The number of neutrophils at the wound site was counted at 4, 12, and 24 hours post-injury (hpi). The fins' regenerative capacity was evaluated by measuring the regenerated length at 24, 48, and 72 hpi using ImageJ software. Finally, we wanted to explore the effects of embryonic pre-exposure to  $\beta$ -glucan on the larvae's immune competence after the embryonic development. We challenged 120 hpf larvae with 130  $\mu\text{g}/\text{mL}$  LPS (from *Pseudomonas aeruginosa*) for 48 hours in a systemic inflammation model and monitored the survival during the LPS-treatment.

**Results:** We observed a decreased expression of immune-related genes at the end of the  $\beta$ -glucan exposures (4–48, 4–72 hpf) compared to the control groups. At 120 hpf, there were no differences in mRNA expression levels for these genes between the control and the 4–48 hpf-exposed group. However, the mRNA levels increased in the 4–72 hpf-exposed larvae. In the tail fin transection model, we detected an increased number of neutrophils at the wound site at 4 hpi in the pre-exposed groups to  $\beta$ -glucan. Interestingly, a significant increase in the neutrophil number was found in the group with a shorter pre-treatment duration (4–48 hpf). Besides, the regenerative capacity of the tail fins increased significantly in the 4–72 hpf-exposed group. We observed that embryonic  $\beta$ -glucan exposure had a considerable impact on LPS resistance. The survival percentage was significantly higher in the 4–72 hpf-exposed group compared to the control during LPS-treatment.

**Conclusions:** Taken together, our results demonstrate that embryonic pre-exposure to  $\beta$ -glucan can induce temporal changes in the expression of immune-related genes, alters the response of neutrophils to a local injury, improves tissue regeneration capacity, and enhances zebrafish larvae's immune competence.

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*Keywords:* zebrafish, embryo,  $\beta$ -glucan, innate immune system, inflammation

## Detection of *Cordulegaster* (Insecta: Odonata) species in Hungary with eDNA method

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The aim of this study was to investigate the potential of eDNA techniques to detect the presence of the two dragonfly species *Cordulegaster heros* and *Cordulegaster bidentata* in Hungarian freshwaters. Both species are classified as “near threatened” according to the IUCN Red List and are strictly protected in Hungary. Monitoring these species with traditional sampling methods is often difficult, time-consuming and invasive. In this pilot study, we first collected tissue samples from *C. heros* and *C. bidentata* to sequence the traditional DNA-barcode gene fragment COI. We then collected further dragonfly COI sequences from BOLD to design species-specific primers. This, however, was impossible given the enormous variability of COI. Therefore, we refrained from species-specific eDNA assays and followed eDNA metabarcoding protocol using universal (BF2/BF2) as well as a more dragonfly specific primer that does not target many of the abundant diatom species. For the evaluation of the method, we took water samples from places where *Cordulegaster* specimens are known to occur. After the extraction of DNA, we used two sequential PCR steps for obtaining the desired amplicon (two-step PCR) using universal primers in the first step, and group (dragonfly) specific primers or universal primers. Amplicons were sequenced on an Illumina MiSeq platform and then analysed the data with the JAMP pipeline.

**Results:** With the newly designed primers and protocol we could effectively detect dragonfly species from tissue samples, and also from filtered environmental samples. With the traditional method the specimens have to be collected, preserved and identified by experts. The detection of the species is time consuming and involves the destruction of the specimens. In comparison with the traditional method, with the eDNA method we could easily detect strictly protected dragonfly species on a non-invasive way.

*Keywords: eDNA, COI, dragonflies, metabarcoding*

## Hungarian adaptation of the EAS Temperament Survey for Children

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**Introduction:** Based on a definition, temperament includes traits which are almost stable over time [1]. Studying temperament is important in several reasons, for example some dimensions of temperament are mentioned in the literature as risk factors [e.g. 2] while others as protective factors [e.g 3].

**Aim:** The goal of this study to validate the Hungarian version of the EAS Temperament Survey for Children.

**Methods:** The EAS Temperament Survey for Children: Parental Ratings [4] was adapted to Hungarian. The sample consist 166 kindergarten-aged children, where the parents completed the EAS questionnaire about their children. The mean age of the children was  $4.58 \pm 1.06$ . The main focuses of the data analysis were descriptive statistics, correlations and confirmatory factor analyses.

**Results:** Internal consistency analysis of the Hungarian EAS showed moderately good reliability ( $\alpha=0.441$ ). According to the discriminant validity analysis there is a moderate relationship between the EAS temperament survey and the resilience scale (*Hungarian ConnorDavidson Resilience Scale Parental Version*). The results of the confirmatory factor analysis showed differences between the original and the Hungarian factor structure.

**Conclusions:** The Hungarian EAS Temperament Survey for Children was able to measure temperament dimensions of children rated by their parents adequately, however, the internal consistency and the factor analysis showed some issues. Differences in the factor structure was detected in other validating studies as well [eg.: 5, 6]. Our future goal is to validate this scale by objective data.

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**Keywords:** temperament, kindergarten-aged children, parental ratings

## Residual stress build-up during 3D metal printing

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3D printing is one of the most rapidly growing industry of our time. It is present in almost every known field as a main, or a supplementary source of production. However, the more widespread is the technology becomes, the more challenges we must overcome. One of these challenges is the residual stress within the manufactured parts. The stress originates from the rapidly changing heating and cooling conditions [1]. Each layer, which becomes deposited in the system, must overcome a laser melting, which occurs at high speed. The created melt pool quickly solidifies, as the laser beam travels through the cross section to finish the layer. This phenomenon not only effect the current layer, but some of the previously deposited ones as well, with a lowered intensity. In this way, stress slowly develops, which, if we are not careful enough, can cause further problems, such as deformations or cracks [2].

**Results:** During our work with HTCS130 tool steel, we have made several 3D metal printed test specimens for tensile, hardness and Charpy testing and all of them yielded similar results as their conventionally made counterparts. The only conspicuous difference occurred at the preparation of the Charpy tests, for texture analysis, where one of the specimens cracked in the middle during grinding and polishing. This happened, because the bulky structure of the 3D printed specimen, which was made using the MSZ EN 10045-1 standard for Charpy testing, does not really suit the principles of 3D printing.

**Conclusions:** This phenomenon we observed during our tests are common in every structure, however, it does not always end in the cracking of the part. It is important to know which geometries will build up more residual stress and create countermeasures in the planning phase of production, or during post processing. However, understanding why and how these residual stresses appear in the volume will be even more important in the future of the additive manufacturing, when these processes will become widely used in serial production as well as prototype making.

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*Keywords:* 3D metal printing, residual stress, tool steel, Charpy test

## Raspberry Pi at Educational Competitions

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**Introduction:** This paper's intention is to introduce Raspberry devices and their utilization in school environment. The single-board computers, more commonly known as, microcomputers, already got solid foundations in computer history and industrial fields. These devices may be considered as microcontrollers with extra capabilities and higher performance. These low-profile devices are capable of executing wide spectrum of programs and applications which we will describe in detail later.

**Aim:** Our goal was to promote the Raspberry Pi devices among students and participate in different creative competitions where the mentioned devices may function as the basis of the submitted work. In addition, improving programming and interdisciplinary skills was emphasized too.

**Method:** We believe that the applied approach, method and device are able to mutually exploit and strengthen the useful aspects of each other. On the other hand, we do not claim that this is the best or only suitable usage of these palm-sized computers. This time we chose Project-based learning to let the students experiment and find their own solution. Thanks to the gradually increasing demand and success in the year of 2020 it grew into a well-supported, regularly improved ecosystem backed by a huge community.

**Results:** The outcome of this research was a comprehensive introductory curriculum aimed for study groups, several distinct projects and the successes on different competitions over a three years period. The paper discusses the last but not least mentioned projects which were intended directly for competitions.

**Conclusions:** The Raspberry Pi devices were intentionally designed as an aid for education. With relatively small investment and carefully chosen goals these microcomputers can be turned into modern teaching aids which will be welcomed by the curious students of all ages. We strongly recommend considering the experimentation with already published solutions and encourage teachers and academics alike to invent new ways to use this technology, thus making the educational process more involving and engaging for the target audience.

*Keywords: Raspberry Pi, learning by doing, IT education, computer science, Project-based learning*

**Title of the abstract: Studying spatial navigation in elderly by using virtual reality**

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**Introduction:** Spatial navigation is vulnerable to aging [1] [2] and susceptible to cognitive impairment [3]. The concept of a cognitive map refers to the representation of the topographical relationships between objects in the environment [4]. With regards to the construction of a cognitive map, we distinguish between egocentric reference frames, in which a body-centered relation of the space is used, and allocentric reference frames, in which objects are defined in relationship to other objects in the environment [5]. According to related studies, the elderly performs worse in environments that require allocentric navigation skills [4].

**Aim:** To study age related factors of the construction of cognitive maps we introduced the preliminary results of a novel VR-game.

**Methods:** 12 elderly (11 female) participated in the experiment (Mean=74,25 year). We implemented a navigation game for tablet computers, where the subjects have to locate and return lost space aliens to their spaceships. We also collected Mini Mental States scores to correlate mental states with spatial navigation performance. Different camera setups (3rd person and aerial view) enabled us to dissociate the effect of reference-frame (egocentric, allocentric) from the camera-view on the performance. The performance was scored as time efficiency and route efficiency.

**Results:** According to the results there is an interaction between the reference frames and the viewpoint ( $F=6,229$ ;  $p=0,03$ ,  $\eta^2=0,362$ ). The elderly navigated faster in the bird-eye egocentric than in the third person egocentric orientation, but there was no difference in the allocentric references. The participants performed worse than the control young adult group in all camera settings.

**Conclusions:** Our results indicates the map-based navigation is easier for this age group in a virtual environment. We are going to investigate the question on a larger sample to get statistically more reliable values.

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*Keywords: spatial navigation, elderly, tablet game, reference frames, MMSE*

## **Erőművek kereskedési stratégiái a villamosenergia-piacon – Kereskedési stratégiákat meghatározó piaci körülmények vizsgálata**

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Kutatásom fő témája az egyes erőművek elhelyezkedése, lehetséges kereskedési stratégiáinak bemutatása a villamosenergia-piacon. Különös figyelmet szentelve és tüzetesebben vizsgálva hazánk legmodernebb erőművét, a gönyüi kombinált ciklusú erőművet.

Kutatásom időszerűségét támasztja alá a dinamikusan fejlődő kombinált ciklusú erőművi technológia, aminek segítségével egyre jobb hatásfokúvá válnak ezen rendszerek, így egyre kedvezőbb üzemeltetési paraméterekkel léphetnek piacra. Mindezek mellett az átalakulás alatt álló villamosenergia-rendszerekben az egyre inkább terjedő időjárásfüggő erőművek sztochasztikus termelési formája miatt felmerül az ellátásbiztonság fenntartásának kérdése is. Itt jön a képbe a környezetbarát, ám nem időjárásfüggő kombinált ciklusú gázerőművi technológia. Hiszen bár mikor üzemeltethető, illetve nem csak magasabb hatásfokkal, hanem alacsonyabb károsanyag-kibocsátással is rendelkezik más, fosszilis tüzelőanyagot hasznosító erőművekhez képest, valamint gyorsabban indíthatók és rugalmasabban szabályozható erőművek ezek. Mindezen tulajdonságok miatt úgy gondolom, hogy a jövőben felértékelődhet a kombinált ciklusú erőművek jelenléte a villamosenergia-rendszerekben, így piaci helyzetük is egyre kedvezőbbé válhat.

Munkám megalapozásaként elsősorban bemutatom a hazai villamosenergia- és gázpiaci viszonyokat, illetve a kombinált ciklusú erőművek műszaki tulajdonságait. Másodsorban pedig számításokkal bizonyított következtetéseket vonok le arról, hogy manapság milyen piaci térnyerése lehet egy csúcserőműnek. Kitérek kutatásom során a csúcserőművi termelő egységek gyakori szabályzására és ennek viszonyára az élettartamával, illetve az üzemeltetési költségeivel.

*Kulcsszavak: villamosenergia-piac, csúcserőmű, kombinált ciklusú erőmű, Clean Spark Spread, szabályzás*

## A fenntarthatóság és az IKEA

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A dolgozat célja, hogy felvázolja a fenntartható fejlődésre vonatkozó elvárások menedzsmentre gyakorolt hatását az IKEA tevékenységében. A szerző rövid elméleti bevezető után a fenntarthatóságot támogató menedzsmentrendszer és vállalati kultúra legfontosabb jellemzőit vizsgálja. A dolgozat második felében a konkrét eredményeket is elemzi elsősorban az IKEA fenntarthatósági jelentésében [1] közzétett eredményeket összevetve az ENSZ Fenntartható Fejlődési Célok dokumentumában [2] foglaltakkal. A dolgozat kitér a fenntarthatóság terén tapasztalható ellentmondásokra is.

A társadalmi felelősségvállalás több okból lehet fontos egy vállalat számára: költség- és kockázatcsökkentés, a reputáció növelése, a tevékenység legitimációja, versenyelőnyhöz jutás, kölcsönös előnyök a szinergikus értékkeremtés által. A fenntarthatóság felértékelődését lényegében ugyanezekre a tényezőkre vezethetjük vissza.

A nagyvállalati gyakorlatban a fenntarthatóság általában többet jelent, mint a környezetvédelem, lényegében az egész CSR-t lefedi, ami a környezeti és a társadalmi folyamatok bonyolult kölcsönhatása miatt indokolt.

Az IKEA a fenntarthatóságot termelésmenedzsment-szempontról termékéletről modellként értelmezi. Ezt jól példázza az eWheel, amely az IKEA öt fázisból álló környezettudatos termékdizájn segítő modellje. Az öt fázis: alapanyag, termelés, forgalmazás, használat és a termékéletút vége (környezetbarát megsemmisítés vagy újrafelhasználás).

**Eredmények:** A szerzők feltárják az IKEA menedzsmentrendszerének összetett szabályait.

**Következtetések:** Az IKEA menedzsmentmodellje innovatív vállalati környezetet teremt, amely elsősorban a termékfejlesztésben, de szélesebb összefüggésben az ellátási lánc minden elemében lehetőséget teremt a fenntartható fejlődés követelményeihez történő alkalmazkodáshoz.

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*Kulcsszavak:* környezettudatos termékfejlesztés, fenntarthatóság, a szervezeti struktúrákban, társadalmi felelősségvállalás



## Mozgásba hozott egyensúly

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**Bevezetés:** A XXI. század emberének megváltozott az életvitele a korábbiakhoz képest. Sokat ülünk, és a mozgásszegény életmód már gyermekkorban kialakul. Melynek következtében másképp alakul a csontozat, az izomzat, és ezáltal a testtartás is. Ami kihat a belső szervek és az agy működésére is. Többek között emiatt is lényeges, hogy mit mozgunk. A sportmozgásunkat adaptálnunk kell a körülményeinkhez, hogy az hatékony legyen és egyensúlyba hozza a szervezetünket.

**Célkitűzés:** A cél a XXI. század emberének igényeire kialakított, élvezetes és egészséges mozgásforma kialakítása volt, amely hatékonyan fejleszti az összes motoros képességet. Ezen belül igyekeztünk olyan mozgást kidolgozni, ami az erő-állóképesség-gyorsaság háromszögében középre kerül és egyenlő mértékben fejleszti mindhárom kondicionális képességet. A legtöbb sportmozgásban kevés, avagy egyáltalán nem kapnak hangsúlyt a koordinációs képességek. Mii ezek fejlesztésére tettük a nagyobb hangsúlyt. Mindezek mellett a hajlékonyság és lazaság fejlesztését is szem előtt tartva. Olyan rendszert törekedtünk megalkotni, amelynek a különböző intenzitási fokozatai lefedi a mozgás teljes tartományát a gyógytornától az élsportolók fejlesztéséig. Melynek rendszeres alkalmazásával elérhető a test egészséges és dinamikus egyensúlya.

**Módszer:** 2018-tól kezdődően több féléven keresztül végeztünk felméréseket két röplabda és két B2P2 csoportban a Budapesti Gazdasági Egyetemen (BGE) hallgatói körében, az írásos bejegyzésükkel. . A felmérést mozgásrehabilitációs szakorvos, szakedző, mozgáselemző és instruktor együttesen végezte. A felmérésben összesen 95 hallgató vett részt, melyek közül 79 fő egyezett bele az eredmények közzétételébe, illetve lett értékelhető az eredménye. Az állapotfelmérésben olyan egyensúlyt, koordinációt, hajlékonyságot, lazaságot, erőt mérő gyakorlatok szerepeltek, melynek hatására többek között megállapítható volt a hallgatók általános fizikai állapota és esetleges mozgásszervi panaszai. A hallgatók a felmérésen kívül írásban is értékelték a saját állapotukat.

**Eredmények:** A felmérés során külön hangsúlyt kapott a lábak állapota. A hallgatók közel 1/3-a (35,71%-a) volt lúdtalpas. Közel felének (44,29%-ának) volt bokasüllyedése, X-lába 21,43%-ának, O-lába 7,14%-ának volt. A felmérés során néztük a hallgatók gerincének állapotát, köztük azt is, hogy van-e gerincferdülés és ha van, akkor melyik gerincszakasz érintett. A résztvevők 28,57%-ának volt gerincferdülése, 5,71%-ának volt fokozott lordózis, 28,57%-uknak elsimult lordózis, 4,29%-ának fokozott kifózia, 51,43%-ának elsimult kifózia.

**Következtetések:** Sikeresen alakítottunk ki a XXI. századi ember mozgásszegény életmódja vagy a nem megfelelő mozgása következtében kialakult eltérések kiegyensúlyozására is alkalmas módszert. Kivétel nélkül számoltak be a résztvevők detektálható fejlődéséről valamely képességükben.

**Kulcsszavak**



**Keywords**

# Kulcsszavak/Keywords

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