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The thirty-sixth collection issue presents content on criminalistics, theory and methodology of forensic science, as well as information about scientific-practical conferences and educational projects and participation of the NSC staff in them.

Our authors are representatives of forensic science institutions, higher education institutions, law enforcement agencies from Ukraine and foreign countries.

The collection can be used by students and employees of higher education institutions, law enforcement agencies, legal experts, and researchers.

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Forensic Examination in the Digital Age: Challenges, Innovations, and Prospects for Development

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Forensic examination is a key component in ensuring justice, facilitating the establishment of truth in criminal, civil, and administrative cases. However, with the development of information technologies and their penetration into all spheres of life, both the complexity of crimes and the requirements for investigative methods have increased. In these circumstances, digitalization, automation, and the implementation of cutting-edge technologies are becoming the foundation of modern forensic science.

The digitalization of society has given rise to new forms of crime, such as cybercrimes, financial fraud involving cryptocurrencies, falsification of digital documents, dissemination of malicious software, and other offenses that require specialized knowledge for investigation.

Most of these crimes have a transnational character, complicating their identification and documentation. Cybercrimes involve technologies that conceal evidence, such as encryption, anonymous networks, and manipulation of digital proof. This necessitates forensic experts to have a profound understanding of contemporary technologies and the expertise to analyze them.

Additionally, digital transformation has posed challenges for traditional forensic practices. For instance, experts working with physical evidence increasingly face tasks involving the verification of digital forms of such evidence (photographs, video recordings, electronic documents). In the context of globalization and rising crime rates, the standardization of forensic methods at the

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international level has become a pressing issue.

In response to modern challenges, innovative technologies are actively being introduced, transforming approaches to the collection, analysis, and evaluation of evidence.

The National Scientific Center “Hon. Prof. M. S. Bokarius Forensic Science Institute” of the Ministry of Justice of Ukraine is at the forefront of digital transformation, integrating advanced technologies into its operations. The Center implements scientific research projects aimed at adapting international standards to Ukraine’s forensic practice and collaborates with leading forensic institutions worldwide.

As of today, the journal “*Theory and Practice of Forensic Science and Criminalistics*” is indexed in the following scholarly databases: Google Scholar, Academic Scientific Journals Indexing, Bielefeld Academic Search Engine (BASE), CORE, Crossref, Directory of Open Access Journals (DOAJ), Directory of Open Access Scholarly Resources (ROAD), Central and Eastern European Online Library (CEEOL), ERIH PLUS, Eurasian Scientific Journal Index (ESJI), Europub, Index Copernicus International, MIAR, RefSeek, ResearchBib, Ulrich’s, WorldCat, and the Register of Scientific Publications of Ukraine. The journal’s electronic versions are available online on sites such as the V. I. Vernadsky National Library of Ukraine, libraries of forensic institutions under the Ministry of Justice of Ukraine, institutions of higher education under the Ministry of Internal Affairs of Ukraine, and others. This facilitates the exchange of scientific developments between the journal’s authors and researchers worldwide.

As in previous issues, the academic papers in this volume of «*Theory and Practice of Forensic Science and Criminalistics*» are divided into two categories: *Research Papers* and *Case Notes*.

Let us briefly review the contents of the current issue. The paper “*Modern Interaction of Forensic Experts, Criminalists, and Journalists: Challenges and Prospects*” by Doctor of Law and Professor **Olesya Vashchuk** (Ukraine) focuses on analyzing modern challenges, particularly the rise of cybercrime and the use of innovative technologies by criminals, which complicates investigations and requires new approaches and legal mechanisms to ensure the accuracy and impartiality of journalistic materials. The study adopts an interdisciplinary approach by analyzing legal, ethical, and technological aspects of collaboration between journalists, forensic examiners, and criminalists.

Ph. D. in Economics, **Valeriia Bondarenko-Berehovych** (Ukraine), in her paper “*Strategies for Minimizing Errors in Forensic Expert Practice*”, investigates ways to minimize errors in forensic practice, including the influence of cognitive biases, the role of modern technologies, improvements in training and certification systems for experts, and ethical aspects of forensic work. She formulates key strategies for error minimization in forensic practice, which carry significant theoretical and practical value. As a result of the study, a comprehensive approach to minimizing errors is developed, integrating various aspects of the problem to provide a holistic solution. Emphasis is placed on cognitive biases, insufficient expert training, and the lack of unified standards. The impact of modern technologies on reducing the number of errors is assessed, and recommendations are proposed for improving the system of training and certifying forensic experts.

Doctor of Veterinary Sciences, Professor **Ivan Yatsenko** (Ukraine), in his research “*Substantiation of Issues in the Procedural Document on the Appointment of a Multidisciplinary Forensic Examination Concerning Animal Poisoning*”, focuses on identifying dis-

tinguishing signs and physiological features of living animals (or animal carcasses), detecting poisons, determining the pathways and methods of toxin entry into the animal's body, understanding the mechanism of the poison's action, and assessing the degree of health impairment or loss of usability of the animal due to poisoning. The study also establishes causality between the poisoning and the health disorder (or death) of the animal, as well as determining whether physical pain and suffering were inflicted on the animal prior to death. The practical significance of the research lies in logically systematizing and scientifically formulating questions that pre-trial investigation bodies or courts can include in procedural documents for appointing comprehensive forensic examinations, thus enabling forensic scientists to provide the most complete and substantiated conclusions within the optimal time frame.

Candidate of Philological Sciences, Associate Professor **Nelia Medvid** (Ukraine), in the manuscript "*Combinations of philological knowledge application while forensic linguistic (semantic and textual) examination*", highlights the need for new scientific developments in the field of semantic-textual examination, driven by current political and social demands. She notes the complexity of linguistic examiners' work due to the lack of methodologies for conducting such research. The study explores potential applications of philological knowledge when analyzing texts containing elements of incitement, intimidation, propaganda, or the pursuit of unjustified benefits.

Recommendations are outlined for analyzing texts using elements of semiotic, linguo-pragmatic, semantic, stylistic, thematic, formal-grammatical, descriptive, interpretive analysis, intent analysis, and knowledge from cognitive linguistics. An example is provided from the author's own practice involving the analysis of a con-

flict-related text in a case concerning the protection of an individual's honor, dignity, and business reputation, as well as socio-political texts. Forensic research algorithms for media-related texts and calls to action are presented. Theoretical aspects and methodological recommendations are highlighted for identifying key indicators of incitement to suicide at psychological, verbal, and non-verbal levels. It is proven that semantic-textual analysis requires profound expertise in linguistics.

In the following joint academic article, "*The Importance of the Bokarius Family in the Development of Forensic Medicine in Ukraine (A Review Article)*", Associate Professors **Zhanneta Pertseva** (Ukraine) and **Olha Vynohradova** (Ukraine) emphasize the role of the Bokarius family in the advancement of forensic medicine and criminalistics in Ukraine. The scientific contributions of three family members are presented: the father, Mykola Serhiiiovych, and his sons Mykola Mykolaiovych and Vitalii Mykolaiovych. General scientific methods such as description, comparison, analysis, and synthesis are applied to achieve the study's goal.

The Bokarius family dedicated over 100 years of professional life to forensic medicine and criminalistics. Mykola Serhiiiovych Bokarius, known as a knowledgeable scholar and talented educator, is regarded as the founder of the criminalistics direction in Ukrainian forensic medicine. He made significant contributions to the formation of the national forensic examination system and forensic institutions, including the establishment of the Forensic Science Office in Kharkiv.

His eldest son, Mykola Mykolaiovych, continued his father's scientific, forensic, and teaching activities. He headed the Kharkiv Institute of Forensic Examinations for 25 years and significantly contributed to training personnel in Kharkiv's medical

and legal institutes, founding the department of criminalistics at the latter.

The younger son of Mykola Serhiiovych, Vitalii, was deeply impacted by the war. After graduating from the Kharkiv Medical Institute, he went to the front. Unfortunately, no printed records of him have been preserved; the authors relied on the memories of his son, military doctor Serhii Vitaliiiovych.

Ph.D., Associate Professor **Karen Mamikonyan** (Armenia) and **Anush Harutyunyan** (Armenia), in their scientific article “On the Issue of Exempting Dividends Received from the Participation of Individuals in Company Capital from Taxation” examine the economic consequences arising from disproportionate double taxation of corporate profits under legal regulation. These consequences are related to investment transparency, risk factors in encouraging investment, and particularly the accumulation of unjustified capital reflected in companies’ financial statements. This is especially relevant in cases where limited alternative investment opportunities lead to profit distribution (dividend payments) and reinvestment into authorized capital without proper documentation, as stipulated by legal acts.

Tax avoidance (or withholding tax) on dividends paid to individuals participating in a company’s capital may constitute grounds for legal violations. This could result in financial-economic forensic examinations in criminal or court proceedings through specific questions posed to forensic examiners. Meanwhile, the article suggests that corporate and individual accountability under current legal norms is unjust, considering flaws in tax policy and the existing legislative framework. Discussions on methodologies for addressing this issue in financial-economic forensic research are relevant today, as effective and targeted reinvestment of capital directly

impacts a company’s ability to meet obligations, maintain financial stability, and protect shareholders’ interests while pursuing future developmental goals. Scientific methods such as analysis, synthesis, generalization, and logical-structural approaches were applied.

The research section concludes with the article by Candidate of Economic Sciences, Associate Professor **Olha Dyvnych** (Ukraine) and **Anatolii Dyvnych** (Ukraine), “Prospects for Determining the Market Value of Combat Small Arms Based on the Data of Purchase and Sale Agreements in Ukraine” The authors propose determining the value of firearms (a task complicated by a lack of information and legal ambiguity surrounding the market’s operation) by analyzing transactions completed through public procurement procedures for pistols. General scientific and specialized methods were applied. It is proven that a market for military small arms exists in Ukraine. The authors identify market participants and characterize the mixed structure of imperfect competition. Furthermore, similarities between the Ukrainian small arms market and analogous markets in developed countries are highlighted.

The notes section opens with **Daria Barbash** (Ukraine) material “Legal Principles of Justice Administration: European Union Experience and Implementation in Ukrainian Legislation”. The article provides a systematic analysis of current legislation and case law in the European Union and Ukraine, highlighting the principles of justice and the courts’ relevant legal positions regarding their application and protection. The author emphasizes the close correlation between individual principles of justice within their system and proposes examining them comprehensively in interconnected groups. The conclusion is drawn that Ukraine’s current legislation contains a unified system of fundamental princi-

ples of justice, aligned with European standards, while national judicial practice ensures compliance, incorporating European case law.

Teodore Giorgobiani (Lithuania), in his article “*Economic and Social Drivers of Cybercrime*” explores how modern global realities—characterized by technological progress and heavy reliance on digital tools—exacerbate cybercrime. He highlights the threats posed by cybercrime and analyzes its prevalence across 94 countries, examining the influence of six predictor variables. His analysis reveals an inverse relationship between economic freedom and cybercrime rates, while innovation, though a contributing factor, increases cybercrime at a lower rate.

Samir Ilyas oghlu Gadirov (Azerbaijan), in “*Modern problems of criminal law fight against hooliganism*” examines the multifaceted nature of hooliganism as an illegal phenomenon. Tracing its historical development from its origins to the present day, he explores the challenges it presents to modern society and the factors driving its spread. He considers both legislative and social dimensions, investigating the social, cultural, and economic shifts that give rise to and perpetuate hooliganism in many countries.

The final article in this issue, “*Improved Incendiary Device: Concept Definition*” by **Mykhailo Kuzmenko** (Ukraine), focuses on defining the term “homemade incendiary device” for use in forensic fire investigations. Employing system-structural analysis, Kuzmenko addresses the lack of established methodologies for studying these devices. This absence hinders foren-

sic fire examiners in identifying the precise ignition source responsible for igniting materials or substances, or for generating sufficient energy to ignite the flammable environment at the fire’s origin.

The final pages of the 37th issue of the edited volume “*Theory and Practice of Forensic Science and Criminalistics*” highlight significant recent developments in the field. Despite the ongoing Russian military aggression against Ukraine, the editorial board emphasizes the active participation of staff from the National Scientific Center “Hon. Prof. M. S. Bokarius Forensic Science Institute” in international and Ukrainian events. These high-level scientific gatherings demonstrate the resilience of Ukrainian scientists and specialists working under the challenging conditions of martial law.

The editorial board expresses its sincere gratitude to all contributing authors and the staff involved in preparing this issue for publication. Your innovative ideas and scientific contributions enrich our publication and underscore its importance within the professional community.

We cordially invite Ukrainian and international scientists and practitioners—including forensic scientists, academics, law enforcement agencies, courts, and other institutions—to submit their research paper to our journal.

Fruitful collaboration between authors and the editorial board is essential to the continued success of *Theory and Practice of Forensic Science and Criminalistics*. Together, we strive to advance science, even in the most trying of times.

Together we head to the Victory!
Glory to Ukraine!

Modern interaction of forensic experts, criminalists and journalists: challenges and prospects

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In the modern information society, journalistic investigations are an important tool for exposing offenses, corruption schemes, and shaping public opinion. For ensuring quality and reliability of information obtained, journalists need professional cooperation with forensic experts and criminologists. The purpose of this scientific research is to develop theoretical and legal principles and practical recommendations for optimizing the interaction between journalists and forensic experts and criminologists in the process of conducting journalistic investigations. Particular attention is paid to the analysis of the latest challenges, in particular the growth of cybercrime and the use of innovative technologies by criminals, which complicates the investigation and requires new approaches and legal mechanisms to ensure the accuracy and impartiality of journalistic materials. An interdisciplinary approach (analysis of legal, ethical, and technological aspects of cooperation between journalists and forensic experts and criminologists) is used within the framework of the research. Given the global trends towards digitalization, the need to introduce new standards and legal mechanisms to ensure transparency and objectivity of such cooperation is emphasized. The issues of confidentiality, prevention of manipulation and compliance with ethical standards during this interaction are considered.

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In the context of digitalization, such measures will contribute to the establishment of justice, increasing trust in both the mass media and the judicial system, as well as the protection of citizens' rights, which are prerequisites for the successful functioning of a democratic society. Research results confirm that increasing the role of forensic experts and forensic scientists in journalistic investigations is an important factor in ensuring a high level of quality and reliability of information, which is relevant in the context of the continuous improvement of digital technologies for exposing new types of crime (in particular, cybercrimes), which require the introduction of innovative methods of forensic science.

Keywords: *journalistic investigations; journalist; forensic expert; forensic scientist; interaction; forensic examination; forensic science.*

Research Problem Formulation

Journalistic investigations play an important role in exposing crimes and corruption, and shaping public opinion. For ensuring reliability and objectivity of information received by society, it is important for representatives of the mass media to cooperate with forensic experts and criminologists, who, within the limits of the law, can provide technical support and assistance in verifying certain facts. The conclusions of forensic experts are of decisive importance for the outcome of legal proceedings, so such interaction must be responsible in order to prevent conflicts of interest and ensure justice. With the emergence of new types of crime (in particular, cybercrime), there has been a need to apply more modern, innovative methods of forensic examination. During journalistic investigations, there is often a need for expert assistance in order to analyze complex technical data or detect manipulation. Cooperation between journalists

and forensic experts and criminologists should take place exclusively within the limits of the law, observing confidentiality, objectivity and preventing manipulation, as this is important for protecting human rights and ensuring trust in the media and the judicial system. Strengthening the interaction between journalists and forensic experts and criminologists requires the development of new standards that will take into account modern challenges and prevent conflicts, erroneous conclusions and human rights violations. That is why a comprehensive study of all aspects of such cooperation is relevant in order to develop new approaches to it and will contribute to the establishment of justice and the protection of citizens' rights.

Analysis of Essential Researches and Publications

In the modern digitalized world, the interaction of forensic experts, criminologists, and journalists is expected to undergo sig-

nificant changes due to the introduction of new technologies and methods ¹. Development of digital technologies, globalization, and the increasing influence of media and information resources on society are significantly transforming approaches to cooperation between these profes-

sionals in the investigation of crimes and the detection of offenses ². In this context, journalistic investigations ³ are becoming an important independent tool for identifying socially significant problems, which requires effective interaction with forensic experts and criminalists ⁴. However, these

- 1 Шепітько В. Ю., Авдеева Г. К., Коновалова В. О. та ін. Інноваційні методи, засоби та технології в криміналістиці та судовій експертизі : наук.-практ. посіб. / за ред. В. Ю. Шепітька. Харків, 2023. 116 с. URL: <http://surl.li/zhvtv> (date accessed: 01.08.2024) ; Василенко М. К. Особливості розвитку журналістики-розслідування. Припустимі стандарти домислу і вимислу. *Наукові записки Української академії друкарства*. 2012. № 2. С. 31—36. URL: http://nbuv.gov.ua/UJRN/Nz_2012_2_6 (date accessed: 01.08.2024) ; Куліді Н. А., Гудошник О. В. Досвід оцінки ефективності міжнародних журналістських розслідувань в українському медіапросторі. *Масова комунікація у глобальному та національному вимірах*. 2019. Вип. 11. С. 65—70. DOI: [10.5281/zenodo.2816764](https://doi.org/10.5281/zenodo.2816764) (date accessed: 01.08.2024) ; Толокольнікова К. Нові тренди журналістики розслідувань зі США / Детектор медіа. 28.09.2015. URL: https://ms.detector.media/mediaprosvita/education/novi_trendi_zhurnalistiki_rozsliduvan_zi_ssh/ (date accessed: 01.08.2024) ; Стекольщикова В. А. Конвергентність класичних та інноваційних інструментів інформаційного досєє крізь призму ефективності журналістського розслідування. *Поліграфія і видавнича справа*. 2017. № 2 (74). С. 128—136. URL: <http://pvs.uad.lviv.ua/static/media/2-74/16.pdf> (date accessed: 01.08.2024).
- 2 Яковець А. В. Телевізійна журналістика: теорія і практика : посібник. 2-ге вид., допов. і перероб. Київ, 2009. 262 с. ; Полушкіна В. Ю. Специфіка використання інформаційних джерел у журналістському розслідуванні. *Наукові записки Інституту журналістики*. 2000. Т. 1. С. 56—60. URL: <http://journalib.univ.kiev.ua/index.php?act=article&article=44> (date accessed: 01.08.2024) ; Лілієнталь Ф. Розслідування / пер. з нім. В. Климченко. Київ, 2016. 135 с. URL: <http://www.aup.com.ua/rozsliduvannya-folker-liliiental/> (date accessed: 01.08.2024) ; Кирилова О., Шевцова К. Журналістське розслідування як метод залучення аудиторії. *Масова комунікація у глобальному та національному вимірах*. 2017. Вип. 7. С. 145—149. DOI: [10.13140/RG.2.2.17474.07367](https://doi.org/10.13140/RG.2.2.17474.07367) (date accessed: 01.08.2024).
- 3 Бут К. О., Любченко Ю. В. Інструментарій сучасної розслідувальної журналістики: особливості використання. *Вчені записки Таврійського національного університету імені В. І. Вернадського. Серія: Філологія. Соціальні комунікації*. 2019. Т. 30 (69). № 4. Ч. 2. С. 178—182. DOI: [10.32838/2663-6069/2019.4-2/34](https://doi.org/10.32838/2663-6069/2019.4-2/34) (date accessed: 01.08.2024) ; Яблоновська Н. Журналістське розслідування в аспекті вимог оперативно-розшукового законодавства: про et contra. *Держава та регіони. Серія: Соціальні комунікації*. 2011. № 4. С. 118—124 ; Бачкова С., Виргосу І. Розслідувальна журналістика: посібник для журналістів з активною громадянською позицією. Луганськ, 2013. 97 с. URL: https://issuu.com/irf_ua/docs/rol-2013-7-18_1 (date accessed: 01.08.2024) ; Глушко О. К. Журналістське розслідування: історія, теорія, практика : навч. посіб. 2-ге вид. перероб. та допов. Київ, 2007. 144 с.
- 4 Бель Б., Бурмагін О., Патора Т., Хоменок О. Посібник з журналістських розслідувань. Теорія та практика. Київ, 2013. 190 с. URL: <https://irrp.org.ua/wp-content/uploads/2013/12/verstka.pdf> (date accessed: 01.08.2024) ; Мурікан Ж. Журналістське розслідування. Київ, 2003. 176 с. ; Журналісти-розслідувальники про надихаючий досвід і практичні уроки глобальної конференції / RPD ІППП. 05/11/2013. URL: <https://irrp.org.ua/zhurnalisti-rozsliduvanniki-pro-nadikhayuchiy-dosvd-praktichn-uroki-globalnoyi-konferencyi/> (date accessed: 01.08.2024) ; Лілієнталь Ф. Зазнач. твір.

changes cause even more challenges⁵ that require the adaptation of existing methods and approaches to such cooperation in the field of forensic science and criminalistics⁶.

Article Purpose

For developing a theoretical and legal basis and practical recommendations for optimizing the cooperation of journalists with forensic experts and criminologists

in the process of journalistic investigations aimed at exposing offenses and corruption; to identify and analyze the latest challenges caused by technological changes and the emergence of new types of crime (in particular, cybercrime); to determine what standards and legal mechanisms need to be developed to ensure the reliability, objectivity and ethics of the published media; in order to protect human rights and increase confidence in the media and the judicial system, to consider

- 5 Портян О. Журналістських розслідувань в Україні стає більше, та фігурантів не карають / European Journalism Observatory. 30.11.2016. URL: <https://ua.ejo-online.eu/3340/media-i-politika/> (date accessed: 01.08.2024) ; Хоменко І. А. Вплив бінарних стереотипів мислення на результати журналістських розслідувань. *Наукові записки Інституту журналістики*. 2015. Т. 58. С. 9—16. URL: http://nbuv.gov.ua/UJRN/Nzizh_2015_58_4 (date accessed: 01.08.2024) ; Николенко О. 5 найгучніших журналістських розслідувань України / Суспільне новини. 06.06.2020. URL: <https://suspiilne.media/38952-5-najgucnisih-zurnalistskih-rozsliduvan-ukraini/> (date accessed: 01.08.2024) ; Коваленко А. В. Розслідування кримінальних правопорушень проти журналістів : навч. посіб. Івано-Франківськ, 2022. 268 с. URL: <https://rep.dnuvs.ukr.education/handle/123456789/1105> (date accessed: 01.08.2024) ; Журналістське розслідування : посібник. За мат-ми сем-рів Ін-ту мас. ін-форм. (Київ), Центру підготов. та вдосконал. журналіст. (Париж), нідерланд. прогр. МА-ТРА / пер. та адапт. А. Лазарева та ін. ; упорядкув. А. Лазарева, І. Чайка ; ред. С. Таран. Київ, 2004. 110 с.
- 6 Нікітіна Н. В. Специфіка журналістського розслідування: основи жанру й методу. *Наукові записки Інституту журналістики*. 2008. Т. 30. С. 170—172. URL: http://www.scientific-notes.com/wp-content/uploads/2019/01/nz_30.pdf (date accessed: 01.08.2024) ; Полушкіна В. Ю. Агентство журналістських розслідувань як ефективна модель проведення, розробки та розповсюдження інформаційного продукту розслідувальної діяльності. *Актуальні питання масової комунікації*. 2002. Вип. 3. Ч. 2. С. 15—17. URL: http://comstudies.org/wp-content/uploads/CIMC_2002_no03.pdf (date accessed: 01.08.2024) ; Юхно О. О. Актуальні проблеми досудового розслідування кримінальних правопорушень у сфері професійної діяльності журналістів. *Вісник Харківського національного університету внутрішніх справ*. 2017. № 3 (78). С. 11—20. URL: <https://univd.edu.ua/science-issue/issue/2504> (date accessed: 01.08.2024) ; Коваленко А. В. Розслідування посягань на життя та здоров'я журналістів : монографія. Северодонецьк, 2018. 268 с. URL: <https://rep.dnuvs.ukr.education/handle/123456789/1089> (date accessed: 01.08.2024) ; Його ж. Обставини, що підлягають з'ясуванню під час розслідування посягань на життя та здоров'я журналістів. *Право і Безпека*. 2016. № 1. С. 103—108. URL: http://nbuv.gov.ua/UJRN/Pib_2016_1_22 (date accessed: 01.08.2024) ; Його ж. Особливості тактики огляду електронних документів під час досудового розслідування посягань на життя та здоров'я журналістів. *Вісник Національної академії правових наук України*. 2017. № 1 (88). С. 182—191. URL: http://nbuv.gov.ua/UJRN/vapny_2017_1_19 (date accessed: 01.08.2024) ; Його ж. Професійна діяльність журналіста як елемент віктимологічної характеристики потерпілого від злочинів проти журналістів. *Вісник Луганського державного університету внутрішніх справ імені Е. О. Дідоренка*. 2015. № 4 (72). С. 216—225. URL: <http://surl.li/rtdsqe> (date accessed: 01.08.2024).

the issue of confidentiality, prevention of manipulation and objectivity in the context of judicial assistance in journalistic investigations.

Research Methods

Interdisciplinary approach was applied: analysis of legal, ethical and technological aspects of cooperation between journalists and criminologists and forensic experts was carried out.

Main Content Presentation

Modern interaction of forensic experts and criminologists with journalists takes place in various forms, depending on the context, tasks and specifics of investigations, in particular:

- consultations and expert comments (forensic experts and criminologists advise journalists on complex technical or scientific issues that arise during journalistic investigations; such consultations relate to explaining the specifics of investigative methods, assessing the reliability or admissibility of evidence or analyzing complex topics for ordinary citizens to understand them);
- joint investigations (joint participation in “fieldwork” and analysis of collected evidence and/or expert research to confirm (refute) hypotheses put forward by journalists);
- trainings (forensic experts and criminologists conduct training seminars or trainings for journalists, where they are introduced to modern methods of forensic examination, the basics of digital forensics and data analysis, etc., which increases the competence of journalists and helps them more effectively apply scientific methods in their work);
- publication (within the framework of the legislation) of the results of the examination (journalists publish the results of forensic examinations conducted by experts to confirm their investigations or to give weight to their materials. Such publications should be transparent and meet ethical standards to ensure the reliability of the information);
- joint participation in conferences and round tables (journalists and experts participate in joint conferences, symposiums or round tables, where they discuss topical issues of criminology, forensic science and journalism, promoting the exchange of experience and knowledge and establishing contacts between professionals in various fields);
- documentary cooperation (journalists collaborate with experts in creating documentaries, reports or special issues on complex topics that require in-depth expert analysis. Experts become consultants or participants in such projects);
- providing an evidence base (forensic experts and criminologists provide assistance to journalists to confirm (refute) the facts, checking the collected evidence: analyze digital data, photo and video materials, conduct handwriting or other examinations);
- confidential consultations (journalists turn to forensic experts and criminologists for consultations without telling about the details of the case or about the sources of information, which allows them to acquire the necessary knowledge without the risk of disclosing information that could interfere with the investigation);

- legal assistance (assistance to journalists in legal matters related to their activities, in particular regarding the admissibility of evidence in court, the protection of the rights of journalists or the confidentiality of sources of information).

The aforementioned forms of interaction between forensic experts, criminalists and journalists are aimed at effectively identifying, investigating and covering socially important issues, that requires compliance with ethical and legal standards.

For regulating cooperation of forensic experts and criminalists with journalists⁷, it is necessary to develop and introduce appropriate legal mechanisms that will ensure transparency, objectivity and protection of the rights of all participants in this process, in particular:

1. Specialized agreements and contracts that, within requirements of the legislation of Ukraine, will regulate the main aspects of interaction, such as:

1.1. Confidentiality Agreement. Such an agreement provides that experts and journalists undertake not to

disclose confidential information obtained during cooperation;

1.2. Agreement on the provision of expert services. This document should clearly outline the scope and conditions for the provision of expert services to the journalist, as well as the rights and obligations of the parties;

2. Provisions on cooperation that supplement the codes of ethics (the rules governing cooperation between forensic experts and journalists should be added to the professional codes of ethics of both journalists and forensic experts):

2.1. Code of Ethics of the Ukrainian Journalist⁸. It will contain provisions on ethical principles of cooperation with forensic experts and criminologists, among which: prohibition of pressure on experts, objectivity in the presentation of information contained in expert opinions, and compliance with the requirements of the legislation of Ukraine on confidentiality;

2.2. The Code of Ethics of a Forensic Expert⁹ in Ukraine as of 01.12.2024

7 Опришко Л., Панкратова Л. Основи судової журналістики : посібник. Київ, 2016. 152 с. URL: https://imi.org.ua/wp-content/uploads/2017/06/Courts_and_media_journalists_manual_2016_Ukr1.pdf.pdf (Date accessed 01.08.2024) ; Хоменко О. С., Бурмагін О. О., Іванова К. Б., Рибка Є. М., Томіленко С. А. Журналістське розслідування: навчальний посібник для початківців / за заг. ред. О. О. Хоменка. Мелітополь, 2008. 182 с. ; Земляна І. Журналіст і (НЕ) безпека. Посібник для журналістів, які працюють в небезпечних умовах. Київ, 2016. 192 с. URL: <https://imi.org.ua/wp-content/uploads/2017/06/Zhurnalist-i-ne-bezpeka.pdf> (date accessed: 01.08.2024) ; Журналістське розслідування ... ; упорядкув. А. Лазарева, І. Чайка ...

8 Кодекс етики / Комісія з журналістської етики. URL: <https://cje.org.ua/ethics-codex/> (date accessed: 01.08.2024).

9 Шерстюк В. М. Організаційно-правові та морально-психологічні засади судово-експертної діяльності : автореф. дис. ... канд. юрид. наук. Харків, 2007. 20 с. URL: <https://dspace.nlu.edu.ua/jspui/handle/123456789/13906> (date accessed: 01.08.2024) ; Дереча Л. М. Професійна етика судового експерта. Актуальні питання судової експертизи та криміналістики : мат-ли міжнар. наук.-практ. конф., присвяч. 90-річ. створ. ХНДІСЕ ім. Засл. проф. М. С. Бокаріуса (Харків, 07—08.11.2013). Харків, 2013. С. 12—13. URL: https://www.hni-ise.gov.ua/user_files/File/nauka/2013_actualni_pytannya.pdf (date accessed: 01.08.2024) ; Рувін О. Г., Голікова Т. Д., Полтавський А. О. Кодекс етики судових експертів України

exists only at the level of individual institutions¹⁰, but its draft law must contain points on providing advice to journalists, ensuring objectivity and independence, as well as avoiding conflicts of interest;

3. State standards and recommendations for cooperation between forensic experts, criminologists and journalists, which will consist in recommendations on the exchange of information (taking into account security and confidentiality issues), or standards of evidence (defining standards for the collection, preservation and application of evidence obtained during cooperation with experts so that the court can accept them if necessary);

4. Relevant changes to the legislation, the laws of Ukraine *On Media*¹¹ (on the protection of sources of information, confidentiality and responsibility for the disclosure of classified information) and *On Judicial Examination*¹² (on the regulation of the participation of experts in journalistic investigations, the procedure for providing advice and the legal status of expert opinions referred to by media representatives);

5. Training programs or models to train both journalists and experts for more effective cooperation (with simulators of real investigations, where both parties will learn to work together, observing ethical and legal norms).

In addition to the above, it is necessary to create special regulatory bodies or commissions that will monitor cooperation between forensic experts and journalists. For example, the National Commission on the Ethics of Cooperation of Media and Experts, which would consider conflict situations, provide clarifications and recommendations, and develop policies to ensure ethical and legal cooperation or provide for the work of an ombudsman for information interaction (a special official responsible for protecting the rights of cooperation participants, considering complaints and promoting conflict resolution).

Establishing an effective relationship between forensic experts, criminologists and journalists requires a systematic approach, which should include the following steps:

- definition of clear communication channels (creation of a platform for information exchange (an online platform or database where forensic experts, criminologists and journalists will exchange information in compliance with the principles of confidentiality and protection of personal data), or appointment of contact persons (each party (experts, journalists) should have specific contact persons who will be

як складова державної антикорупційної політики. *Реалізація державної антикорупційної політики в міжнародному вимірі* : мат-ли Міжнар. наук.-практ. конф. (Київ, 09.12.2016). Київ, 2016. С. 350—353. URL: <https://elar.naiu.kiev.ua/server/api/core/bitstreams/396ea8a8-d53f-4259-a169-ef16455cc24f/content> (date accessed: 01.08.2024) ; Панькевич В. М., Сплавська О. В. Правова регламентація професійної етики судового експерта. *Криміналістичний вісник*. 2018. № 2 (30). С. 7—14. DOI: 10.37025/1992-4437/2018-30-2-7 (date accessed: 01.08.2024).

10 Кодекс етики судового експерта ТОВ «Судова незалежна експертиза України» : затв. наказ. дир-ра ТОВ «СНЕУ» від 30.12.2014 р. № 56. URL: <https://ekspertiza.com.ua/uk/kodeks-etyky-sudovoho-eksperta> (date accessed: 01.08.2024).

11 Про медіа : Закон України від 13.12.2022 р. № 2849-IX (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2849-20#Text> (date accessed: 01.08.2024).

12 Про судову експертизу : Закон України від 25.02.1994 р. № 4038-XII (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/4038-12#Text> (date accessed: 01.08.2024).

responsible for coordinating cooperation, which will facilitate communication and speed up response to requests), or indication of contact person data and their professional interests;

- regular holding of joint exercises, seminars and trainings on ethical and legal aspects of cooperation, on the use of modern technologies in investigation, etc. (will help to understand the specifics of each party's work and achieve unanimity) and/or joint implementation of practical exercises (collective resolution of an imaginary case will allow to practice the skills of interaction);
- development of common standards and protocols for cooperation (ethical standards that both experts and journalists must adhere to when cooperating in order to prevent conflicts of interest and ensure objectivity in their work; interaction procedures, including formats for requests for expert assistance, conditions for providing consultations, the procedure for exchanging information and processing evidence);
- formalization of cooperation through agreements (conclusion of memorandums between media organizations and judicial expert institutions that will stipulate the principles of interaction, confidentiality, rights and obligations of the parties) or contracts (for the provision of expert services, which will ensure mutual understanding and legal protection of both parties);
- establishing feedback mechanisms to regularly monitor cooperation and evaluate its effectiveness (de-

termining the effectiveness and impact on the quality of journalistic investigations, including surveys, case discussions or internal audits; identifying problems and developing recommendations to improve the procedure);

- development of professional networks (creation or active use of existing professional networks (associations of journalists or experts), where the parties will interact, exchange experience and discuss topical issues of cooperation), organization and holding of conferences and round tables (regular events where journalists and experts will discuss new challenges, share experiences and develop new forms of cooperation);
- providing legal support (providing legal advice in the event of legal issues or conflicts related to cooperation, including advice on the admissibility of evidence, confidentiality issues or protection of sources of information) and implementing international experience (to develop a regulatory framework for cooperation and adapt best foreign practices to local conditions);
- informing and raising awareness (conducting information campaigns to raise public awareness about the importance of cooperation between journalists and experts to ensure transparency and fairness); publications and reports (publishing the results of successful cooperation, analytical reports and studies confirming the significance and effectiveness of such interaction).

The steps outlined above are aimed at establishing an effective relationship between forensic experts, criminologists

and journalists, designed to ensure mutual trust, compliance with ethical and legal norms and, ultimately, improve the quality of journalistic investigations and expert conclusions.

Forensic experts and forensic scientists are able to provide significant support to journalists in a number of key areas where their professional knowledge and skills are critical for conducting thorough and credible investigations. In particular, it is worth highlighting the main areas in which cooperation between journalists and experts is especially useful:

- criminal investigations (forensic scientists and forensic experts help journalists understand the technical aspects of investigating crimes (restoring the chronology of events, analyzing the scene and physical evidence, for example, fingerprints or DNA samples); forensic scientists are able to provide a deep understanding of the processes behind the disclosure of crimes, which allows journalists to create more accurate and informative materials);
- financial and economic investigations (expert economists will help journalists reach legally sound conclusions when investigating complex financial schemes to analyze accounting documents to detect illegal financial transactions, expose corruption schemes, money laundering, corruption or fraud);
- cybercrime (digital forensics experts are indispensable for journalists investigating cybersecurity incidents, in recovering deleted data, analyzing digital traces, finding out the sources of cyberattacks and providing conclusions on the authenticity of digital evidence, etc.);
- corruption investigations (forensic experts conduct an examination of documents, analyze their authenticity and legality, which helps journalists to detect corruption; experts are able to detect fakes, analyze suspicious contracts or other legal documents, which are key elements in the investigation of corruption cases, etc.);
- environmental investigations (experts in the field of ecology and chemistry can help journalists in investigating environmental crimes or violations (analysis of soil, water or air samples for the presence of pollutants, identification of sources of environmental disasters and assessment of their consequences for public health and the environment), etc.);
- medical investigations (forensic experts are able to provide support to journalists in the investigation of medical crimes or suspicious deaths (analysis of bodily injuries, clarification of the cause of death, evaluation of medical reports and detection of violations in medical practice), etc.);
- humanitarian and social investigations (in the context of humanitarian crises or social conflicts, experts can help journalists assess the situation on the ground, identify victims or determine the scale of destruction, analyze social policies and their impact on different segments of the population, etc.);
- linguistic expertise (in case of investigation of cases of dissemination of false information or analysis of confidential documents, etc., linguists analyze texts to identify authorship, decipher hidden meanings or identify manipulations in documents);

- legal expertise (lawyers advise journalists on the legal aspects of investigations, including the admissibility of evidence, confidentiality of sources and other issues that affect the legal validity of published materials, etc.).

Consequently, forensic experts and criminologists are able to significantly improve the quality of journalistic investigations by providing specialized knowledge and assistance for the analysis of complex materials, which ensures accuracy, reliability and objectivity in media content.

For collecting evidence, verify information or ascertain the authenticity of materials, journalists (especially those involved in investigations) often use the results of various types of examinations, in particular:

- digital one (analysis of electronic data (emails, computer files, data from mobile devices, information from social networks and other digital sources); recovery of deleted files; authentication of digital documents; detection of falsifications (manipulations) with electronic data; tracking sources of information leakage, etc.);
- photographic one (analysis of photo and video materials (determination of their authenticity, possible changes or manipulations) obtained from anonymous sources or suspected of being fake, etc.);
- audio and video recording (clarification of authenticity and source of recording, detection of editing or manipulation in video, audio recordings of conversations, testimonies or interviews, etc.);
- graphological one (analysis of handwriting and signatures, determination of their authenticity in documents containing signatures or handwritten text and for which there is a suspicion of their authenticity, etc.);
- forensic linguistic one (analysis of textual content (articles, correspondence, statements) in order to identify characteristic stylistic features to identify the author; detection of hidden content or subtext in documents from anonymous or dubious sources of information, etc.);
- biometric one (analysis of physical characteristics of a person (fingerprints, face, voice or other biometric data) to determine (identify) the identity of the suspect or witness);
- fingerprint (identification of a person by analyzing fingerprints on documents, objects or materials received by journalists);
- chemical and biological one (chemical analysis to determine the composition or origin, identification of hazardous or suspicious substances; DNA analysis to confirm or refute affinity);
- psychological one (to find out the mental state, motives or reliability of the testimony of a person who is important for the investigation of a journalist interviewing suspects, witnesses or victims);
- phonoscopic one (analysis of sound signals, including voice recordings (audio recordings of telephone conversations or other sound materials), to determine the authenticity of the recording, identification of the speaker, detection of editing or other manipulations with sound, etc.);
- economic (analysis of financial documents, accounting reports, contracts and other economic materials

to detect corruption, financial fraud or other economic crimes).

This list of examinations is not exhaustive, but above mentioned examinations allow for a more thorough approach to the selection, verification and analysis of information during journalistic investigations, which is critical for the successful exposure of offenses and the protection of the public interest. Identifying new opportunities to improve the effectiveness of journalistic investigations through the use of advanced forensic techniques is a key aspect of modern forensics. Such opportunities lie in expanding the range of available tools and methodologies that allow journalists not only to better collect and analyze evidence, but also to increase the reliability and credibility of their investigations. Let us look at some of the main areas where advanced forensic techniques can be applied to achieve this goal:

1. Integration of digital forensics (modern digital forensics offers powerful tools for working with e-evidence). Integrating e-criminalistics into investigative journalism enables journalists to:

- recover deleted data (thanks to specialized software, journalists recover deleted files and information from various media (hard drives, flash drives or mobile phones), which is critical for investigations, etc.);
- find out authenticity of e-documents (the use of hashing methods and digital signatures helps to determine whether the documents with which the journalist works have been changed, etc.);
- track sources of information (e-criminalistics allows you to analyze the metadata of e-lists or e-documents, which helps to identify sources of

information leakage or identify the sender, etc.);

2. Application of forensic linguistics and authorship studies. Methods of forensic linguistics and author studies allow deeper analysis of textual materials that have been or can be used as evidence in journalistic investigations. This allows you to:

- identify the authors of anonymous texts (linguistic analysis makes it possible to identify characteristic linguistic features and stylistic features, which helps to determine the identity of the author);
- detect manipulations with texts (the use of text analysis methods makes it possible to find out whether the text was forged, changed or distorted in order to manipulate information);
- decipher hidden meanings (linguistic analysis helps to identify subtexts or hidden messages in texts that are important for the investigation);

3. Analysis of biometric data. Biometric data (fingerprints, face or voice) is an important tool for identifying individuals who are critical figures in investigative journalism. These methods allow you to:

- identify suspects or witnesses (the use of biometric technologies helps to quickly and accurately identify the person involved in the case under investigation);
- protect journalists (biometric systems should be used to protect journalists and their sources, ensuring confidentiality and security in the face of increased threats, etc.);

4. Use of artificial intelligence (hereinafter referred to as AI) and machine learning opens up new opportunities that allow journalists to:

- analyze significant amounts of information (AI automatically processes and analyzes large texts, videos or audio recordings, identifying patterns and anomalies that are important for the investigation, etc.);
- predict behavior and events (machine learning models help predict developments or identify possible risks based on data analysis, which helps journalists stay one step ahead);

5. In-depth analysis of economic and financial documents, including electronic ones. Economic expertise is becoming an important tool for journalists investigating corruption, financial crimes or business abuses. Forensic economics experts can help:

- detect financial fraud schemes (analysis of accounting reports, contracts and other financial documents makes it possible to detect illegal financial transactions, money laundering or other criminal schemes);
- verify the veracity of financial information (economic expertise confirms or refutes financial data published by enterprises or state (local) authorities, etc.);

6. Interdisciplinary approach: Modern investigative journalism often requires the integration of different disciplines. Thanks to the involvement of specialists from various types of expertise (for example, experts in criminalistics, economics, sociology, law, etc.), journalists get a complete and more comprehensive picture of the events under research for a comprehensive analysis of the situation.

Development of recommendations to optimize the cooperation of forensic ex-

perts, criminologists and journalists is an important step to ensure effective and ethical interaction that contributes to clarifying the truth and protecting the rights of all parties. The main recommendations to help achieve this are as follows:

- definition of clear roles and responsibilities in the process of cooperation (experts should remain neutral and objective, providing professional conclusions without interfering with journalistic interpretation; journalists, for their part, should respect the limits of expert activity and avoid pressure on experts to obtain certain conclusions) and transparency (to prevent conflicts of interest and ensure public confidence in the results obtained);
- compliance with ethical standards ¹³: confidentiality (forensic experts must maintain the confidentiality of the information provided to them and not disclose details that could harm the investigation or violate the rights of the parties to the case; journalists must respect the right of experts to confidentiality); avoid bias (both parties must adhere to the principle of impartiality; experts must base their conclusions on facts and scientific data, regardless of how these conclusions affect the journalistic investigation); ethical use of information (journalists must use expert opinions objectively, without distortion or exclusion from the context, which is important to maintain confidence in the journalistic product and protect professional reputation of experts);

13 Іванов В., Сердюк В. Журналістська етика : підручник. Київ, 2006. 231 с. URL: <http://surl.li/wdjfzz> (date accessed: 01.08.2024).

- legal awareness and responsibility ¹⁴ (journalists and experts should be aware of the legal aspects of their activities, including the collection and use of evidence, protection of personal data, copyright and responsibility for the dissemination of information) and documentation of cooperation (in order to avoid misunderstandings or legal problems, it is advisable to document the main stages of cooperation, including confidentiality agreements, use of materials and other important aspects);
- professional development and training (holding joint educational events, trainings and a seminar for journalists and forensic experts will increase the level of mutual understanding and awareness of each other's methods and standards of work); updating of knowledge (both parties should constantly update their knowledge of modern technologies and methods of work that will affect their cooperation; this applies to both new methods of forensic examination and modern media technologies);
- establishing communication ¹⁵: regular meetings (to maintain effective cooperation, it is necessary to hold regular meetings between journalists and experts to discuss topical issues, exchange experience and resolve possible conflicts); clear communication channels (it is important to establish clear communication channels between journalists and experts to ensure effective and rapid exchange of information, especially when time is a critical factor);
- ensuring independence ¹⁶: protection from pressure (forensic experts should work independently, without pressure from journalists or other stakeholders; journalists, for their part, should avoid situations where their actions are perceived as attempts to influence the conclusions of experts); support for journalistic independence (journalists should have the right to independently interpret information received from experts, but at the same time adhere to professional standards and avoid distorting facts);

- 14 Ефективні інструменти доступу до інформації та захисту журналістів (короткий путівник по законодавству та актуальні зразки документів) : посіб. для журналіст. / уклад.: О. Бурмагін, Л. Опришко, Л. Панкратова. Київ, 2014. 84 с. URL: https://irrp.org.ua/wp-content/uploads/2014/12/legal_toolkit_2014.pdf (date accessed: 01.08.2024) ; Панкратова Л. Основи правової безпеки для журналістів — пам'ятка від Людмили Панкратової / RPDI IPPP. 06/06/2018. URL: <https://irrp.org.ua/osnovy-pravovoyi-bezpeky-dlya-zhurnalistiv-pam-yatka-vid-lyudmyly-pankratovoyi/> (date accessed: 01.08.2024).
- 15 *Особливості взаємодії засобів масової інформації з правоохоронними органами: міжнародний та національний досвід* : мат-ли Міжнар. кругл. столу (Київ, 23.11.2016). Київ, 2017. 48 с. ; Голуб О. П. Медіакомпас: путівник професійного журналіста : практ. посіб. Київ, 2016. 184 с. URL: <https://imi.org.ua/wp-content/uploads/2017/06/Mediakompas.pdf> (date accessed: 01.08.2024).
- 16 Блащук О. Ю. Журналістське розслідування як чинник демократичного суспільства (на прикладі України та Польщі) : кваліфікац. роб. ... магістра наук. Київ, 2008. 64 с. URL: https://msj.ukma.edu.ua/images/uploads/textblog/08_13_Blashchuk_Olesya_dyplom2008.pdf (date accessed: 01.08.2024) ; Тимошик М. Тенденції розвитку журналістики на сучасному етапі. *Український Інформаційний Простір*. 2024. № 1 (13). С. 14—50. DOI: 10.31866/2616-7948.1(13).2024.300817 (date accessed: 01.08.2024).

- Conflict resolution ¹⁷ (in case of misunderstandings or conflicts between journalists and experts, it is important to have clear procedures for their resolution, such as internal ethics committees or independent arbitration bodies) and mutual respect (regardless of the circumstances, all participants in cooperation must respect mutual respect and professional ethics).

Consequently, optimizing cooperation between forensic experts, forensic scientists, and journalists is critical to ensuring the effective and ethical conduct of journalistic investigations. Compliance with the above recommendations will contribute to a better understanding between the parties, ensuring objectivity and impartiality, as well as protecting the rights of all participants in the process, which in turn will increase public confidence in the results of both journalistic investigations and expert opinions.

Conclusions

In today's information society, where journalistic investigations play an important role in exposing high-profile offenses and corruption, cooperation with forensic experts and criminologists is a prerequisite for ensuring the reliability and objectivity of information. Such cooperation allows journalists to use scientific methods to verify facts and analyze technical data, which improves the quality of their investigations.

Despite the positive impact of cooperation of journalists with forensic experts and criminologists, it also creates some

problems related to ethical and legal issues. In particular, it is necessary to ensure confidentiality, avoid manipulation and maintain objectivity when providing expert opinions: all this is critical for maintaining trust in the media and the legal system.

With the development of digital technologies, new types of crime (in particular, cybercrime) have emerged, and the role of forensic experts for journalistic investigations has increased significantly. To adequately respond to these challenges, it is necessary to integrate modern methods of forensic examination and criminalistics into the practice of journalistic investigations, which requires constant updating of the knowledge and skills of both journalists and experts.

For ensuring effective and ethical interaction between journalists and forensic experts and forensic scientists, it is necessary to develop new standards and legal mechanisms that will take into account modern needs and ensure transparency, objectivity and protection of the rights of all participants. It is also important to supplement the relevant provisions with codes of ethics and to issue special regulations governing such cooperation.

The interaction of journalists with forensic experts and criminologists should be based on an interdisciplinary approach, which provides a comprehensive analysis and comprehensive coverage of complex socially significant issues, and this will contribute to improving the effectiveness of investigations and the quality of journalistic content.

Consequently, the cooperation of journalists with forensic experts and criminologists is a necessary element in the fight

17 Recommendation No. R (2000) 7 of the Committee of Ministers to member states on the right of journalists not to disclose their sources of information : Council of Europe. Committee of Ministers. (Adopted by the Committee of Ministers on 8 March 2000 at the ^{701st} meeting of the Ministers' Deputies). URL: <https://rm.coe.int/16805e2fd2> (date accessed: 01.08.2024).

against crime and corruption. Introduction of new standards and mechanisms for regulating this interaction will ensure its effectiveness, ethics and legal security, which will contribute to strengthening confidence in the media and the judicial system, as well as protecting the rights of citizens.

Сучасна взаємодія судових експертів, криміналістів і журналістів: виклики та перспективи

Олеся Ващук

У сучасному інформаційному суспільстві журналістські розслідування є важливим інструментом викриття правопорушень, корупційних схем і формування громадської думки. Для забезпечення якості й достовірності здобутої інформації журналісти потребують професійної співпраці із судовими експертами та криміналістами. Метою цього наукового дослідження є розроблення теоретико-правових засад і практичних рекомендацій для оптимізації взаємодії між журналістами й судовими експертами та криміналістами у процесі проведення журналістських розслідувань. Особливу увагу приділено аналізу новітніх викликів, зокрема зростанню кіберзлочинності й застосуванню злочинцями інноваційних технологій, що ускладнює розслідування та потребує нових підходів і правових механізмів для забезпечення точності й неупередженості журналістських матеріалів. У межах дослідження застосовано міждисциплінарний підхід (аналіз правових, етичних і технологічних аспектів співпраці журналістів із судовими експертами та криміналістами). Зважаючи на світові тенденції до діджиталізації, підкреслено необхідність запровадження нових стандартів і правових механізмів

для забезпечення прозорості й об'єктивності такої співпраці. Розглянуто також питання конфіденційності, запобігання маніпуляціям і дотримання етичних стандартів під час цієї взаємодії. У контексті цифровізації такі заходи сприятимуть утвердженню справедливості, підвищенню довіри як до масмедіа, так і до судової системи, а також захисту прав громадян, що є передумовами успішного функціонування демократичного суспільства. Результати дослідження підтверджують, що підвищення ролі судових експертів і криміналістів у журналістських розслідуваннях — важливий чинник забезпечення високого рівня якості й достовірності інформації, що є актуальним в умовах невинного вдосконалення цифрових технологій для викриття нових видів злочинності (зокрема, кіберзлочинів), які потребують запровадження інноваційних методів судової експертизи.

Ключові слова: журналістські розслідування; журналіст; судовий експерт; криміналіст; взаємодія; судова експертиза; криміналістика.

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Strategies for Minimizing Errors in Forensic Expert Practice

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The Article Purpose is to enhance the understanding of error minimization strategies in forensic expert activity through an in-depth analysis of the most frequent errors and the development of new approaches to avoid them; to emphasize the classification of errors in order to identify key factors of their occurrence; to focus on the impact of cognitive biases, inadequate training of forensic experts and the lack of uniform standards; to develop recommendations for improving the system of training and certification of forensic experts; to address ethical aspects for the work of forensic experts. General scientific and special methods have been used to achieve this goal. The paper outlines strategies for minimizing errors in forensic expert activity; the impact of cognitive biases; issues of introducing state-of-the-art technologies, improving the system of forensic experts' training and certification, as well as ethical dimensions of work. The author develops the main strategies for minimizing errors in forensic expert activity, which are of paramount theoretical and practical importance. A comprehensive approach to minimizing errors has been developed. Different aspects of the problem have been brought together to create a comprehensive approach to its resolution. Emphasis has been made on cognitive biases, insufficient training of forensic experts, and the lack of uniform standards. The impact of modern technologies on reducing the number of errors has been assessed. Recommendations have been proposed to improve the

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system of training and certification of forensic experts, as well as to adhere to high ethical standards.

Keywords: *forensic activity; forensic examination; error minimization; cognitive bias; modern technologies; artificial intelligence; automated systems; standardization; professional training; ethical standards.*

Research Problem Formulation

Despite considerable progress in studying and minimizing errors in the work of forensic experts, there are still a number of unresolved issues in this field. One of these is the excessive reliance on subjective judgement, reducing the reliability of experts' conclusions.

A major concern is the influence of cognitive biases. Despite being aware of them, they are difficult to eliminate. The lack of uniform standards for conducting forensic examinations in various countries, and even various institutions in the same country, makes standardizing procedures difficult. That is also a problem.

The training system for forensic experts is often flawed, as existing training programs oftentimes overlook state-of-the-art advances in science and technology. Ethical issues are also relevant, despite the development of ethical codes, because their practical implementation and compliance are not always properly ensured. The study of these aspects is necessary to develop efficient strategies in order to minimize errors in forensic practice. This will further contribute to the objectivity and accuracy of court decisions.

Minimizing errors in forensic expertise is crucial for ensuring justice, since errors in expert conclusions can result in inaccurate judicial decisions and undermine public trust in justice.

It is important to understand the nature of errors in forensic expert activity, identify their factors, and develop efficient tools to reduce them. It is necessary to analyze and systematize errors that often occur during forensic expert activities, develop and implement methodologies intended to prevent them.

The relevance of the issue related to expert error prevention is due to the significance of ensuring the credibility of experts' conclusions, which is a key element of the proof process in criminal and civil cases. Errors in forensic expert activity can significantly affect the outcome of trial, so their prevention is a top priority of forensic science institutions.

One of the ways to minimize expert errors is a thorough analysis of both objective and subjective factors that have led to them. *Objective factors:* imperfection of existing research methods; limited resources; insufficient technical support and scientific and technical problems. *Subjective factors:* Inadequate qualifications of forensic experts; lack of experience; unwillingness to raise one's professional level; psychological aspects that may affect objectivity of the expert's conclusion.

Errors in forensic practice not only affect the outcome of a trial, but also have economic consequences, as they may require re-examination and additional resources for revision and elimination.

Expert research is directly linked to the needs of the judiciary and law enforcement

agencies to enhance the quality and objectivity of court proceedings. Implementation of the developed error minimization strategies will substantially improve the quality of the expert's conclusions and reduce the number of miscarriages of justice resulting from inaccurate expert conclusions.

The research findings can be utilized to train new and experienced forensic experts, enhance the regulatory framework and practice of conducting forensic examinations, and prepare methodological guidelines for reducing errors in the expert's conclusions.

Analysis of Essential Researches and Publications

Minimization of errors in forensic expert activity is a significant research avenue internationally. S. M. Kassir, I. E. Dror, and J. Kukucka made a valuable contribution to resolving this issue: they investigated the impact of cognitive biases on forensic examination results and proposed methods for their minimization, emphasizing the importance of training experts to be aware of their own biases and develop critical thinking skills¹.

P. C. Giannelli analyzed ethical challenges faced by forensic experts and

stressed the importance of adhering to ethical standards helping to reduce the number of errors caused by personal and professional conflicts of interest: since ethics are an integral part of forensic expert activity, adherence to them contributes to enhancing the quality and reliability of expert conclusions².

Sh. Nakhaeizadeh, I. E. Dror, and R. M. Morgan emphasized the need to automate processes in forensic expert practice and integrate artificial intelligence into it in order to increase the accuracy of forensic examinations and reduce the influence of the human factor³.

E. J. Reese believes that high quality training of forensic experts and their continuous improvement is the key to successful forensic work: to maintain a high level of professionalism, she suggests introducing stricter training standards and regular retraining⁴.

The *Strengthening Forensic Science in the United States: A Path Forward* Collective Work discusses the importance of audits and inspections to enhance the quality of forensic examinations and facilitate identification and elimination of shortcomings in the work of forensic experts, as quality control is an essential tool for ensuring reliability of forensic expert activities⁵.

- 1 Kassir S. M., Dror I. E., Kukucka J. The forensic confirmation bias: Problems, perspectives, and proposed solutions. *Journal of Applied Research in Memory and Cognition*. 2013. Vol. 2. Is. 1. Pp. 42–52. DOI: 10.1016/j.jarmac.2013.01.001 (дата звернення: 01.11.2024).
- 2 Giannelli P. C. Wrongful Convictions and Forensic Science: The Need to Regulate Crime Labs. *North Carolina Law Review*. 2007. Vol. 86 Is. 1. Art. 4. Pp. 162–235. URL: <https://scholarship.law.unc.edu/cgi/viewcontent.cgi?article=4293&context=nclr> (дата звернення: 01.11.2024).
- 3 Nakhaeizadeh Sh., Dror I. E., Morgan R. M. Cognitive bias in forensic anthropology: Visual assessment of skeletal remains is susceptible to confirmation bias. *Science & Justice*. 2014. Vol. 54. Is. 3. Pp. 208–214. DOI: 10.1016/j.scijus.2013.11.003 (дата звернення: 01.11.2024).
- 4 Reese E. J. Techniques for Mitigating Cognitive Biases in Fingerprint Identification. *UCLA Law Review*. 2012. Vol. 59. Is. 5. Pp. 1252–1290. URL: <https://www.uclalawreview.org/pdf/59-5-3.pdf> (дата звернення: 01.07.2024).
- 5 Strengthening Forensic Science in the United States: A Path Forward / National Academy of Sciences. Washington, D. C., 2009. 350 p. URL: <https://www.ojp.gov/pdffiles1/nij/grants/228091.pdf> (дата звернення: 01.11.2024).

The topic of expert errors and their prevention in forensic expert activities was studied by the following domestic researchers: V. Abramova ⁶; T. Kopylchenko ⁷; K. Latysh, Ye. Demydova, O. Domashenko and I. Kolesnikova ⁸; M. Maksymenko ⁹; M. Sehai at el. Despite the weighty contribution of these researchers to the development of the issues discussed earlier, certain aspects still require an exhaustive scientific study. One of these essential issues is the analysis of the causes of expert errors and the development of effective preventive measures.

Scientific studies demonstrate that in order to efficiently prevent expert errors, it is crucial to systematically improve the professional training of forensic experts, introduce new standards and methodologies, and ensure their regular updating in compliance with current scientific achievements. Emphasis is made on the introduction of novel technologies that can significantly improve the accuracy and objectivity of forensic research.

Therefore, the study of existing issues and the development of new methods for resolving them are important for improving the quality of forensic expert activities: the introduction of modern technologies, the improvement of training and certification standards, and compliance with ethical norms will contribute to reducing the number of errors and increasing the reliability of forensic examinations.

Article Purpose

To deepen the understanding of strategies for minimizing errors in forensic expertise through a detailed analysis of the most common errors and the development of new approaches to preventing them; to focus on the classification and systematization of errors in order to identify primary factors affecting their occurrence; to stress the influence of cognitive biases, insufficient training of forensic experts and the lack of uniform standards; to develop recommendations for improving the training and certification system for forensic experts; to consider ethical aspects of forensic experts' work.

Research Methods

The study stems from the integrated use of quantitative and qualitative methods of analysis. The principal tool is a systematic approach enabling the classification of technical, cognitive, and organizational errors in forensic expert activities. This classification helps to determine key factors resulting in errors and develop efficient strategies to minimize them.

The method of cognitive analysis is employed to assess cognitive biases affecting forensic expert activities.

A comparative analysis of modern technologies (automated systems and artificial intelligence) has been performed

- 6 Абрамова В. М. Експертні помилки: сутність, генезис, шляхи подолання : дис. ... канд. юрид. наук. Київ, 2004. 266 с.
- 7 Копильченко Т. Ю. Експертні помилки у почеркознавчому дослідженні та шляхи їх подолання : автореф. дис. ... канд. юрид. наук. Київ, 2010. 16 с. URL: <https://dspace.nlu.edu.ua/jspui/handle/123456789/13676> (дата звернення: 04.11.2024).
- 8 Латиш К., Демидова Є., Домашенко О., Колеснікова І. Експертні помилки під час проведення окремих видів судових експертиз у сфері інформаційних технологій. *Юридичний вісник*. 2022. № 2. С. 93–99. DOI: [10.32837/yuv.v0i2.2326](https://doi.org/10.32837/yuv.v0i2.2326) (дата звернення: 04.11.2024).
- 9 Максименко М. І. Напрямки профілактичної діяльності по недопущенню експертних помилок. *Юридичний науковий електронний журнал*. 2022. № 10. С. 577–579. DOI: [10.32782/2524-0374/2022-10/144](https://doi.org/10.32782/2524-0374/2022-10/144) (дата звернення: 04.11.2024).

to assess their impact on the accuracy and efficiency of forensic research.

A methodological approach has been used to analyze the implementation of expert training and certification systems.

Main Content Presentation

Forensic expert practice plays a pivotal role in ensuring fair court proceedings and safeguarding citizens' rights. However, high demands on the accuracy and reliability of forensic examination results require the implementation of error minimization strategies.

Errors in forensic expert activity can have serious consequences, including wrongful convictions, undermining confidence in the justice system, and other social and economic consequences. Errors in forensic expert research can occur for a variety of reasons, which can be grouped into three categories: human error, technical failures, and methodological shortcomings.

Human errors are made due to insufficient qualifications and/or experience, the expert's decreased attentiveness as a result of psychological pressure, stress, fatigue, and other factors. Insufficient preparation and lack of systematic training substantially increase the likelihood of such mistakes.

Technical failures are associated with the use of outdated or imperfect equipment. Sudden failures in the operation of equipment or its incorrect calibration may result in inaccuracy and/or misleading results.

Methodological shortcomings are caused by the use of imperfect or outdated research methods as well as by the lack of standards and minutes governing the conduct of forensic examinations.

For the purpose of minimizing errors, it is essential to implement systematic

training programs for forensic experts: basic training and regular advanced training courses. Training should encompass novel methods and technologies, as well as psychological aspects of working in stressful conditions. It is important to implement clear minutes and standards governing the conduct of forensic examinations. This will help reduce the influence of subjective factors and ensure high quality results.

Automating certain aspects of forensic research utilizing specialized software can significantly reduce the risk of errors. Software solutions enable the automatic processing of large volumes of data, reducing the workload of forensic experts and minimizing the likelihood of errors. Improving and regularly updating technical equipment is an essential element of minimizing errors. Modern technologies allow us to achieve a high level of accuracy and reliability of research results. Regular audits and quality checks of equipment ensure its uninterrupted operation and conformity with standards.

Methodological strategies stipulate regular quality inspections of applied methodologies, along with the development of new, more efficient algorithms. Multi-level verification of forensic examination results by several forensic experts, including independent analysis of results, also helps to reduce the risk of errors. Organizational measures are capable of ensuring independence and impartiality of forensic experts, and internal control and external audit: verification of forensic examination quality and accuracy.

Creating conditions for the exchange of experience and best practices between forensic experts from different regions and countries also contributes to enhancing the quality of forensic activities. Modern technologies (artificial intelligence

and machine learning) can substantially minimize expert errors and automate data analysis and interpretation. The use of digital technologies to document and track forensic examination process ensures transparency and control over all stages of research. Innovative approaches also involve the use of modeling and simulation to train forensic experts and assess

their skills. This allows forensic experts to practice their skills in realistic scenarios and advance their qualifications.

To fulfill the paper's purpose, we first classify errors that take place in forensic expert activity. This will help identify the key factors of their occurrence and develop strategies for their minimization (see Table 1).

Table 1

Classification of errors

Types of errors	Description
Technical	Use of outdated or faulty equipment; improper calibration of instruments; failures in the software employed for analysis
Cognitive	Cognitive biases; overlooking details due to stress or fatigue; the influence of prior expertise and expectations on the outcome of research
Organizational	Lack of uniform standards and minutes; inadequate training and certification of forensic experts, internal and external quality assurance

One should pay close attention to the influence of cognitive biases on the results of forensic research. As evidenced by the studies of G. Cooper and V. Meterko¹⁰, P. Croskerry¹¹, and D. Kahneman¹², cognitive biases can distort research findings (see Table 2).

It is therefore crucial to develop and implement systematic measures that will min-

imize the impact of these factors: introduce independent peer review and rotation of forensic experts, optimize working hours, and ensure proper working conditions to reduce the severity of fatigue. Researching cognitive biases and studying their influence on forensic activities will help develop new approaches to preventing expert errors.

Table 2

Impact of Cognitive Biases

Bias type	Description
Confirmation	Forensic experts may be inclined to interpret data in a way that supports their initial hypotheses
Anchoring	Forensic experts may be subconsciously anchored to previous results or authoritative opinions
Fatigue and stress	Long working hours without a break can reduce concentration and enhance the risk of errors

- 10 Cooper G., Meterko V. Cognitive Bias Research in Forensic Science: A Systematic Review. *Forensic Science International*. 2019. Vol. 297. Pp. 35–46. DOI: [10.1016/j.forsciint.2019.01.016](https://doi.org/10.1016/j.forsciint.2019.01.016) (дата звернення: 01.11.2024).
- 11 Croskerry P. The importance of cognitive errors in diagnosis and strategies to minimize them. *Academic Medicine*. 2003. Vol. 78. Is. 8. Pp. 775–780. DOI: [10.1097/00001888-200308000-00003](https://doi.org/10.1097/00001888-200308000-00003) (дата звернення: 01.11.2024).
- 12 Kahneman D. *Thinking, Fast and Slow*. New York, 2011. 512 p. URL: <http://dspace.vnbrims.org:13000/jspui/bitstream/123456789/2224/1/Daniel-Kahneman-Thinking-Fast-and-Slow-.pdf> (дата звернення: 01.11.2024).

It is crucial to emphasize another aspect of error minimization: the introduction of modern technologies. Technological innovations can both reduce the risk of human error and enhance the accuracy and efficiency of forensic examinations.

Automating AI processes and their performance enhances the quality of expert research and contributes to their transparency and optimization of expert activity (see Table 3). The introduction of modern technologies in forensic activity reduces the influence of the human factor on foren-

sic examination findings. Automated systems and artificial intelligence are capable of performing routine tasks with high accuracy and efficiency, significantly reducing the likelihood of errors, enabling tracking of all expert research stages, and contributing to increased transparency and quality assurance of forensic examinations. The use of innovative technologies is an essential step towards mitigating expert errors: it will further increase reliability and credibility of conclusions and enhance trust in the work of forensic experts.

Table 3

Modern technologies to minimize expert errors

Technology type	Description
Automated systems	Perform routine tasks with less chance of errors
Artificial intelligence	Analyzes large volumes of data faster and more accurately than humans
Digital technologies	Help to thoroughly document all forensic examination stages, contributing to increased transparency and control

In addition to the introduction of modern technologies, the continuous improvement of the system of training and certification for forensic experts is of particular importance. The objectivity and quality of forensic examinations are also affected by a high level of training and continuous professional development. Ensuring a sufficient level of expertise among forensic experts (in particular by

introducing mandatory certification and up-to-date training programs) helps to avoid many errors related to the human factor. All of the above boosts confidence in forensic examination results, ensuring greater reliability and accuracy in forensic examinations.

The main areas for improvement in the system of training and certification of forensic experts are shown in Table 4.

Table 4

Enhancing expert training and certification

Direction	Description
Curriculum expansion	Supplement with courses on the state-of-the-art technologies and methodologies as well as psychological aspects of work
Regular advanced training	Regular training courses aimed at updating forensic experts' knowledge and skills
Certification	Mandatory certification of forensic experts with periodic qualification confirmation

A key component in ensuring the quality of forensic activities is conformity with ethical standards. Ethical aspects of

experts' work play a pivotal role in ensuring objectivity, transparency, and impartiality of forensic examinations. They boost

confidence in research findings and ensure that forensic experts are accountable for their conclusions.

The autonomy of forensic experts from external pressures guarantees that forensic examination results remain unbiased and reliable. Transparency in the conduct of forensic examination earns the trust of all concerned parties and facilitates easier verification of results.

Holding forensic experts accountable for their conclusions enhances their performance and reduces the likelihood of errors. Thus, compliance with ethical standards is a cornerstone principle ensuring quality and reliability of forensic research.

Table 5 presents principal ethical aspects important for the proper performance of expert duties.

Table 5

Ethical aspects of forensic experts' work

Type	Content
Independence	Forensic experts are free from external influence
Transparency	Openness and availability of forensic examination results for all parties concerned
Accountability	Experts must be accountable for their research and its consequences.

Methods and approaches suggested by us stem from the current achievements of science and practice, contributing to enhancing objectivity and reliability of forensic examinations. Integration of innovative technologies, improvement of the system of training and certification for forensic experts, as well as compliance with high ethical standards are key elements of a comprehensive approach to reducing errors in forensic expert practice.

Conclusions

Following the study, the author develops the main strategies for minimizing errors in forensic expert activities. They are of great theoretical and practical importance.

Scientific novelty of this study lies in the development of a comprehensive approach to reducing errors. Errors in forensic activities are classified into three main types (technical, cognitive, and organizational), enabling more accurate identification of the causes of errors and the deve-

lopment of appropriate strategies for their prevention.

Theoretical value of research: understanding of cognitive biases and their impact on forensic examination results has been deepened; it has been pointed out that confirmation bias and anchoring bias are the main factors that distort forensic examination results; the need to advance methods of forensic experts' training with an emphasis on identifying and eliminating cognitive biases has been stressed.

Practical value of research: it is proposed to introduce modern technologies (automated systems) that can considerably minimize the risk of human error and enhance the accuracy of research and digital technologies (for greater transparency of forensic examination process and its control); to employ artificial intelligence in order to analyze large volumes of data (to reduce the burden on forensic experts and ensure objective findings); to improve the system of training and certification for forensic experts (to supplement the curriculum with courses on the latest

technologies and methodologies and regularly raise experts' qualification level); adhere to high ethical standards, including independence, transparency, and accountability (to increase objectivity and reliability of forensic examination results, contributing to strengthening trust in the judicial system).

Therefore, the main outcomes of the performed research stress the need for a comprehensive approach to mitigating errors in forensic expert activity. The proposed methods and approaches are based on modern achievements of science and practice, which enable to create a more efficient and transparent system of forensic expert activities. This will help enhance the quality and reliability of forensic examinations, ensure fair justice, and protect citizens' rights.

Стратегії мінімізації помилок у судово-експертній практиці

Валерія Бондаренко-Берегович

Мета статті — поглибити розуміння стратегій мінімізації помилок у судово-експертній діяльності шляхом докладного аналізування найпоширеніших помилок і розроблення нових підходів до запобігання їм; зосередити увагу на класифікації помилок з метою виявити ключові чинники їх виникнення; приділити увагу впливу когнітивних упереджень, недостатній підготовці експертів і відсутності уніфікованих стандартів; розробити рекомендації щодо вдосконалення системи навчання та сертифікації експертів; розглянути етичні аспекти роботи експертів. Для досягнення поставленої мети застосовано загальнонаукові та спеціальні методи. Розглянуто стратегії мінімізації помилок у судово-експертній діяльності; вплив когнітивних

упереджень; питання впровадження сучасних технологій, удосконалення системи навчання та сертифікації експертів, а також етичні аспекти роботи. Сформульовано основні стратегії мінімізації помилок у судово-експертній діяльності, які мають важливе теоретичне та практичне значення. Розроблено комплексний підхід до мінімізації помилок. Об'єднано різні аспекти проблеми для створення комплексного підходу до її розв'язання. Увагу акцентовано на когнітивних упередженнях, недостатній підготовці експертів і відсутності уніфікованих стандартів. Оцінено вплив сучасних технологій на зменшення кількості помилок. Запропоновано рекомендації щодо вдосконалення системи навчання та сертифікації експертів, а також дотримання високих етичних стандартів.

Ключові слова: *судово-експертна діяльність; судова експертиза; мінімізація помилок; когнітивні упередження; сучасні технології; штучний інтелект; автоматизовані системи; стандартизація; професійна підготовка; етичні стандарти.*

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Declaration of Competing Interest

Author declare no conflict of interest.

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Substantiation of Issues in the Procedural Document on the Appointment of a Multidisciplinary Forensic Examination Concerning Animal Poisoning

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The author intended to identify and substantiate questions addressed in the ruling (of the investigating judge, court) or the resolution (of the investigator, inquiring officer, prosecutor) on the appointment of a multidisciplinary forensic veterinary examination and examination of highly toxic substances when investigating animal poisoning. The dialectical method, methods of formal logic (analysis, synthesis, deduction, induction, analogy, formalization, abstraction, idealization) as well as special methods (comparison, modeling, system-structural, system-functional, comparative-legal, hypothesis building) have been applied to fulfill this goal. A range of issues based on the principles of formal logic, dialectics, system analysis, and modeling has been outlined and can be tentatively grouped into three groups: 1) identification signs and physiological features of a living animal (animal corpse); 2) identifying the poison and establishing ways and means of its entry into the animal's body, the mechanism of poisoning action, determining the degree of the animal's health impairment and the degree of loss of an animal's value as a result of poisoning; 3) establishing a causal link between poisoning and health impairments (poisoning and death) of the animal, clarifying consequences of poisoning (specifically whether the animal was subjected to physical pain and suffering before death).

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The practical value of the research findings consists in that logically systematic and scientifically developed questions may be addressed by the subject of pre-trial investigation or the court in the procedural document on the appointment of a multidisciplinary forensic veterinary examination to obtain the most complete and detailed answers to them in forensic expert conclusions in the shortest possible time.

Keywords: multidisciplinary forensic examination; poisoning; exogenous poisons; procedural document; forensic examination appointment; questions in investigator's ruling or court decision.

Research Problem Formulation

A fast-paced development of veterinary medicine opens up new opportunities for practically applying its achievements, particularly for performing the tasks of forensic veterinary examination (hereinafter referred to as FVE) and related forensic examinations, as well as their reflection in the practice of court proceedings¹. This is due to the fact that FVE is the most advanced and well-developed procedural form of using specific expertise during the investigation of crimes committed against

the health and life of animals, which facilitates the solution of identification, diagnostic, situational tasks and helps to provide a conclusion on issues that are or will be the subject of trial². This forensic examination's significance for court proceedings is that it is a reliable means of proof, and the expert's conclusion is admissible in court³.

The FVE subject is a set of factual data and circumstances of a case (proceedings) associated with damage inflicted on the health and life of animals (especially in case of their poisoning as a form of cruel treatment)⁴. The completeness of forensic

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expert examinations, as well as the validity of the expert's conclusion, are fully based on the number of questions raised by the subject of pre-trial investigation or by the court in the procedural document on FVE appointment (ruling, resolution). Therefore, the system of questions addressed to a forensic expert and their justification becomes crucial. Unfortunately, these issues have not been sufficiently resolved to date.

That is why development and substantiation of issues addressed in the ruling (of the investigating judge or court) or resolution (of the prosecutor, investigator, inquiring officer) during a FVE appointment are relevant and possess theoretical and practical value both in jurisprudence and in FVE.

Analysis of Essential Researches and Publications

Ukrainian researchers have already studied animal poisoning: cardiac glycosides (I. Yatsenko et al.⁵), brodifacoum and bromadiolone (R. Kazantsev, I. Yatsenko⁶), isoniazid (H. Kotsiumbas et al.⁷).

Foreign scientists have made a significant contribution to the research of the analyzed issue, which lies in the fact that they have comprehensively studied poisoning as a chemical injury inflicted on animals with the aim of encroaching on their health and life, especially in the case of poisoning of: dogs (K. Bischoff et al.⁸, D. Pivariu et al.⁹, A. F. M. Botelho et al.¹⁰, T. Śniegocki et al.¹¹), cats (A. Chłopaś-

- 5 Яценко І. В., Сердюков Я. К., Якименко Л. П. Судово-ветеринарне встановлення отруєнь тварин препаратами, що містять серцеві глікозиди, за результатами патоморфологічного дослідження. *Ветеринарія, технології тваринництва та природокористування*. 2018. № 2. С. 101–105. DOI: 10.31890/vttp.2018.02.27 (date accessed: 07.11.2024).
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Konowalek et al.¹²), wild animals (I. Valverde et al.¹³, N. Ushine et al.¹⁴), birds (A. Chłopaś-Konowalek et al.¹⁵, K. Nambirajan et al.¹⁶), livestock (C. Zacometti et al.¹⁷, D. G. Ubiali et al.¹⁸, M. J. Clayton et al.¹⁹, A. Bertero et al.²⁰, B. L. Stegelmeier et al.²¹, N. Bates et al.²², M. Machado et al.²³, S. F. Jiang et al.²⁴), poisoning with medicines, house-

- 12 Chłopaś-Konowalek A., Tusiewicz K., Wachelko O. et al. A Case of Amphetamine and Methamphetamine Intoxication in Cat. *Toxics*. 2022. Vol. 10. Is. 12. Pp. 749. DOI: [10.3390/toxics10120749](https://doi.org/10.3390/toxics10120749) (date accessed: 08.11.2024).
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hold products, and pesticides (*M. T. Quail* et al.²⁵, *A. Bertero* et al.²⁶), and also substantiated and proposed approaches to the identification, collection, and preservation of veterinary forensic evidence at the scene (*R. Touroo* et al.²⁷), methods of forensic analytical detection of poisons in various objects, specifically of animal origin (*A. R. Fukushima* et al.²⁸, *F. Galloccchio* et al.²⁹, *S. Schweikle*³⁰, *K. O. Seljetun*³¹, *J. P. Buchweitz*³²) for practical use.

However, a clear system of questions that can be addressed in a ruling (of the investigating judge, court) or resolution (investigator, inquiring officer, prosecutor) on the appointment of a multidisciplinary forensic examination in the case of animal poisoning investigation has not been developed in scientific studies to date. Thus, their importance to the expert's conclusion and the court testifying to the

relevance and novelty of our scientific research has not been highlighted.

Article Purpose

Identify and substantiate questions raised in the ruling (of the investigating judge, court) or resolution (investigator, inquiring officer, prosecutor) on the appointment of a multidisciplinary forensic examination in the animal poisoning investigation case, and demonstrate their significance for drawing up the expert's conclusion and for the court.

Research Methods

The author employs the dialectical method, methods of formal logic (analysis,

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- 30 Schweikle S., Häser A., Wetters S., Raisin M., et al. DNA barcoding as new diagnostic tool to lethal plant poisoning in herbivorous mammals. *PLoS One*. 2023. Vol. 18. Is. 11. DOI: [10.1371/journal.pone.0292275](https://doi.org/10.1371/journal.pone.0292275) (date accessed: 11.11.2024).
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synthesis, deduction, induction, analogy, formalization, abstraction, idealization), and special methods (comparison, modeling, system-structural, system-functional, comparative legal, hypothesis building).

The relationship between these scientific cognition methods has contributed to a comprehensive analysis, substantiation of theoretical conclusions, and the development of practical guidelines.

The empirical basis of the study is the analysis of experts' conclusions drawn from the findings of the forensic veterinary examination of animal cruelty conducted between 2010 and 2024 at the Bureau of Forensic Veterinary Research of Kharkiv State Zooveterinary Academy (currently, *the State Biotechnological University*) and National Scientific Center «Hon. Prof. M. S. Bokarius Forensic Science Institute» of the Ministry of Justice of Ukraine.

Main Content Presentation

The personal forensic experience of the author of this research paper in this field from 2010 to 2024 forms the basis for the development of questions that can be addressed in the procedural document on the appointment of a forensic veterinary examination (decision, ruling) in the case of animal poisoning suspicion. A range of issues based on the principles of formal logic, dialectics, system analysis, and modeling has been outlined and can be tentatively grouped into three groups: 1) identification signs and physiological features of a living animal (animal corpse); 2) identifying the poison and establishing ways and means of its entry into the animal's body, the mechanism of poisoning action, determining the degree of the animal's health impairment and the degree of loss of an animal's usefulness as a result of

poisoning; 3) establishing a causal link between poisoning and health impairments (poisoning and death) of the animal, clarifying consequences of poisoning (specifically whether the animal was subjected to physical pain and suffering before death). The suggested list of questions can be used to draw up a resolution (of the prosecutor, investigator, inquiring officer) or ruling (of the investigating judge, court) on the appointment of a multidisciplinary forensic examination in the animal poisoning investigation case:

1. To what species and class does an animal (animal carcass) submitted for research purposes belong? Is the animal a vertebrate?
2. What is the sex and age of the animal provided for research? What are its physiological features?
3. What clinical signs in a living animal or pathomorphological changes in an animal's carcass were detected during a forensic veterinary examination?
4. What health complications did the animal have and are these complications fatal?
5. What is the severity of harm inflicted on the animal's health?
6. What is the cause of death of an animal whose carcass was submitted for research? If the animal died due to poisoning, which poison resulted in death? (*Note.* a multidisciplinary forensic examination addresses the 6th question. For example: forensic veterinary examination and examination of highly toxic substances).
7. Did poison enter the animal's body intravitaly or postmortem?
8. How exactly did the poison enter the animal's body and in what form? Is animal poisoning related to feed and water consumption?

9. Is poisoning dangerous to the animal's life, and if so, what is the reason for this danger?
10. Did the veterinary care provided to the animal have defects that caused its poisoning?
11. Do the substances found in an animal's carcass (in the body of a living animal) and in external environment objects (feed and water consumed by an animal) have a common generic (group) affiliation?
12. Has the poisoning prevented an animal from being used for general economic or special purposes and, if so, for how long (*specify the period*)?
13. Did an animal's poisoning result in its mutilations?
14. Is an animal's poisoning in a causal link with the animal's health impairment or death?
15. Did poisoning cause an animal's physical pain and suffering before death?

We also deem it appropriate to supplement our proposed list of questions with clause 9.3 of Section IX *Forensic veterinary examination* of the Scientific and Methodological Recommendations on the Preparation and Appointment of Forensic Examinations and Expert Studies³³.

Let's examine these issues more carefully and justify their importance for the resolution of forensic expert tasks, the court, and law enforcement agencies.

1. To what species and class does an animal (animal carcass) submitted

for research purposes belong? Is the animal a vertebrate?

The *animal* definition varies in Ukrainian legislation and in specialized scientific literature. Since poisoning can refer to different animals, we will provide the relevant definitions set forth in Part 1 of Article 1 of the Law of Ukraine *On the Protection of Animals from Brutal Treatment* — *animals* are biological entities belonging to the following types of fauna: agricultural (farm animals), domestic, wild including domestic and wild birds, fur-bearing, laboratory, and animals in zoos and circuses (cl. 2); *wild animals* are animals whose natural habitat is in the wild, including those in captivity and semicaptivity (cl. 3); *domestic animals* are dogs, cats and other animals which by long tradition are kept and bred by man, and also animals belonging to species or breeds artificially raised by man for fulfilment of his/her aesthetic or companionship needs (cl. 4); *agricultural animals* are animals kept and bred by man in order to obtain products and raw materials of animal origin (cl. 5); *homeless animals* are domestic animals abandoned by humans or living in semi-free groups, able to reproduce outside man's control (cl. 6); *experimental animals* are animals used in the conduct of scientific experiments (cl. 7)³⁴.

At the same time, the Law of Ukraine *On Veterinary Medicine* states that animals are mammals, poultry, wild birds, bees, insects, fish, crustaceans, mollusks, frogs, amphibians, and reptiles³⁵.

33 Науково-методичні рекомендації з питань підготовки та призначення судових експертиз та експертних досліджень : затв. наказ. Мін'юсту України від 08.10.1998 р. № 53/5 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/z0705-98#Text> (date accessed: 08.11.2024).

34 Про захист тварин URL: <https://zakon.rada.gov.ua/laws/show/3447-15#Text> (date accessed: 01.11.2024).

35 Про ветеринарну медицину : Закон України від 04.02.2021 р. № 1206-IX (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/1206-20#Text> (date accessed: 01.11.2024).

The Criminal Code of Ukraine envisages criminal liability for animal cruelty exclusively in relation to vertebrates (Article 299)³⁶. In systematic zoological taxonomy, vertebrates are several classes of animals: fish, amphibians, reptiles, birds, and mammals.

Therefore, domestic, wild, agricultural, laboratory, exotic, zoo, and circus vertebrate animals can be the offense object, regardless of their living conditions, level of productivity, welfare facility, purpose of use, age, sex, ownership of them, etc.

As outlined in Article 299 of the Criminal Code of Ukraine³⁷, a forensic expert (based on the results of a forensic veterinary examination) should establish that the living animal under examination or the examined animal carcass belongs to vertebrates³⁸ so that law enforcement agencies can classify actions against an animal as cruelty.

2. What is the sex and age of the animal provided for research? What are its physiological features?

As specified in Article 299 of the Criminal Code of Ukraine, criminal liability is imposed for animal cruelty, while Article 89 of the Code of Ukraine on Administrative Offenses establishes administrative liability for the same offense³⁹. What is more, certain signs of cruelty to animals (regarding the crippled; the elderly; newborns [in birds: flightless]; pregnant animals; sick, lame, with serious injuries [unable to move independently]; certain signs related to the cruel treatment of animals with

genetic developmental defects; as well as those who are in a state of stress, freezing, suffering from hunger, thirst, etc.; during the period of breeding and rearing offspring, etc.) may be qualified as aggravating circumstances by the court in the course of trial.

3. What clinical signs in a living animal or pathomorphological changes in an animal's carcass were detected during a forensic veterinary examination?

Poisoning can be *fulminant*, *acute*, *subacute*, or *chronic*. Fulminant and acute forms usually occur in the event of a single ingestion of a toxic or lethal dose of poison, progress rapidly, and are fatal without any clinical or pathological signs (e.g., cyanide poisoning).

Acute poisoning is characterized by loss of visual and auditory reflexes, convulsions, colic, excessive sweating, repeated vomiting, paresis and paralysis, cardiovascular and respiratory failure, asphyxiation (death of animals occurs within 24–48 hours).

However, most poisonings develop some time after the poison has entered the animal's body, depending on the nature of the poison and the rate at which it is absorbed into the bloodstream. Such poisonings occur in stages, lasting from several hours to a day.

Subacute poisoning results from a single dose of poison, but develops slowly over 1–3 weeks due to the intake of a smaller dose of poison, slow absorption, or excretion from the body. During

36 Кримінальний кодекс України від 05.04.2001 р. № 2341-III (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 01.11.2024).

37 Там само.

38 Там само.

39 Кодекс України про адміністративні правопорушення від 07.12.1984 р. № 8073-X (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/80731-10#Text> (date accessed: 01.11.2024).

subacute poisoning, the animal exhibits morphofunctional changes in individual internal organs.

Chronic poisoning involves repeated ingestion of low-toxic amounts of poison over a long period of time. Clinical signs appear gradually, sometimes becoming atypical. The animal dies within a few weeks or even months in this case.

Clinical signs of poisoning depend on the type of toxic substances that enter the animal's body. Poisoning by lead, nitrates, phenol compounds, poisonous plants containing alkaloids and essential oils causes disturbances in the function of the central nervous system; by organophosphate pesticides results in narrowing of the pupils, salivation, heavy breathing, slowing of the heart rate, increased peristalsis.

It is worth pointing out that the duration of poisoning and the severity of clinical and pathomorphological signs in the body of a poisoned animal are strongly influenced by: 1) poison characteristics (its physical condition [state of matter], chemical properties, amount [the same dose can be indifferent, therapeutic, toxic or lethal], and concentration in liquid or air; the rate of administration [slow or intensive]; nature of the related substance [in an insoluble mixture, the related substance is able to neutralize or weaken the effect of a poison, and vice versa, in a rapidly soluble mixture, the effect of the poison is enhanced or the related substance accelerates the absorption process]; interaction of poisons in the case of their sequential or simultaneous administration [synergism or antagonism], the nature of transformation in the body); 2) peculiarities of the animal's body (health condition associated with impaired detoxification and excretory functions of the body; hypersensitivity [causes more severe poisoning and death even from subtoxic doses];

presence of concomitant diseases; age; body weight; sex [in certain cases]; routes of entering the body; ways of excretion [elimination] from the body [through the kidneys, lungs, liver, mucous membranes, tonsils]; addiction to a particular chemical, the nature of stomach contents and the degree of its filling; the body's ability to resist; individual genetically determined intolerance; drug allergic reaction; addiction to poisons; conducted medical procedures [active detoxification, symptomatic therapy, etc.] etc.).

Organoleptic evaluation of the smell of the stomach contents during a forensic autopsy of an animal's carcass is important (the smell of garlic indicates poisoning with zinc phosphide; bitter almonds: hydrocyanic acid; vinegar: acetic acid; phenol: carbolic acid vapor; etc.) to recognize poisoning.

The color of the mucous membranes of the gastrointestinal tract is also of diagnostic value: yellow is characteristic of poisoning with nitric and picric acids, as well as chromium salts; blue or green: copper salts; gray-black: lead, gray-white: phenol (carbolic acid). In the gastrointestinal tract, it is possible to detect the remains of grains or crystals of toxic compounds (e.g., copper sulfate crystals). Poison can change the blood color: carbon monoxide – to bright red, nitrates and nitrites – to chocolate.

Intoxication with caustic poisons is characterized by inflammatory and necrotic changes in the mucous membrane of the digestive organs (tongue, pharynx, esophagus, small intestine), the formation of hematin in the blood (due to poisoning with acetic acid, acid salts, caustic alkalis), carboxyhemoglobin (as result of carbon monoxide poisoning), methemoglobin (for nitrate and nitrite poisoning). Additionally, individual particles of undigested

plant objects (leaves, berries, tubers, etc.) that resulted in poisoning can be found in the gastrointestinal tract; brown alkaline masses with flaps of exfoliated mucous membrane (for poisoning by caustic poisons, in particular alkalis).

Pathomorphological changes in the body of a poisoned animal manifested as hemorrhages in internal organs may be caused by poisons that increase vascular permeability (arsenic, phosphorus, etc.).

4. What health complications did the animal have and are these complications fatal?

Animal poisoning is a chemical damage causing reversible or irreversible health impairment, mutilation, or death of an animal. It disrupts the anatomical integrity, structure, and/or function of organs and tissues.

An animal's health impairment is any violation of the normal functioning of the body, a permanent violation of the habitual mode of existence (way of life), the inability to use it for specific (general economic or special) purposes and/or its incapability to exist independently in the environment, or the development of a disease process directly related to the damage inflicted on its health.

Health complications are secondary abnormal conditions that occur after poisoning and are causally linked to it. Therefore, complications are a consequence of the poisoning itself, its complications, or the severity of competing, combined, background, and concomitant pathologies

(shock, collapse, acute blood loss, acute multiorgan failure; hypoxia; secondary disorders of intra-organ blood circulation; critical reduction of capillary blood flow; hemolysis of erythrocytes, etc.).

Complications of animal health from poisoning are fatal in the case of severe bodily injuries that, at the time of infliction or after a certain period, lead to the development of pathological processes threatening to the body's normal functioning and result (may result) in death. In this scenario, a forensic expert must identify a direct causal relationship between the poisoning and an animal's death.

Another type of animal health complication caused by poisoning may be its mutilation. It is easier to study it using the Methods of forensic veterinary examination of animals for the purpose of establishing their mutilation⁴⁰.

5. What is the severity of harm inflicted on the animal's health?

The severity of the harm inflicted on an animal's health is determined exclusively by a forensic expert certified in expert specialty 18.1 *Veterinary Research*. It is done to assess damage of various natures, in particular chemical, during a forensic veterinary examination of a living animal (animal carcass) in compliance with the *Rules for forensic veterinary determination of the degree of severity of damage caused to the animal's health (methodological recommendations)*⁴¹ (hereinafter referred to as *the Rules*).

Harm caused to an animal's health consists of temporary or persistent im-

40 Яценко І. В., Парилівський О. І., Казанцев Р. Г. Методика судово-ветеринарного дослідження тварин з метою встановлення їх каліцтва. Харків, 2021. 50 с. Реєстр. код 18.1.01 / Реєстр методик проведення судових експертиз : офіц. сайт. URL: <https://rmpse.minjust.gov.ua/search> (date accessed: 01.11.2024).

41 Яценко І. В., Парилівський О. І. Правила судово-ветеринарного визначення ступеня тяжкості шкоди, заподіяної здоров'ю тварини (методичні рекомендації). Харків, 2022. 47 с.

pairment of organ functions, body systems and/or body parts, as a result of injury (trauma), disease, a pathological condition that has limited the main manifestations of vital activity in an animal compared to other animals of the same species, as well as disfigured the appearance of an animal due to deformation of body parts and/or their physical absence.

Bodily injury (trauma) is harm to health resulting in temporary or permanent impairment, disability or death, caused by traumatic factors of the external environment (especially chemical: poisons) and manifested by a violation of the anatomical integrity, structure, and function of tissues, organs, or parts of the body.

There are three degrees of damage severity, which differ in specific formalized signs: *severe* (danger to life at the time of causing harm; loss of any organ or part of the body or loss of functions by an organ or part of the body; disfigurement [distortion] of the exterior; traumatic abortion); *moderately severe* (no signs of serious injury; long-term health impairment and loss of ability to perform useful work for 21 days or longer); *minor* (transient consequences without health impairment lasting no more than 6 days; short-term health impairments and short-term loss of ability to do useful work for 6–21 days).

6. What is the cause of death of an animal whose carcass was submitted for research? If the animal died due to poisoning, which poison resulted in death? (Note. A multidisciplinary forensic examination addresses the 6th question. For example: forensic veterinary examination and examination of highly toxic substances).

Determining the cause of an animal's death in case of suspected poisoning is

arguably the most crucial and complex issue for both forensic experts and law enforcement agencies (for a reasonable qualification of the committed offense). Adequate determination of the cause of an animal's death is strongly associated with an objectively established forensic veterinary diagnosis based on a set of signs: clinical manifestations (symptoms), pathomorphological signs, chemical and toxicological detection of poison in the body (taking into account the analysis of data from case files of criminal proceedings: minutes of scene inspection and interrogation of witnesses, etc.).

The forensic veterinarian should note that the cause of an animal's death is the main damage (poisoning by exogenous poisons, as they cause chemical damage) or its complications. *The main injury* is a certain nosological form (e.g., poisoning with organophosphate pesticides). *Complications of poisoning* are pathological processes that are a consequence of the main damage (poisoning) and are etiologically and pathogenetically related to it, leading directly or through complications of the main damage (poisoning) to the death of an animal. Complications may be a leading factor in the pathogenesis of poisoning and can be decisive for the animal's death (e.g., poisoning of an animal against the background of diabetes mellitus, or anemia, or acute multi-organ failure, etc.).

Related pathological conditions are etiologically unrelated to poisoning and its complications (e.g., poisoning on the background of traumatic reticulopericarditis). Related pathology can develop and appear both before and after the animal is poisoned.

As a direct cause of death in poisoning, morphological changes in organs leading to the development of irreversible functional disorders and the inability to

continue living must be considered (e.g., fatal poisoning by exogenous poisons, or complications of non-fatal poisonings, such as: pancreonecrosis, critical blood loss due to poisoning with anticoagulant rodenticides, in particular, bromadiolone).

In the event of deliberate or negligent poisoning of an animal (to determine if poisoning is the cause), multidisciplinary forensic veterinary examination and examination of highly toxic substances are appointed. Within the framework of these examinations, a forensic expert, based on specific veterinary expertise: 1) analyzes veterinary documents submitted for a forensic examination (e.g., an extract from the animal's medical record); 2) outlines clinical signs of the course of poisoning by direct examination of an animal under examination; 3) conducts a forensic-veterinary autopsy of an animal's carcass under examination; and the forensic expert in the study of potent and poisonous substances (relying on his/her specific expertise) detects poison in the blood or internal organs (e.g., a certain insecticide, pesticide, etc., and determines its concentration if necessary and possible).

The synthesis of the specific expertise of these two forensic experts within the framework of a multidisciplinary forensic examination enables to make a forensic veterinary diagnosis in an objective and reasoned manner and to establish the cause of an animal's death associated with poisoning as well as a causal link between the entry of the detected poison into the body and the onset of death (if the object under study is the carcass) or the development of a painful (pathological) process, which is *poisoning* (if the object under study is a living animal).

Accordingly, multidisciplinary forensic veterinary examination and examination of highly toxic substances should

determine the main damage (poisoning by exogenous poisons), complications of poisoning, concomitant, background, competing, and combined pathologies that collectively will define the cause of an animal's death.

7. Did poison enter the animal's body intravitality or postmortem?

Elucidation of intravitality or post-mortality of poison entering the body is essential for determining the nature of a crime by the investigation subject, and for forensic experts: to address the question regarding the cause of death or health impairment in an animal. The answer of forensic experts to this question outlines the following actions of the pre-trial investigation subject: opening criminal proceedings or refusing to initiate them.

Postmortem ingestion of any substances into the body may require veterinary resuscitation immediately after the animal's biological death, or may mask a graver crime with poisoning.

Common signs of an animal's intravital poisoning are the reaction of functioning organs or tissues: the circulatory system under the influence of certain poisons reacts by increasing the porosity of blood vessel walls (massive hemorrhages into body cavities, tissues, or organ cavities, blood seepage into the parenchymal organs with its subsequent clotting and, as a result, the development of general exsanguination); hemorrhages under the endocardium; myocardial weakness; overflow of coronary vessels with blood; disappearance of the transverse striation of the myocardial myofibrils; multiple areas of necrosis; dystrophic phenomena.

The respiratory system reacts to intravital poisoning by gaseous toxins with congestive hyperemia, oedema, accumulation

of soot on the mucous membranes of the nasal cavity, pharynx, larynx, trachea, and bronchi when the animal inhales carbon monoxide and combustion products (vomit may be found in the respiratory system as a result of aspiration of the latter).

During the animal's life, digestive organs react to the poison with redness or cyanosis; acute serous-catarrhal, hemorrhagic, croupous diphtheric, or diphtheric-necrotic inflammation of the mucous membranes; hemorrhages and erosions in the gastrointestinal canal; plethora of solid organs and dystrophic changes in them; hemorrhages on the serous membranes; a specific odor of the contents of the stomach and intestines (in case of poisoning with zinc phosphide: garlic); yellowing of mucous membranes (occurs in lupinosis); inflammatory and necrotic changes in the mucous membranes of the alimentary canal organs (due to poisoning with destructive poisons).

Central nervous system organs react to the poison with brain hyperemia, swelling of the brain's pea matter and grey matter, softening of certain areas of the latter.

Blood reacts to poisons by changing its color (to brownish-brown [chocolate] in case of poisoning with nitrates and nitrites); rheological properties; carboxy-hemoglobin content (in case of carbon monoxide poisoning).

Urinary organs respond to poison with dystrophic and necrotic changes in the kidneys, torsion of the nephron tubules, hemorrhages in the bladder's walls.

Ultimately, a significant response of the body, indicating the intravital poisoning, is numerous dystrophic, necrotic foci, as well as signs of inflammation, accompanied by reactive infiltration of leukocytes and plasma cells, perivascular edema.

If poison is injected into the animal postmortem, it can be detected only in lo-

calized sites of injection, together with traces of injections or infusions, especially in atypical areas of an animal's body; also, as a response of the animal's body to the poison, cellular and vascular inflammatory reactions, dystrophic and necrotic phenomena will not be observed.

***8. How exactly did the poison enter the animal's body and in what form?
Is animal poisoning related to feed and water consumption?***

The intensity of the poison's action depends on the route of its entry into the body: through the mouth, rectum, nose, intact skin, vagina, parenterally (subcutaneously, intramuscularly, intravenously, intraperitoneally, etc.).

The typical way in which toxins enter an animal's body is through the mouth, with feed and water, which are absorbed into the bloodstream in the stomach and small intestine, then through the portal vein to the liver, where they are partially decontaminated. Instead, poisons injected through the rectum (intrarectally) and vagina (intravaginally) enter overall circulation, bypassing the liver barrier, and therefore having a greater toxic effect at the same dose.

Poisons enter the bloodstream rapidly and almost unchanged in the form of solutions when administered parenterally and as gases and vapors when inhaled through the respiratory system. The intensity of the percutaneous penetration of poisons depends on the area and duration of their contact with the skin and their ability to dissolve in fats.

When administering parenterally, emphasis should be made on pinpoint puncture wounds on the animal's skin caused by the injection of a syringe needle. At the same time, it is essential to exclude such traces if an animal has been under veterinary care. The time of their formation and

the coincidence with the onset of animal poisoning must also be taken into account.

Poisons can be absorbed by the animal's body as powder (poisons for the control of mouse-like rodents, rats: ecocide C, zinc phosphide, etc.), pills (isoniazid, rifampicin, granules for the control of mice and rodents [iRex], etc.), pastes (paste Bros, etc.), solution (pesticides, rodenticides, and corrosive poisons such as sodium hydroxide, potassium hydroxide, ammonium hydroxide, hydrogen peroxide, potassium permanganate, hydrochloric acid, nitric acid, acetic acid, oxalic acid, sulfuric acid, and carbolic acid (and its derivatives: lysol, cresol, tricresol). They can also enter the body as gases, such as carbon monoxide, carbon dioxide, hydrogen sulfide, carbolic acid vapors, etc.

9. Is poisoning dangerous to the animal's life, and if so, what is the reason for this danger?

A lot of poisons that enter into an animal's body are life-threatening and can result in substantial health impairments or death of an animal. As set forth in subclause 2.5.33 of *the Rules*, life-threatening conditions to the animal are those in which functions of organs, organ systems, and the body as a whole cannot recover on their own and require intensive care (toxic coma and shock; collapse; blood loss [more than 30% of the total volume]); acute cardiovascular and respiratory, kidney and liver failure; pulmonary edema; "shock lung" syndrome; paralysis of respiratory muscles; acute hemocoagulation syndrome; severe intoxications with general toxic poisons without local chemical damage phenomena; acute pancreatic necrosis, etc.)⁴².

Veterinary care which has saved the animal's life should not be considered

when assessing the threat to life of such injuries, however, the life-threatening condition of an animal that develops during the clinical course of injuries, regardless of the time that has passed since its occurrence, is in a direct causal link with it: this should be confirmed by objective clinical studies.

In the absence of life-threatening phenomena for an animal, the severity of the harm caused by an animal's poisoning should be assessed after the injury.

10. Did the veterinary care provided to the animal have defects that caused its poisoning?

Malpractice in veterinary care is the inadequate performance of diagnostic, therapeutic, resuscitation, rehabilitation, and other procedures by a veterinary worker, poor organization and implementation of preventive measures related to inadequate performance or failure of a veterinary worker to perform his or her professional duties, which resulted in negative consequences for an animal in the form of health impairment (illness, injury, mutilation, etc.) or death. Animal poisoning can be the result of defects in veterinary care provision: due to errors in the dosage of veterinary drugs (concentrations, methods, and frequency of their administration), disregard for requirements and warnings of instructions adopted for their use (regarding youngsters, the pregnant, individual and species sensitivity and/or intolerance, combining with other means, possible side effects, etc.). Given the above conditions, veterinary medicines can result in toxic effects: poisoning. Inadequate provision of veterinary care may take place due to a combination of accidental circumstances (accident), professional errors of veterinary workers, unlawful vete-

rietary activities, professional crime, or misconduct.

When carrying out a forensic examination, defects in the provision of veterinary care are established based on the methodology developed by the author of this article⁴³.

Resolving this issue in the expert's conclusion will help the subject of pre-trial investigation and court identify the cause of an animal's poisoning. One of such causes may be improper provision of veterinary care.

11. Do the substances found in an animal's carcass (in the body of a living animal) and in external environment objects (feed and water consumed by an animal) have a common generic (group) affiliation?

To address this issue, results of a chemical-toxicological study of the biomaterial removed from an animal's carcass (entrails and biological fluids of the body [blood, urine, feces, bile, milk, vomit, contents of the gastrointestinal tract, etc.]) and feed and water consumed by the animal on the eve of poisoning or death and removed directly from the feeder should be analyzed. If the same poison is detected in the animal's body and in the consumed feed or water, it is stated that the death or health impairment was caused by the identified poison.

Analysis of chemical-toxicological study results of the substance found in open ampoules, vials, syringes left at the scene, and in the biological material obtained from an animal (animal carcass), will provide a basis for confirming or refuting the identity of the poison found in ampoules,

vials, syringes, etc., and in the animal's body, as well as for clarifying the method (route) of its administration (during diagnostic and therapeutic measures or with the aim of causing harm to the health and life of an animal: this is resolved by the pre-trial investigation subject).

12. Has the poisoning prevented an animal from being used for general economic or special purposes and, if so, for how long (specify the period)?

Losing the ability to use an animal for overall economic or special purposes is real in the event of a health impairment, injury, or an animal's death.

As envisaged in *the Rules*, overall economic use of an animal should be viewed as its ability to perform useful work through the consolidation of a set of skills necessary for a person, at the level of the animal's conditioned reflexes (for the purpose of, for example, searching for physical objects, protection under certain circumstances, guarding facilities, participation in sports and entertainment events, etc.; cll. 1.16 and 1.17)⁴⁴.

Useful is an animal's work bringing maximum benefit to a person. In terms of duration, the animal's health impairment (when it is unable to perform useful work) can be *temporary* (insignificant transitory consequences lasting no more than 6 days); *short-term* (6–21 days); *long* (more than 21 days)⁴⁵. In this regard, there are three degrees of severity of harm deliberately inflicted on an animal's health, including poisoning: severe, moderately severe, and minor (for more details, see *question 5*).

43 Яценко І. Методика проведення судово-ветеринарної експертизи з метою визначення дефектів ветеринарної допомоги. *Теорія та практика судової експертизи і криміналістики*. 2023. Вип. 4 (33). С. 57–86. DOI: 10.32353/khrife.4.2023.05 (date accessed: 01.11.2024).

44 Яценко І. В., Парилівський О. І. Зазнач. твір.

45 Там само.

The importance of resolving this issue lies in the fact that the conclusion of a forensic veterinarian on the loss of the ability to use an animal in economically useful work for a certain period of time may become a valid basis for demanding compensation for material damages for the time (determined by a forensic veterinarian) when an animal did not work due to health impairment in court.

13. Did an animal's poisoning result in its mutilations?

Article 299 of the Criminal Code of Ukraine stipulates criminal liability for cruelty to animals, specifically if the animal has been mutilated⁴⁶. Various poisons can lead to severe impairments and complications in the functioning of an animal's body, hence the loss of health, complete or partial functional loss of any organ, which will lead to physical disabilities, including mutilation.

In view of the above, limitation of an animal's vital activity in relation to its overall economic use should be understood as the reduced ability to perform useful unskilled work, however, limitation of an animal's vital activity with regard to special use must be interpreted as the ability to perform useful qualified, specialized work, i.e., for carrying out which it is necessary to purposefully develop and consolidate the set of service skills needed for a man.

The degree of limitation of an animal's vital activity is the amount of deviation from its normal vital activity. It is characterized by one or a combination of its most important criteria. In forensic veterinary

practice, there are three degrees of limiting an animal's vital activity: *moderately severe* (III degree), *severe* (II degree), and *considerable* (I degree).

The fact of animal mutilation is established solely by a forensic veterinarian in accordance with the methodology developed by the author of this article along with co-authors⁴⁷. Forensic veterinary examination of poisoned animal carcasses to determine its mutilation is performed in the same way as the research on living animals.

14. Is an animal's poisoning in a causal link with the animal's health impairment or death?

The poisoning of animals as objects of criminal protection may be classified as cruelty by law enforcement authorities or a court: a crime with a material component under Article 299 of the Criminal Code of Ukraine⁴⁸. In this case, there is a need to objectively determine a causal link between poisoning (cause) and consequence (illness, mutilation, or death of an animal), when the cause conditions these consequences exceptionally stemming from the results of multidisciplinary forensic veterinary examination and examination of highly toxic substances. Let's point out that such a reason is self-sufficient and does not need any additional conditions, except for committing a dangerous act.

Forensic experts must trace a causal link between the poisoning and death of an animal. The presence of poison in the body does not mean that the animal died from poison: poison may be detected in the

46 Кримінальний кодекс URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 01.11.2024).

47 Яценко І. В., Париловський О. І., Казанцев Р. Г. Зазнач. твір.

48 Кримінальний кодекс URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 01.11.2024).

body, but in a concentration that would not have led to the animal's death.

When poison is present in the body, death can occur for another reason (e.g., from the rupture of an aortic aneurysm due to excessive strain: in this case, there is no direct causal link between the poisoning [the presence of poison in the body] and death of an animal).

In this connection, it is not enough to detect the fact of the presence or absence of poison in the body: it is also essential to take into account clinical signs and patho-anatomical changes occurring at a certain time in the course of poisoning.

Dangerous effects of an animal's health impairments or death inflicted due to poisoning are intangible harm caused to it that has no physical units of measurement: such damage is determined by the criteria of intangible (moral) nature. Since the nature of the consequences of an animal's poisoning (health impairment, injury, or death) affects the severity of harm caused to its health⁴⁹, then such a crime is punishable under Art. 299 of the Criminal Code of Ukraine⁵⁰ in accordance with the degree of its public danger.

As is it is known, there is a distinction between *direct* and *indirect* causal link. If research results confirm *the direct causal link* between an animal's poisoning and the impairment of its health or death, a forensic veterinarian must draw up *a categorical conclusion*. However, for the subject of pre-trial investigation or court, such confirmation in the expert's conclusion is only the first stage, which brings closer the conviction of the guilty party of the crime

mentioned in Article 299 of the Criminal Code of Ukraine⁵¹, leading him/her to face legal responsibility. What is more, the subject of pretrial investigation subject or court must prove the subjective side of such a crime, i.e., the person's guilt manifested as intent or carelessness regarding the consequences that occurred.

15. Did poisoning cause an animal physical pain and suffering before death?

Forensic veterinary medicine singles out several groups of poisons (depending on the nature of their effects on organs and tissues): caustic (highly acidic or alkaline chemicals) which might result in severe chemical burns of the digestive tract (symptoms: pain [especially when swallowing], coughing, shortness of breath, and vomiting); destructive (causing necrotic and dystrophic changes in the liver, kidneys, heart, and brain); leading to blood hemoglobin and resulting in asphyxiation. Therefore, poisons cause physical pain and suffering to an animal. In this regard, *physical pain* is a condition of an animal manifested as suffering caused by physical or chemical effects on its body (specifically poisons).

Suffering is a combination of intense suffering or unpleasant feelings experienced by a living being, when it endures physical and/or psycho-emotional discomfort, pain, stress, or excruciating pain. This term covers a variety of conditions and situations that can vary substantially depending on the peculiarities of the impact of certain factors on the body. Inflicting severe

49 Яценко І. В. Теоретико-гносеологічна конструкція феномену ступеня тяжкості шкоди, заподіяної здоров'ю тварини, в судово-ветеринарній експертизі. *Форум права*. 2023. Вип. 75. № 2. С. 65—88. DOI: 10.5281/zenodo.7699531 (date accessed: 01.11.2024).

50 Кримінальний кодекс URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 01.11.2024).

51 Там само.

and prolonged suffering on an animal that leads to health impairments, mutilation, chronic stress⁵², or death indicates that the offender lacks any compassion for the animal, especially if he/she enjoys observing its pain and suffering.

Actions resulting in pain and suffering to an animal include: long-term deprivation of food, drink, heat, keeping in conditions hazardous to health, excessive exploitation, etc.⁵³. We deem it appropriate to use the 'psycho-emotional suffering' term rather than 'moral suffering' when talking about animals. Unfortunately, to date, forensic veterinary medicine has not defined certain components of the category and conceptual apparatus (in particular, the duration and extent of pain). Researchers have also not reached a consensus on the ability of animals to experience suffering when exposed to various negative external factors. According to zoopsychologists, animals are able to feel pain and react emotionally to a certain situation (since they have a well-developed nervous system and higher nervous activity). However, a great number of issues are currently at the level of scientific discussion⁵⁴. A clinical forensic examination (of stress hormones, the structure of adrenal glands, discirculatory changes in organs,

etc.) will help to interpret them in each specific expert case.

The degree of physical pain and suffering are proportionately dependent on clinical condition of the poisoned animal, and is also affected by the degree of its pain and suffering from the inflicted poisoning: in case of severe poisoning, they are very strong or unbearable; they are moderate, minor, and extremely minor in case of moderately severe or minor poisoning.

A forensic veterinarian's conclusion on the infliction of injuries, physical pain, and suffering to an animal (in particular, immediately before its death) is of value since it enables to accurately qualify the 'cruelty to animals' offense: if an animal has been injured, mutilated, or died, such acts are qualified by law enforcement agencies or the court as a crime defined by Article 299 of the Criminal Code of Ukraine⁵⁵; if an animal's suffering was not accompanied by bodily harm, mutilation, or its death, such actions with the animal are qualified as an administrative offense envisaged in Art. 89 of the Labor Code of Ukraine⁵⁶.

Conclusions

Relying on the principles of dialectic, formal logic, system analysis, and mode-

52 Camps T., Amat M., Manteca X. A Review of Medical Conditions and Behavioral Problems in Dogs and Cats. *Animals (Basel)*. 2019. Vol. 9. Is. 12. Art. 1133. DOI: [10.3390/ani9121133](https://doi.org/10.3390/ani9121133) (date accessed: 01.11.2024); Kooriyama T., Ogata N. Salivary stress markers in dogs: Potential markers of acute stress. *Research in Veterinary Science*. 2021. Vol. 141. Pp. 48–55. DOI: [10.1016/j.rvsc.2021.10.009](https://doi.org/10.1016/j.rvsc.2021.10.009) (date accessed: 01.11.2024).

53 Foraita M., Howell T., Bennett P. Environmental influences on development of executive functions in dogs. *Animal Cognition*. 2021. Vol. 24. Is. 4. Pp. 655–675. DOI: [10.1007/s10071-021-01489-1](https://doi.org/10.1007/s10071-021-01489-1) (date accessed: 01.11.2024).

54 Доценко В. В. Зоопсихологія : навч. посіб. Харків, 2019. С. 132–133. URL: <https://dspace.univd.edu.ua/server/api/core/bitstreams/9411a76f-09bf-4c35-b69d-c6fe33a244a6/content> (date accessed: 07.11.2024).

55 Кримінальний кодекс URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 01.11.2024).

56 Кодекс ... про адміністративні правопорушення URL: <https://zakon.rada.gov.ua/laws/show/80731-10#Text> (date accessed: 01.11.2024).

ling, the author has developed, justified, and formulated a system of questions that can be addressed to a medical examiner in a resolution (by a prosecutor, investigator, inquiring officer) or ruling (by an investigating judge, court) on the appointment of forensic examination of animals in case of poisoning by exogenous poisons, which, in turn, will contribute to the efficiency and effectiveness of forensic examination, and the provision of a well-grounded and objective conclusion in a categorical form. It would be expedient to supplement the Scientific and Methodological Recommendations on the Preparation and Appointment of Forensic Examinations and Expert Studies with this system of questions.

All the issues addressed in the procedural document on forensic examination appointment (specifically in animal poisoning case) can be conditionally grouped into three groups: 1) identification signs and physiological features of a living animal (animal corpse); 2) identifying the poison and establishing ways and means of its entry into the animal's body, the mechanism of poisoning action, determining the degree of the animal's health impairment and the degree of loss of an animal's value as a result of poisoning; 3) establishing a causal link between poisoning and health impairments (poisoning and death) of the animal, clarifying consequences of poisoning (specifically whether the animal was subjected to physical pain and suffering before death).

**Обґрунтування питань
у процесуальному документі
про призначення комплексної
судової експертизи
щодо отруєння тварин**

Іван Яценко

Мета статті — виокремити й обґрунтувати питання, які ставлять в ухвалі

(слідчого судді, суду) або постанові (слідчого, дізнавача, прокурора) про призначення комплексної судової ветеринарної та з дослідження сильнодіючих і отруйних речовин експертизи в разі розслідування отруєння тварин. Для досягнення поставленої мети застосовано діалектичний метод та методи формальної логіки (аналіз, синтез, дедукція, індукція, аналогія, формалізація, абстрагування, ідеалізація) і спеціальні методи (порівняння, моделювання, системно-структурний, системно-функціональний, порівняльно-правовий, побудова гіпотез). Окреслено коло питань, які ґрунтуються на принципах формальної логіки, діалектики, системного аналізу й моделювання та які можна умовно об'єднати у три групи: 1) розпізнавальні ознаки й фізіологічні особливості живої тварини (трупа тварини); 2) виявлення отрути та визначення шляхів і способів її потрапляння до організму тварини, механізму дії отрути, з'ясування ступеня розладу здоров'я тварини та ступеня втрати можливості використовувати тварину внаслідок її отруєння; 3) визначення причиново-наслідкового зв'язку між отруєнням і розладом здоров'я (отруєнням і смертю) тварини, з'ясування наслідків отруєння (зокрема, чи завдано тварині перед смертю фізичного болю та страждань). Практичне значення здобутих результатів дослідження полягає в тому, що логічно систематизовані й науково сформульовані питання суб'єкт досудового розслідування або суд можуть поставити в процесуальному документі про призначення комплексної експертизи з метою отримати найбільш повні й обґрунтовані відповіді на них у висновку експертів у найбільш оптимальний строк.

Ключові слова: комплексна судова експертиза; отруєння; екзогенні отрути; процесуальний документ; призначення судової експертизи; питання в постанові слідчого або ухвалі суду.

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Declaration of Competing Interest

Author declare no conflict of interest.

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Combinations of philological knowledge application while forensic linguistic (semantic and textual) examination

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This article purpose is to outline variants of philological knowledge application in the course of linguistic (semantic and textual) examination. For achieving this goal, general scientific and special research methods were used. The necessity of new scientific developments in the field of semantic and textual examination due to political and social requirements of the time is substantiated. Complexity of the work of linguistic expert due to the lack of methods for conducting forensic semantic and textual examination is noted. Possible options for applying philological knowledge in analyzing texts with signs of appeals, intimidation, propaganda, and profit are considered. The author outlines recommendations for research on texts using elements of semiotic, linguistic and pragmatic, semantic, stylistic, subject and thematic, formal and grammatical, descriptive, interpretive analysis, content analysis, and knowledge of cognitive linguistics. An example from the author's own practice of researching a conflict text in a case of protection of honor, dignity, business reputation of an individual, as well as texts with socio-political content is given. The algorithms of forensic research of appeals and media texts are presented. Theoretical aspects and methodological recommendations for identifying the main signs of suicide in the text at the psychological, verbal and extra-verbal le-

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vels are highlighted. It is proved that semantic and textual research requires a thorough professional knowledge of linguistics.

Keywords: *forensic semantic and textual examination; coherence; perlocution; locative formations; performatives; cognitive linguistics; semiotic approach; linguo-pragmatic analysis; extralinguistic factors; invective vocabulary; creolized text.*

Research Problem Formulation

Complexity of the work of forensic linguist in semantic and textual research at the present stage is due to the challenges of our time and the lack of methods for conducting examinations. Therefore, it is necessary to develop, test and implement new methods and improve existing ones. During the research, the linguistic expert should rely primarily on professional knowledge, and when drawing up forensic expert conclusion, he or she should apply the skills of linguistic text analysis.

Analysis of Essential Researches and Publications

Currently in Ukraine, B. Azhniuk, L. Azhniuk, M. Bohoslovskaya, T. Budko, N. Didushok, O. Dovzhenko, Ye. Kovkina,

L. Kompantseva, Yu. Pradid, L. Svyrydova, L. Shevchenko et al., are successfully working on solving issues of forensic semantic and textual examination.

The subject of L. Svyrydova's interests is the issues of development of linguistic expertise at the present stage, relevance of linguistic research in forensic expert practice. In particular, the scientist analyzes peculiarities of the methods of conducting authoring and semantic-textual linguistic examinations¹.

Ye. Kovkina's publications (personal and with co-authors) are devoted to the analysis of texts within the framework of semantic and textual research (SMS messages in cases of threats; statements in the form of various types of appeals; the presence of benefits in the texts of the proposal, etc.²).

Social networks are the source of L. Kompantseva's reflections on the issues

- 1 Свиридова Л. В. Актуальність лінгвістичних досліджень у судово-експертній практиці. *Криміналістика і судовая експертиза*. 2013. Вип. 58. Ч. 2. С. 267–269. URL: http://nbuv.gov.ua/UJRN/khrife_2013_58%282%29__52 (date accessed: 01.10.2024) ; Її ж. Експериментальне дослідження деяких особливостей українського писемного мовлення, обумовлене статевим диморфізмом. *Теорія та практика судової експертизи і криміналістики*. 2008. Вип. 8. С. 196–203.
- 2 Ковкіна Є., Алоян М., Авоян Л. Актуальність лінгвістичної експертизи мовлення у кримінальних справах щодо інкримінування погрози. *Там само*. 2022. Вип. 28. С. 98–108. DOI: 10.32353/khrife.3.2022.06 (date accessed: 01.10.2024) ; Ковкіна Є. В. Актуальні питання при призначенні та проведенні лінгвістичних (семантико-текстуальних) експертиз щодо встановлення погрози у текстах смс-повідомлень. *Актуальні проблеми діяльності органів досудового розслідування* : мат-ли Всеукр. наук.-практ. конф. (Дніпро, 07.06.2019). Дніпро, 2019. С. 85–88 ; Ковкіна Є., Свиридова Л., Дідушок Н. Семантико-текстуальні дослідження закликів. *Теорія та практика судової експертизи і криміналістики*. 2020. Вип. 22. С. 280–292. DOI: 10.32353/khrife.2.2020.22 (date accessed: 01.10.2024) ; Ковкіна Є. В. Теоретичні і практичні аспекти вивчення комунікативного акту прийняття пропозиції вигоди в сучасній лінгвістичній експертизі мовлення. *Мовознавчий вісник*. 2022. Вип. 32. С. 164–170. DOI: 10.31651/2226-4388-2022-32-164-170 (date accessed: 01.10.2024).

of forensic linguistics. The scientist analyzes the applied possibilities of linguistic expertise of social networks in the context of hybrid threats to national security of Ukraine (mass media texts on identifying destructive influences on the consciousness of the masses, manipulation of public opinion) ³.

The issue of urgent problems, basic principles and tasks of linguistic expertise is investigated by L. Shevchenko. Highlighting the types of linguistic examinations, the scientist determines the specifics of their implementation ⁴.

T. Budko considers modern possibilities of forensic semantic and textual examination, scientific and linguistic requirements for forensic expert methods, peculiarities of preparation of objects and content for forensic linguistic examinations, etc. ⁵

It is worth noting that, despite the significant amount of scientific research in the field of linguistic expertise, in particular semantic and textual, the need for further development of methods with reliance on the latest approaches to linguistic research remains relevant, due, in particular, to the needs of modern investigative practice.

Article Purpose

Outline the options for applying linguistic knowledge during semantic and textual examination based on various types of analysis of the studied texts.

Research Methods

For achieving this goal, both general scientific (analysis, synthesis, induction, deduction) and special linguistic (linguistic, stylistic, discursive, contextual and interpretive, semantic and syntactic, lexical-semantic, functional and pragmatic, cognitive) research methods were used.

Main Content Presentation

Text has its own meaning, grammatical structure, stylistic organization, integrity, semantic coherence, completeness, author's intention, and emotionality. These textual specifics are the subject of expert linguistic research. According to Research guidelines on preparation and appointment of forensic examinations and forensic researches, the main tasks of semantic and textual examination are *"establish the content of concepts, lexical meaning of words*

- 3 Компанцева Л. Ф. Лінгвістична експертиза соціальних мереж : підручник. Київ, 2018. 318 с. ; Її ж. Лінгвістична експертиза соціальних мереж в умовах гібридних викликів національній безпеці України. *Актуальні проблеми української лінгвістики: теорія і практика*. 2020. № 40. С. 119—139. DOI: [10.17721/APULTP.2020.40.119-139](https://doi.org/10.17721/APULTP.2020.40.119-139) (date accessed: 01.10.2024).
- 4 Шевченко Л. І., Сизонов Д. Ю. Лінгвістична експертиза : підручник / за ред. Л. І. Шевченко. Київ, 2021. 244 с. URL: <http://surl.li/otaveg> (date accessed: 01.10.2024).
- 5 Будко Т. В. Наукознавчі та мовні вимоги до судово-експертних методик. *Криміналістика и судебная экспертиза*. 2015. Вип. 60. С. 58—66. URL: http://nbuv.gov.ua/UJRN/krise_2015_60_11 (date accessed: 01.10.2024) ; Її ж. Судово-лінгвістична експертиза: об'єктивна необхідність та суб'єктивні фактори гальмування її розвитку. *Судово-експертна діяльність: сучасний стан та перспективи розвитку* : мат-ли кругл. столу (Київ, 23.04.2015). Київ, 2015. 3,5 с. URL: <https://elar.naiu.kiev.ua/server/api/core/bitstreams/bf952a6c-674c-449a-9224-7ed3cabd83c3/content> (date accessed: 01.10.2024) ; Її ж. Проблемні питання судово-лінгвістичної семантико-текстуальної експертизи мовлення та рекомендації щодо їх вирішення (на матеріалах кримінальних проваджень) : монографія. Київ, 2017. 88 с.

or phrases used in the texts or oral communications submitted for examination (based on their textual reproductions), their stylistic coloring, semantic load and nature of the information contained therein”⁶.

The task of forensic linguist is complicated by the need to study texts of mostly implicit content. In the process of studying such a text, the expert must reveal hidden orderliness, taking into account internal connections, analyzing phenomena, and presenting their generalization in the synthesizing part of the conclusion. When studying texts with a violation of coherence (integrity, meaningful coherence), a forensic expert should establish its objective content by studying the content of its individual fragments. In this process, it is important to take into account the social context, as the need to study propaganda texts aimed at inciting the population to overthrow the constitutional order in the country, violate its territorial integrity, incite hatred on national and religious grounds, create illegal armed groups, commit terrorist acts, support the aggressor country, etc. is growing day by day. Therefore the task of semantic and textual studies is to determine the level of perlocution of texts (influence on the consciousness and behavior of the addressee) based on the analysis of locative formations (linguistic means).

For example, when answering the question of linguistic (semantic and textual) examination in criminal proceedings

about the objective meaning of the statement of citizen “X” “*we need to unite*”, forensic expert in his/her research should note availability of incentive to act in the phrase, as evidenced by lexical and grammatical indicators of this call (an adverb with the semantics of obligation is added to the infinitive). The performatives (deeds, actions) localized in this phrase are not descriptive in nature, but are a direct encouragement to perform them, which also becomes clear from the context of the studied sample. Similar appeals (“*get up*”, “*start acting*”, “*stop being silent*”) that may be the subject of the study usually also have subtextual interpretations related to illegal actions and indicate a conscious, predictable impact on the potential recipient. In this case, a linguistic expert, as defined by L. Shevchenko and D. Syzono, “*appears as a professional interpreter of the communicative realization of the resource of the word’s semantics, its ability to reproduce reality or create a new one, desired or deliberately modeled for the mass recipient*”⁷.

Example from the author’s practice. The following text posted on the Internet is subject to analysis: “*Fellow countrymen, Crimeans, we bravely stood up to defend Russia*”⁸, *it’s time to prove that our country, our army, is the strongest and most united. We send greetings to the Zaporizhzhia direction, we are all volunteers, we came here so that there would be no war, we are here only for this, victory will be ours. Dear comrades, our grandfathers beat the fascists in Ukraine*

6 Науково-методичні рекомендації з питань підготовки та призначення судових експертиз та експертних досліджень : затв. наказ. Мін’юсту України від 08.10.1998 р. № 53/5 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/z0705-98#Text> (date accessed: 01.10.2024).

7 Шевченко Л. І., Сизонов Д. Ю. Зазнач. твір. URL: <http://surl.li/otaveg> (date accessed: 01.10.2024).

8 Написання назв «російська федерація» / Національна комісія зі стандартів державної мови : офіц. сайт. 20.09.2023 р. URL: <https://mova.gov.ua/news/napysannia-nazv-rosiiska-federatsiia> (date accessed: 01.10.2024).

during the Great Patriotic War, we are now repeating their feat, Russia is with us, I wish us victory and a speedy return home, victory will be ours. There is a tough and bloody fight against a lying and insidious regime that spares neither children nor the elderly. The enemy is at the door, we are beating the would-be Ukrainian Nazis hard, the advantage is on our side, we have everything will, determination, faith, powerful modern weapons, we have smart, competent commanders, good soldiers and the right men with us. Wake up people, stand in line with us. We will teach you to fight, do not be afraid of difficulties, we do not abandon our own. Victory and truth are ours, the enemy will be defeated, do not doubt". During the linguistic analysis, it is necessary to find out the meaning of semantic lexemes according to lexicographic sources and to come to a conclusion about the nature of their use in the text (direct and figurative meanings). With the help of semantic, syntactic, and linguistic analysis, we determine that the words and phrases in the text are used mostly in their direct meanings. The sentences of the text are of simple and complex syntactic construction with narrative and exhortative content, realized in Russian. Using the subject and thematic analysis, we determine that the main topic of the text is social and political situation, namely the problems of the Russian-Ukrainian war that began in 2014.

Further, by semantic, conceptual and content, functional and pragmatic, formal and grammatical analysis and intentional analysis, we determine the objective content of the text and come to the conclusion that it contains:

1. The addressee's statements, expressed in the form of direct appeals to fellow countrymen (Crimeans) to defend Russia, to wage war against Ukraine, its political direction: "Countrymen, Crime-

ans, we bravely defended Russia, it's time to prove that our country, our army, is the strongest and most united... **Wake up people, stand up with us**".

Illocutionary power of the components of the studied text is embodied in the form of an appeal-an inclusive action to fellow countrymen, Crimeans (the addressee considers himself to be one of the performers of the future action). At the grammatical level, the illocution of the appeal is conveyed by the predicate construction: "it's time to prove", namely the predicate adverb and the infinitive, where the adverb "it's time" reinforces the semantics of the obligation to perform the action, the meaning of which is revealed by the infinitive form of the "prove" verb. Imperative of the call is in the third person of plural;

2. The addressee's statement in the form of direct calls-slogans of inclusive action with the leading direction of the addressee's actions aimed at achieving the victory of Russia: "Victory and truth follow us, the enemy will be defeated";

3. Statements of the addressee, expressed in the form of statements about the so-called defense of Russia and peace: "We bravely defended Russia... we came here so that there would be no war, we are only here for this", which is an implicit sign of justification of the armed aggression of the Russian Federation against Ukraine, launched in 2014;

4. A statement with a negative evaluation connotation for the designation of the Ukrainian people and the political vector of Ukraine's development: "There is a tough **and bloody struggle against a deceitful and insidious regime** that spares neither children nor the elderly. The enemy is at the doorstep, we are beating the grief-stricken **Ukrainian Nazis** hard";

5. Various means of argumentation used by the addressee to justify the

need to overthrow the government of the Ukrainian state by armed force: ***“Our grandfathers beat the fascists in Ukraine during the Great Patriotic War, we are now repeating their feat, Russia is with us, I wish us victory and a speedy return home, victory will be ours. There is a tough and bloody fight against a lying and insidious regime that spares neither children nor elderly. The enemy is at the doorstep, we are hitting the would be Ukrainian Nazis hard, the advantage is on our side, we have everything: will, determination, faith, powerful modern weapons, we have smart, competent commanders, good soldiers and real men with us. Wake up people, stand in line with us. We will teach you to fight, do not be afraid of difficulties, we do not abandon our own. Victory and truth are ours, the enemy will be defeated, do not doubt”***;

6. Explicit motivational statements addressed to Crimeans, “co-workers”, are embodied in the form of calls for war against Ukraine: *“Awake, people, stand up with us. We will teach you how to fight, do not be afraid of difficulties, we do not abandon our own. Victory is the truth behind us, the enemy will be defeated, do not doubt”*;

7. Forecasts, beliefs in the form of a direct statement about the inevitable victory of Russia: *“For us, victory and truth, the enemy will be defeated, do not doubt”*, which is achieved by using verbal constructions “will be broken”, “do not doubt” with the semantics “will happen”;

8. Words and constructions with a pronounced positive characteristic of Russia and its potential: *“Our country, our army, the strongest and most united... the superiority is on our side, we have everything: will, determination, faith, powerful modern weapons, smart competent commanders, good soldiers and peasants that we need”*;

9. Explicit statements in the form of a statement about the cruelty of the

Ukrainian authorities: *“There is a tough and bloody struggle against a **deceitful and insidious regime that spares neither children nor elderly**”*.

Often, in order to diagnose calls in the studied texts, it is not enough to reveal only the semantics of language constructs. It's also important to explain how you're instructed to follow your creator's program. The expert will be able to determine it by applying the techniques of discursive analysis, revealing intertextual connections within the studied text. For example, the linguistic justification of the appeal *“Time to find the common roots of the Kher-son region and Russia”*, put in the title of the article, requires a comparison of the content of this appeal with the characteristics of all speech components of the text. The algorithm of expert research in this case may be as follows:

- identification of belonging to political discourse, as evidenced by both the title and the context;
- definition of the role of the author of the text (acts as a political subject of communication with the addressee);
- establishment of the fact of achieving the goal, violation of territorial integrity of Ukraine by separating its part in the interests of the Russian Federation;
- identification of the author's program to achieve the goal (instructions of convincing content for certain actions of the addressee);
- identification of mechanisms of speech influence on the consciousness of the addressee to control his actions and behavior in the right direction.

In the synthesizing conclusions, forensic linguist makes a generalization, answering the question whether the

submitted text contains speech signs that indicate the possibility of violating the territorial integrity of Ukraine. In addition, it is important to note that the content of the title of the appeal and the entire text corresponds to the current legal norm (Part 1 of Art. 110 of the Criminal Code of Ukraine⁹). The legal terminology used in the text of forensic expert conclusion is applied exclusively within the framework of linguistic types of analysis.

During the study of the publication *"Ukrainians! The story makes it possible to get rid of Bandera's oppression, which drove Ukraine into a deep pit. Stand up against the Kiev regime and Bandera gangs!"* posted on the Internet¹⁰, the expert notes that, given the semantics of the words used, the phrase *"Stand up to fight"* (Ukrainian: *"Stand up for the fight"*) in the context is used as an appeal addressed to Ukrainians in order to destroy the current Ukrainian authorities and their representatives. In addition, the addressee notes that it is possible to implement this, since the story gives such a chance (according to the situational context, taking into account the date of distribution of the publication on the Internet; destruction of the current Ukrainian authorities and their representatives should take place during the Russian-Ukrainian war, which began in 2014): *"History provides opportunity to get rid of Bandera's oppression"*.

In the context of the publication, the *"Kiev regime"* (Ukrainian: *"Kiev regime"*) refers to the current Ukrainian authorities headed by President V. Zelensky, called the *"regime"* with a negative assessment

in the meaning of *"anti-people, anti-democratic state system"*, the *"Bandera gangs"* (Ukrainian: *"Bandera gangs"*) refers to representatives and structures of the current Ukrainian authorities, which are referred to as the *"gang"* with the semantics of *"robbery, crime"*. In the context of the message *"to get rid"* (Ukrainian: *"to get rid of"*), *"to fight"* (Ukrainian: *"to fight"*) has a direct meaning, that is, *"to free oneself by destruction, eradication"*.

In view of the above, the appeal to Ukrainians contains an incentive to perform actions that will contribute to the achievement of the provisions set out in the context, namely: to free themselves from the oppression of the so-called nationalists (given the semantics of the used *"Bandera"* lexeme as a derivative of the *"Bandera"* lexeme). A grammatical indicator of the call is the presence in its structure of the lexeme *"Ukrainians"* (Ukrainian: *"Ukrainians"*), expressed by the noun-conversion, and the lexeme *"get up"* (Ukrainian: *"get up"*), expressed by the verb of the ordinance method (*"Ukrainians!.. Stand up to the Kiev regime and Bandera gangs!"*).

Thus, illocutive power of components of the studied speech structure is expressed in the form of a direct appeal-appeal of exclusive action (the addressee excludes himself from among the performers of the future action) to rise to fight against the current Ukrainian authorities, nominated by the *"Kiev regime"*, and its representatives and structures nominated by the *"Bandera gangs"*.

Content analysis of the text under study, taking into account the semantics of

9 Кримінальний кодекс України від 05.04.2001 р. № 2341-III (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 01.10.2024).

10 Ухвалено вирок чоловіку, який вчинив дії, спрямовані на насильницьку зміну чи повалення конституційного ладу / Сумський райсуд Сумської обл. : офіц. сайт. 18.07.2024 р. URL: <https://su.su.court.gov.ua/sud1817/pres-centr/novyni/1664397/> (date accessed: 01.10.2024).

the lexemes, revealed that its main theme and leading goal is to convince the reader that Ukrainians should get rid of the current Ukrainian government and its representatives by force (through struggle).

Given the semantics, it is impossible to unambiguously interpret any word, phrase, sentence outside the context of its use. *Context* is the text that surrounds the studied word (phrase, sentence) and is in direct connection with it; intonation, the situation in general, which caused the creation of the studied communicative message. Depending on these factors, the word (phrase, sentence) may acquire some new or unusual nuances of meaning. In view of this, the expert notes that, with the help of lexical and semantic analysis of the publication under research, it has been established that it contains:

- 1) appeal to the Ukrainian people to get rid of the current Ukrainian government, its representatives and structures by force (*"Ukrainians!.. Stand up to the Kiev regime and Bandera gangs!"*);
- 2) emphasizing that history makes it possible to get rid of "Bandera's oppression" (*"History gives an opportunity to get rid of Bandera's oppression"*);
- 3) a negative characterization of the activities of the so-called Bandera gangs (*"Bandera's oppression"*), who, according to the addressee, made life in Ukraine unbearable.

In the conclusions, forensic expert notes that the above statements, combined grammatically, semantic load, purpose, object, method of implementation of ac-

tions, are generally perceived as a single, integral, indivisible semantic unit, which is a detailed evaluation-motivated appeal to an indefinite number of persons – residents of Ukraine – to rise up and forcibly overthrow the current Ukrainian authorities, physically destroying them.

The above statements, taking into account their stylistic specifics (publication on the Internet in order to influence audience within the framework of socio-political communication), objectively acquire the signs of a public call for the implementation of the actions they refer to.

At the current stage of development of new areas of semantic and textual research, conflict texts in cases concerning *protection of honor, dignity and business reputation* of legal entities and individuals are gaining importance. The protection of honor, dignity and business reputation is regulated by the current legislation (part 4 of Article 32 of the Constitution of Ukraine ¹¹ and part 1 of Article 94, Article 297 of the Civil Code of Ukraine ¹²). Here is an example of a text that requires analysis of the semantics of a word/words, taking into account the context: *"Citizen X during a public speech called citizen Y a 'clumsy fool', an 'idiot who does not understand anything'"*. The expert was asked the following questions: *"What are the semantic characteristics of the statements of citizen X addressed to citizen Y in the material provided for analysis? Do they contain offensive information? Can such statements cause moral harm to an individual?"*.

Forensic expert conclusion: *"Insult is humiliation of a person's honor and dignity expressed in an indecent manner. It is a negative*

11 Конституція України : Закон України від 28.06.1996 р. № 254к/96-ВР (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text> (date accessed: 01.10.2024).

12 Цивільний кодекс України від 16.01.2003 р. № 435-IV (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/435-15#Text> (date accessed: 01.10.2024).

assessment of a person's personality, human qualities, and behavior in a form that contradicts the communication established between people. Whether this assessment corresponds to the facts does not matter. It undermines the authority of the individual in society and affects the sense of self-respect. However, it should be noted that a negative assessment, even if it is incorrect in nature, does not form the objective composition of an insult. For an insult to exist, the humiliation of honor and dignity should be carried out in an indecent manner. Otherwise, any criticism that usually undermines the authority and affects the sense of self-respect of the person being negatively evaluated can be interpreted as an insult. By insulting, the addressee verbally humiliates the honor and dignity of the addressee by using obscene or rude words.

The Ukrainian Dictionary gives the following definitions for the lexemes in the text: 'Fool — 1. colloquial: Mentally handicapped, stupid person // curse. It is used to insult someone, to condemn someone's behavior'¹³, 'Idiot — 1. Person suffering from idiocy. 2. a slur. A fool, a stupid person'¹⁴.

Thus, a comparison of the above information with the meaning of the word "fool" in the dictionary allows us to conclude that the phrase "uncouth fool" humiliates the honor and dignity of a person, has an emotionally expressive coloring and is an insult. The expression "an idiot who understands nothing" has a negative connotation. Thus, in the contextual meaning of the studied text, the statement X to the address Y is a negative characteristic of a person, therefore it humili-

ates his honor and dignity, causes him moral trauma".

Thus, a key component of the algorithm of linguistic examination in the described case is to determine the semantics and nature of the used linguistic units of the text. They become important while studying texts of other content, for example, social and political one.

For example, a poetic text called "So this is why they don't like us so much":

*"For the Crimea, which left
without asking permission,
For Auntie Nuland's rotten cookies.
For a clean Donetsk
that will never come back,
For the "cotton wool",
which does not give up.
For the nuclear status
and the Victory Day,
(What a pity the grandfathers
didn't finish off the Bandera gangs!)
For the Army, Poplar,
Caliber and Armata,
For the bolt that is put
on the States and NATO.*

*For Syria, space and the Olympics,
For every success, achievement, reward.
For being Zhukov, Kutuzov, Vatutin,
For having Putin in Russia today¹⁵."*

The expert, having determined the lexical meanings of the key words, means that the text contains vocabulary both in direct (verbal) and figurative (metaphorical) meanings; the river is simple and complex. Further, it means an objective replacement of the text by contextual-in-

13 Дурень / Академічний тлумачний словник української мови. В 11 т. // за ред. І. К. Білодіда. Київ, 1970—1980. Т. 2 : Г—Ж ; ред. тому: П. П. Доценко, Л. А. Юрчук. 1971. С. 437. URL: <https://sum.in.ua/s/Durenj> (date accessed: 01.10.2024).

14 Ідіот / Там само. Т. 4 : І—М ; ред. тому: А. А. Бурячок, П. П. Доценко, П. Й. Горецький. 1973. С. 12. URL: <https://sum.in.ua/s/Idiot> (date accessed: 01.10.2024).

15 У Луцьку судили пенсіонерку, яка виправдовувала агресію РФ в «Однокласниках» / ВолиньPost : офіц. сайт. 21.08.2024 р. URL: <https://www.volynpost.com/news/243360-ulukku-sudyly-pensionerku-iaka-vypravdovuvala-agresiyu-rf-v-odnoklasnykah> (date accessed: 01.10.2024).

terpretive, conceptual-substance, functional-pragmatic, formal-grammatical and lexical-semantic analysis: "The addresser informs the addressees about those that Ukrainians do not love Russians, but themselves: a) for spending, on reconciling the addressee, Crimea ("For Crimea, who left without asking permission"); b) for unrealized ideas of the Euromaidan ("For rotten Aunt Nuland cookies"), semantics derived from the geopolitical meme associated with the distribution of products on the Euromaidan by an official representative of the US Department of State Victoria Nuland; c) for the return of Ukrainians to Donetsk, which, according to the addressee, will no longer be Ukrainian ("For a clean Donetsk, which will not return"), which has been confirmed as belonging to the Russian part of the territory of Ukraine (Donetsk region), which is an implicit sign of the prohibition of the time-consuming occupation of part of the territory of Ukraine; d) against the warriors of the armored forces of the Russian federation who continue to fight ("For the "cotton", which still does not give up"), which is confirmed by the embedded lexeme "cotton" similar to the lexeme "cotton wool jacket" from semantics calls for people who support the current political regime in Russia, its internal and current political course, and then (subject to the situational context) the war, and also the lexeme "does not give up" from semantics "does not apply opposition"; e) for Russia's election to the status of a nuclear power and (depending on the situational context) the threat of nuclear destruction to the whole world, for Russia's course to support and continue the ideas and policies of the Radian Union ("For the nuclear status and the Victory Day"). The phrase "(What a pity, the grandfathers didn't finish off Bandera!)" realizes the emotional-expressive idea of the addressee, expressed by the lexical and grammatical display "what a pity" so that representatives of the national

free movement in Stepan's Ukraine Bandera, followers of whom (familiar Ukrainians) will continue his idea of national independence, at the current stage of the Russian-Ukrainian war, without destroying the Radian regime; f) for the importance of armor currently in the arsenal of the Russian armored forces: drones, missile (ballistic) systems, tanks ("For the Army, Topol, Caliber and Armat"); g) for the political course of Russia without NATO and the USA: "For the bolt that is laid on the States and NATO"; h) for Russia's aggression against Syria, Russia's reach in the explored space, sports, etc. ("For Syria, space and the Olympics, / For every success, achievement, award"); j) for the Radian commander Zhukov, Soviet military leader, army general Vatutin, the Russian commander of the Franco-Russian War of 1812, Kutuzov; k) for Russian President Putin".

Here is another example from the author's practice. Taking into account the meaning of semantic lexemes, the expert determines objective content of the following statements submitted for research: "Ukrainians, don't watch. It will blow your mind. Mariupol six months after liberation from Ukrainian Nazism". In the statements "Ukrainians, don't watch. It will blow your mind", expressed in the form of a warning, the addressee informs that Ukrainians, called "Ukrainians" with a pronounced negative connotation, should not watch the video, as what they see will have a negative impact on. The negative impact at the lexical level is expressed by the phrase "It will blow your mind" with the semantics of "go crazy". Final statement of the publication realizes the addressee's message about the city of Mariupol after six months of its so-called liberation from Ukrainians nominated as "Ukrainians" with a negative assessment. The liberation lexeme used is an implicit sign of denial of the temporary occupation of a part of the territory

of Ukraine, namely the Donetsk region, by replacing the occupation of the territory of Ukraine with its so-called liberation (*"Mariupol six months after liberation from Ukrainian Nazism"*).

In the ongoing development of information technologies, infusion of virtual communication into everyday political life, which is the subject of semantic-textual examination, is becoming increasingly important. Current social media is often a tool for expanding fake information, especially encouraging various types of destructive actions through calls, propaganda, threats, sponsorship, and manipulation of thoughts. Moreover, linguistic investigations of media texts (updates, comments, speeches, posts, articles, etc.) are no longer relevant due to the fact that they have hidden meanings of their own constructions in order to reveal and trace the influence of people's knowledge. The warehouses of such texts can be both verbal units and non-verbal elements (signs, symbols, images, emoticons, memes, icons, etc.), obtained from verbal text with the method of intensifying the transmission process. The information is linked to a huge amount of information. For example (from the practice of the article author), we analyze a publication posted on the Internet: images of a grandmother with the ensign of the Russian Union as a symbol of the Russian invasion of Ukraine (Z) with the following text: *"Ukrainian soldiers wanted to laugh at 'stupid Russian scoops'. But the wave of posts with this heroic grandmother suggests that they were wrong! And as a result, they only created for us a new symbol of Courage, Courage and Honor!"*¹⁶. It is possible to determine the objective place behind the lexical meanings of the

existing key words. It further means that after lexical-semantic, formal-grammatical analysis of the findings recorded in the subsequent publication, it was established that the learned vocabulary is important in the direct (word) meaning, sentences: simple and complex ones.

The addressee informs that Ukrainian soldiers wanted to laugh at the Russians of the summer century, based on the metaphorical creation of the *"scoops"* with the people who lived in the Soviet Union: *"Ukrainian soldiers wanted to laugh at the 'stupid Russians scoops'"*. The image of the grandmother with the ensign of the Soviet Union and the coat of arms of the USSR symbolizes the Soviet time. In the current form of a generic design, the sender informs the recipients about the fact that Ukrainian soldiers have shown mercy, which has shown a significant number of posts on the Internet for support *"heroic grandmother"*, and then, the idea of Soviet Union: *"But the wave of posts with this heroic grandmother suggests that they were mistaken!"*. The metaphorical phrase *"heroic grandmother"* is used in conjunction with the communicative method of the heroization of Russians in the summer century and its projections on current military affairs. This remains confirmed by the images of the *"heroic grandmother"* on the aphid symbol of the Russian invasion of Ukraine (Z). Under the metaphorical phrases of the *"wave of posts"* there is a significant number of people who support the ideas of the great Russian union and the Russian invasion of Ukraine (the brutal aggression of the Russian Federation against Ukraine). In the final publication, the addressee informs about the creation for Russia of a new symbol of masculinity, honoring the

16 Вироки у справах щодо поширення забороненої інформації: як і за що карають українців / Зміна : офіц. сайт. 30.12.2022 р. URL: <https://zmينا.info/news/poshyrennya-zaboroneno-yi-informacziyi-novi-statti-ta-vyroky-za-nymy/> (date accessed: 01.10.2024).

person of the “heroic grandmother”, inheritance of the negative reaction of Ukrainian soldiers, on the one hand, and mass support on the Internet, such as: “As a result, they just created for us a new symbol of Courage, Courage and Honor!”.

Thus, contextual-interpretive, conceptual and semantic, functional-pragmatic, formal-grammatical and lexical-semantic analysis, as well as the inclusion of images in the text, allowed the expert to determine that the objective content of the statements under study contains justifications for the armed aggression of the Russian Federation against Ukraine, which began in 2014, and arguments for the defense by Russians of the ideas of the former Soviet Union with a projection onto current military events (Russian “heroic grandmother” was supported by many on social media).

For conducting semantic and linguistic examination of a media text, we recommend applying a semiotic approach to analysis, which involves interpreting the text as a meaningful sequence of any signs. As the scholar N. Zrazhevskaya rightly notes, “*semiotic analysis makes possible to understand the positions of those who create and those who perceive media materials; to look into the internal structure, logic and idea of the message*”¹⁷.

We offer the following algorithm for analyzing destructive media texts:

- semantic analysis of the words of the text in the direct sense;
- semantic analysis of text words in a figurative (subtextual) sense;
- interpretive analysis of the text in general;
- interpretive analysis of text perception options;

- analysis of key ideas that determine the general orientation of the text.

We believe that the study of media space texts should begin with a discursive level, which involves the analysis of specific words, visual signs perceived at the surface level. Further analysis with the help of decoding should be aimed at revealing deeper levels of values.

Let us say, follow-up SMS notifications, electronic lists for the presence of a sign of slur (advance, threat), the court expert linguist can be obtained before carrying out the investigation as semantic, communicative-pragmatic approach, as well as semiotic, which conveys the development of a system of symbolic creations (on the basis of emoticons of a menacing place). This need is dictated by the specifics of media materials, and even the judicial expert examines the most important creolized texts. The main connotations of such notices are localized in the vocabulary of negative, creative, lilac, rude, disrespectful place. The task of forensic linguist is to determine the objective position of keywords, phrases, phrases and the entire text, to select options for the understanding of verbal and non-verbal constructions, to identify modality, expressiveness of information, recognition of the level of expression of the modal assessment of the author's actions and the emotional assessment of the recipient's heritage in the form of a conclusion about what is on the table “to you (your relatives) it will be bad, if...”. Researcher I. Garbera is right when she notes: “*Establishing the fact of a threat should not be based on the subjective perception of a certain statement by its addressee, but primarily on the objective reality*”.

17 Зражевська Н. І. Використання семіотичного методу в аналізі медіакультури. *Держава та регіони. Серія: Соціальні комунікації*. 2013. № 3—4. С. 13. URL: http://nbuv.gov.ua/UJRN/drsk_2013_3-4_5 (date accessed: 01.10.2024).

of the text”¹⁸. According to Ye. Kovkina, it is important to take into account all the communicative components of the text under study: *“The syntactic expression of the illocutionary component, the recipient’s reaction, the volume of the phrases, the modality of words and phrases, explication of the addressee’s intention, speech strategies and tactics”*¹⁹.

Texts with signs of implicit threats should be checked for a specific tone (harsh; frightening) recognized by the invective vocabulary used, extra-linguistic factors that characterize the situation of aggression (conflict, hostility, etc.), indications of undesirable consequences for the addressee in case of refusal to accept the author’s “program”, lack of or excessive emphasis on politeness. For example, in order to determine the degree of manifestation of actions that led to suicide, a linguistic expert must take into account linguistic, situational and personally significant features that need to be identified in the context or speech situation, taking into account the form of manifestation of linguistic aggression, the addressee’s intentions and the addressee’s perception of it. Let us consider this issue in more detail.

Linguistic signs include:

- semantic sign based on the nature of the assessment (negative assessment of a person, his or her appearance, actions, behavior using derogatory, mocking, cynical vocabulary);
- expressive characteristic, i.e., nature of expressive and emotional evaluation (swearing, vulgar, dismissive, etc.);

- social and functional characteristic (vulgar and vernacular, slang, invective, and obscene vocabulary).

Linguistic signs are determined by dictionaries and special reference literature, depending on their lexical meaning, a set of stylistic signs and analysis.

Situational signs (determined from the context by analyzing speech situation, stylistic analysis):

- situation nature of specific speech act(s): place and circumstances of the action; social role of the addressee and addressee; public/non-public speech; speech environment (emotionally charged; offensive; threatening; frightening; etc.);
- peculiarities of speech and the context of the speech situation (type and nature of statements and remarks, their place in the context; intonation, availability of threatening, humiliating non-verbal means);
- speaker’s intentions (humiliating; insulting; blackmailing; inducing certain actions; forcing certain actions against the addressee’s will; causing physical suffering; etc.)

Personally significant signs (determined by subject and thematic, logical and grammatical and content analysis):

- nature of evaluative judgment (who/what is specifically evaluated: the addressee as a person or his/her behavior, actions, deeds that indicate that this person does not behave in the way the addressee wants);
- nature of emotionally negative assessment (purpose is to demonstrate the worthlessness of the addressee

18 Гарбера І. В. Основи лінгвістичної експертизи тексту : навч.-метод. посіб. Вінниця, 2020. С. 84—85. URI: <https://r.donnu.edu.ua/handle/123456789/2420> (date accessed: 01.10.2024).

19 Ковкіна Є., Алоян М., Авоян Л. Зазнач. твір. С. 105. DOI: [10.32353/khrife.3.2022.06](https://doi.org/10.32353/khrife.3.2022.06) (date accessed: 01.10.2024).

or to express a negative attitude to his or her behavior, deeds, actions);

- function of normalized (inoffensive) word use in a particular speech situation(s): the desire to offend, humiliate, disgrace the addressee (in this case, the speaker evaluates the addressee as a person: from the point of view of their personal moral traits, character traits, disposition, etc.); express contempt, disdain, to force the addressee to take certain actions and, as a result, to express a negative personal (subjective) attitude (in this case, the addressee's actions, behavior and actions are evaluated).

Means of psychological influence on the addressee:

- suggestion (instilling certain impressions, ideas, perceptions, beliefs in the addressee's inferiority, mental retardation, physical underdevelopment, etc.);
- ignoring (isolation) by society;
- bullying (harassment, intimidation, bullying; derived from English: *bully*, *bully*, *rude person*, *to bully* – *bully*,) is a long process of conscious cruelty, aggressive behavior to cause harm, cause fear, anxiety or create a negative environment for a person. The second definition: *bullying* is a type of violence; intentional long-term (repeated) physical or psychological violence on the part of an individual or group that has certain advantages (physical, psychological, administrative, ones etc.) in relation to the individual, occurs mainly in organized groups with a certain personal purpose (for

example, desire to earn the authority of certain persons)²⁰;

- cyberbullying is humiliation of a person through offensive remarks in text messages, emails, comments in chat rooms; use of intimidating images, spreading gossip, etc.

Means of verbal influence on the addressee:

- use of statements whose objective content contains humiliation of the addressee's human dignity (name-calling, mockery, ridicule, etc.);
- use of statements (speech constructions), in the objective content of which there is coercion to certain actions contrary to the will and desire of the addressee, with signs of threat ("You will do it, otherwise you will regret!");
- availability of the speaker's intention with the meaning of coercion to perform certain actions against the addressee's will;
- availability of a speaker's intention with the meaning of inducing suicide (if the addressee has real intentions to drive the addressee to suicide).

Lexical and grammatical means of expressing tactics of driving to suicide can include:

- use of lexemes with the meaning of insult, mockery, name-calling, extortion (of money, food, things, etc.), coercion, prohibition, punishment, etc.;
- use of rhetorical questions, interrogative sentences ("Did you know about... Why didn't you do it?");
- use of statements and sentences with verbs in the imperative mood

20 Ожйова О. М. Булінг. Шкільний булінг: поняття та основні форми. *Вчені записки Харківського гуманітарного університету «Народна українська академія»*. 2009. Т. XV. С. 159–160.

of the past and future tense (“You didn’t do it, but you will do it!”).

Extralinguistic means of influencing the addressee:

- offensive gestures;
- infliction of bodily injury;
- causing damage to things;
- conflict nature of the situation that inspires (generates) fear and anxiety;
- threatening tone of voice; rough, raised tone of voice and frightening, terrifying; screaming.

In texts with indirect expression of propaganda, metaphors, euphemisms, negative vocabulary aimed at condemning someone or something are usually used, as well as positive words and phrases with the aim of justifying one’s actions and intentions. For decoding such texts and identify their manipulative markers, in the practice of experts, we recommend applying knowledge of cognitive linguistics. According to the definition of linguists, cognitive linguistics expands language not as a “*system in itself and for itself*”²¹, but in connection with a person, without whom the emergence and functioning of the system would be impossible. When studying texts, knowledge of cognitive linguistics will help the expert identify linguistic signs of propaganda, clarifying the objective content of the author’s ideas, views, and perceptions; motivations for action, as well as to determine the mechanisms of transmitting information that comes to people with the aim of influencing them, building conclusions and making constructive decisions. Cognitive mechanisms and structures of intentionality (intentions) of the author of the text under study are transmitted through a conscious selection of facts and arguments of distorted

or false content. Therefore, we consider it necessary to identify them and objectively evaluate them, as well as various forms of propaganda through appeals, instructions, advice, warnings, demands, threats, etc.

In the cognitive linguistic model of text with propaganda signs, the main place is occupied by the study of metaphor, which is used with the aim of hiding the truth about the author’s intentions and obtaining a positive reaction from the general public to the ideas and behavioral models being disseminated. For example, common methods of manipulating people’s consciousness in modern texts include replacing the words: *murder* with *liquidation*, *dead* with *losses*, *war* with *special operation*, etc. The task of a linguist expert is to recognize substituted, manipulated facts by examining the synchronic semantics of the above mentioned words that are often used due to the intentions of collaborators to hide the truth about the terrorist actions of the Russian Federation against Ukraine.

Through contextual-interpretive, conceptual-semantic, functional-pragmatic, formal-grammatical and lexical-semantic analysis of the studied text (from the practice of the author-expert: “*Denis Pushilin visited the branch of the Kholodnaya Balka Mine of the State Unitary Enterprise of the DPR Makeevugol Head of the DPR Denis Pushilin congratulated the miners on the upcoming holiday and noted the importance of Miner’s Day for Donbass.*”

The Head of the Republic also stated that it is necessary to develop the coal industry, despite the restraining factors. As it turned out, about 180 mine workers are participating in the liberation operation. In connection with this, the volume of production has been reduced, and work has been transferred to three shifts. “The shelling will not break us,

21 Кочерган М. П. Загальне мовознавство : підручник. 2-ге вид., випр. і допов. Київ, 2006. С. 146. URL: <http://irbis-nbuv.gov.ua/ulib/item/UKR0000573> (date accessed: 01.10.2024).

no matter how hard the enemy tries, because this is our character that of a miner”,— Denis Pushilin emphasized”) the expert defines its objective content as follows: the addressee informs the addressees about the visit of the leader of the illegal armed formations of the so-called DPR, Denis Pushilin, nominated by the addressee as the “Head of DPR”, to the branch of the Kholodnaya Balka mine of the DPR State Unitary Enterprise *Makeevugol*, when he congratulated the miners on the upcoming Miner’s Day: “Denis Pushilin visited the branch of the Mine Kholodnaya Balka of the State Unitary Enterprise of the DPR Makeevugo, the head of the DPR Denis Pushilin congratulated the miners on the upcoming holiday and noted the importance of Miner’s Day for Donbass”. “Head of DPR Denis Pushilin” is implicated in the recognition of the self-proclaimed sovereign creation of the DPR and its management, and subsequently, the prohibition of the time-consuming occupation of part of the territory of Ukraine (Donetsk region). At the moment, the addressee informs the addressees about the fact that a group of illegal military formations of the so-called DPR Denis Pushilin, nominated by the addressee as “Head of Republic”, stating the need for the development of armed formations, does not respectful streaming officials: “Head of the Republic stated that it is necessary to develop the coal industry, despite the restraining factors. “As it turned out, about 180 mine workers are participating in the liberation operation. In connection with this, the volume of production has been reduced, and work has been transferred to three shifts”. The point is that many miners (almost 180 workers) are participating in the “liberation operation”, so named by Pushilin (as well as all of Russia, led by Putin!), which has reduced coal production and shifted work to a three-shift regime. The euphemism “liberation operation”, used in

the discursive-semantic plane of the publication under study to denote the so-called special military operation on the territory of Ukraine, testifies to the presence in it (the publication) of statements with a pronounced illocution justifying the armed aggression of the Russian Federation against Ukraine, which began in 2014, the so-called liberation (in the context: the Russian Federation is carrying out armed aggression (“special operation”) with the aim of liberating (“denazification”, “demilitarization”) Ukraine).

In the last message “*The shelling will not break us, no matter how hard the enemy tries, because our character is miner’s, Denis Pushilin emphasized*” the addressee informs the addressees about Pushilin’s statements that contain:

- 1) belief in victory over the enemy, that, according to the situational context, is the Armed Forces of Ukraine and Ukraine as a whole,
- 2) denial of the armed aggression of Russian federation against Ukraine, launched in 2014, in particular by presenting it as an internal civil conflict, shifting the blame for the armed aggression to Ukraine (at the grammatical level, expressed by the used phrases “*The shelling will not break us*”, “*no matter how hard the enemy tries*”).

While studying texts in which the strategy of obtaining any benefit is implemented, we consider it advisable to apply methods of linguo-pragmatic analysis, which will allow us to determine the intentions of the addressee, which are also often hidden. The basis of linguistic pragmatics as a section of linguistic science is the principles of anthropocentrism. Therefore, the analysis, according to the definition of S. Shabat-Savka, should be aimed at studying the features of “*use and functioning of*

linguistic signs in the process of communication in connection with the addressee-addressee continuum, relations between communicants, in the context of a holistic speech situation, the ratio of verbal and non-verbal means of communication”²². In the studied texts, the addressee’s instructions to perform certain actions in his favor can be expressed by means of a plea, request, invitation, advice, suggestion, permission, instruction, order, warning, command, demand, prohibition, threat, etc. Therefore, the analysis of texts in which the extortion strategy is implemented should be aimed at identifying and studying the following polysemic locutions: from an invitation to perform certain actions in favor of the author of the speech to an aggressive insistence that the addressee listen and carry them out. At the lexical level, instructions to do something, to act in accordance with the interests of the author of the text are expressed by means of lexemes with the semantics of *request, advise, suggest, oblige, order, forbid*, etc. One of the main factors that indicates availability of statements in the text in the form of proposals and promises is verb-predicates in the imperative mood (grammatical level).

We propose the following algorithm of expert research from our own practice. The objective content of the statements “A” in the textual reproduction of conversations is subject to research: *“They will support your accusation, they will not, negligently, they will transfer, they will come, I understand, it is necessary. You need to talk to Andrii Vasylovych, what... our actions”; “Well, you need to give a bribe so that... so you need to... Tell me, and I will go to the negotiations, that’s all”; “They decide, they are waiting, I am, well, I am, that’s all, we have passed on, you have already been suspected*

of... for the bribe, that’s all, now... that’s what we are waiting for. Well, I need to know your position so that I can go there for the negotiations. Well, we are not to giving a fuck about, that’s all, we are working. We give it there, give it, understand? You need to consult with Andrii Vasylovych”; “Let’s say this, if I were to ask for you, I would still do some equivalent service. Andriy, if I were to ask for you, I would bring the wood, he has his own... I’m sure of it. With you, it’s just a one-time action, no one is going to be friends with you, you understand? He’s friends with me and I can have him right now... that’s how you are with your friend, you understand? Let’s go fishing, everything... it’s happening, I understand and that’s it... Or, come to me for a barbecue, you understand? I don’t want to talk about it, everything will be okay... but I’m sure of it. Vasia, it’s just... there’s no one to talk to, except us. Vasia, everyone is breaking the law, everyone, ... that’s why there are prosecutors and courts and police to stop them. It’s just that some people get it the first time, people get over it all, and others don’t get it, not even again... do you understand? Don’t blame yourself...”.

Through subject-thematic, logical-semantic, lexical-semantic, contextual-interpretative, contextual and pragmatic analysis, intent analysis, the expert determines the objective content of the statements of “A”: the statements of the addressee “A” contain a message for the addressee (“B”) about the actions of the judicial authorities if “B” gives money. The situational context refers to the amount of 5 thousand US dollars. Under such conditions, the judicial authorities will support the accusation of “B” *negligently*, postpone the meeting, etc.: *“They will support your accusation, it will not be, negligently, they will postpone, they will come”*. In the following statements, reveal-

22 Шабат-Савка С. Т. Роль антропоцентричного фактора у моделюванні діалогічних ситуацій. *Лінгвістичні студії*. 2005. Вип. 13. С. 362.

ling the main issue of the communication situation (giving money), the addressee "A" addresses the interlocutor ("B") with instructions regarding his further actions: talk to Andrii Vasylovych (according to the context — with "C"), inform about his final decision, give money to the addressee, who will go with them to the negotiations (according to the situational context to "D") with the aim of transferring this money to him ("D"): *"You need to talk to Andriy Vasylyevich, what... our actions... Well, you need to give a bribe so... Well, you need to... Tell me, and I will go to the negotiations, that's all."* In the addressee's statements *"it's necessary, well... Well, it's necessary to give a bribe so that"* the incentive to give money to the addressee "A" for their further transfer to "D" is implemented, expressed at the grammatical level by the used exclamation *"well"* with the semantics of encouragement and the predicate *"need"* as a formative lexeme of the imperative mood of the verb *"give"*, which reinforces the categorical nature of the unconditional fulfillment of what should be done.

Next, the addressee "A" in the form of a narrative structure informs the addressee ("B") that the police are deciding the issue of "B", who has already been charged with attempting to give a bribe (according to the situational context — to police officers), and are waiting for a final decision from "B", so before he (the addressee) goes to negotiations (according to the situational context, this is about resolving the issue of "B" by means of a bribe for "D"), he (the addressee) needs to know whether "B" agrees to give a bribe: *"They are deciding, they are waiting, I am, well, I am, that's it, we have passed on, you have already been suspected of taking a bribe, that's all, now... that's something we are waiting for. Well, I need to know your position before I go there for negotiations"*. In the addressee's subsequent state-

ments, the instruction addressed to the addressee ("B") is explicated, expressed in a categorical form that does not imply rejection of the addressee's position in resolving the issue "B" by means of a bribe: *"Well, we're not to giving a fuck about, everything, working. We're giving there, giving, do you understand?"*. At the grammatical level, the instruction is expressed by verbs of the imperfect active mood with the semantics of obligation (*"giving a fuck about"*, *"working"*, *"giving"*) and an interrogative construction. In the last sentence, the addressee expresses his own conviction addressed to "B", expressed at the grammatical level by the word *"need"* with the semantics of obligation, that "B" needs to consult with Andrii Vasylovych (in the context, this refers to "C"): *"You need to consult with Andrii Vasylovych"*. From the context of the previous conversations (*"I say five, if Andrey is sure of two — great, I will take two, I am sure — five"*) it becomes clear that the statements under study refer to a persistent conviction, addressed to "B", of the need to give a bribe in the amount of 5 thousand dollars (and not 2 thousand dollars!), motivated by the fact that the service should be paid for with an equivalent (equivalent) service, and also by the fact that the transfer of the bribe for "B" will be a one-time, nominated *"action"* by the addressee: *"Let's say, if I had asked for you, I would have provided some service of equivalent value. If Andrei asked for you, he would bring the forest, he would have it..., I'm sure. With you, this is a one-time event"*. In the following statements, the addressee informs the addressee about his friendly relations with "D" (according to the situational context): *"He is friends with me and I can eat it right now... so how are you with your friend, do you understand? Let's go fishing, everything... seems to be happening, I understand and there's something there... Or, come and have a barbecue with me, do*

you understand?”, which is an implicit sign of the addressee’s attempt to convince the addressee to resolve the issue in his (the addressee’s) favor. The statement *“I don’t want to talk about this, everything will be fine... but, I’m sure”* realizes the addressee’s belief in a positive resolution of his issue for the addressee (“B”). The further statement (*“Vasia, now... there’s no bazaar with anyone except us”*) has an expressed illocution of the addressee’s request, addressed to the addressee, not to tell anyone about his case and not to negotiate with anyone about its solution (according to the situational context — the addressee will decide everything himself through “D” from the submission of “S”). The final statements that *“everything violates the law”* and one should not reproach oneself for the actions committed, implement the addressee’s communicative intention of emotionally-expressive influence on the addressee with the aim of persuading the latter to make a decision to give a bribe of 5 thousand dollars: *“Vasia, everything violates the law, everything... for that and there is a prosecutor’s office and a court there and a police force, to stop this. It’s just that some people come to you the first time, people experience everything, and others don’t come, not even again... do you understand? Don’t blame yourself”*.

In the conclusion, the expert notes that the objective content of “A”’s statements is that it is necessary for “A” to give money in the amount of 5,000 US dollars from “B” for its further transfer to “D” for the help of “B”. The statements take the form of instructions, encouragement, persuasion, and persuasion.

Conclusions

Currently, semantic and textual examination is one of the priority types of expertise. It is designed to obtain factual data

on specific issues of pre-trial investigation and trial. The number of examinations assigned to identify calls for illegal actions in texts; signs of humiliation of human honor, dignity, business reputation; threat, propaganda of certain ideas, etc. is constantly increasing. When conducting semantic-textual expertise, the expert must use special knowledge in linguistics. The use of elements of descriptive, semiotic, linguo-pragmatic, semantic, interpretative, cognitive analysis in the process of studying texts is one of the possible approaches. For achieving high quality examinations, it is necessary to develop unified methodological principles for specific expertise application.

The further direction of studying the stated problem involves both deepening and detailing the stated provisions, and involving other methods and techniques of linguistic examination of the text (comparative, stylistic one, etc.) in the analysis of texts. They can be used when conducting both the above mentioned and other types of linguistic examinations: in cases of misleading; on the legal protection of a trademark (logo); on the identification of proper names; examination of texts that violate the legislation of Ukraine on language, etc.

Комбінації застосування філологічних знань у процесі проведення лінгвістичної (семантико-текстуальної) експертизи Неля Медвідь

Мета статті — окреслити варіанти застосування філологічних знань під час проведення лінгвістичної (семантико-текстуальної) експертизи. Для досягнення поставленої мети застосовано загальнонаукові та спеціальні методи дослідження. Обґрунтовано потребу но-

вих наукових розробок у сфері семантико-текстуальної експертизи, обумовлену політичними й соціальними вимогами часу. Зауважено складність роботи експерта-лінгвіста через нестачу методик проведення судової семантико-текстуальної експертизи. Розглянуто можливі варіанти застосування філологічних знань під час аналізування текстів з ознаками закликів, залякування, пропаганди, отримання вигоди. Окреслено рекомендації щодо дослідження текстів із застосуванням елементів семіотичного, лінгвопрагматичного, семантичного, стилістичного, предметно-тематичного, формально-граматичного, описового, інтерпретаційного аналізу, інтенс-аналізу, знань з когнітивної лінгвістики. Наведено приклад із власної практики дослідження конфліктного тексту у справі про захист честі, гідності, ділової репутації фізичної особи, текстів соціально-політичного змісту. Викладено алгоритми експертних досліджень закликів і текстів медійного характеру. Висвітлено теоретичні аспекти й подано методичні рекомендації щодо виявлення в тексті основних ознак доведення до самогубства на психологічному, вербальному та позавербальному рівнях. Доведено, що семантико-текстуальні дослідження потребують ґрунтовних фахових знань з лінгвістики.

Ключові слова: семантико-текстуальна експертиза; когерентність; перлокуція; локутивні утворення; перформативи; когнітивна лінгвістика; семіотичний підхід; лінгвопрагматичний аналіз; екстралінгвальні чинники; інвективна лексика; креолізований текст.

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Declaration of Competing Interest

Author declares no conflict of interest.

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Importance of Bokarius family for development of forensic medicine in Ukraine (Review Article)

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On the occasion of the 220th anniversary of founding of the V. N. Karazin Kharkiv National University and, accordingly, the Kharkiv National Medical University and with the aim of focusing attention on the role of the Bokarius family in the development of forensic medicine and criminalistics in Ukraine, the scientific path of three representatives of this dynasty is highlighted: father Mykola Mykolayovych and sons Mykola Mykolayovych and Vitalii Mykolaiovych. For achieving the set goal, general scientific methods were applied: description, comparison, analysis, generalization. The Bokarius family devoted more than 100 years of professional life to the service of forensic medicine and criminalistics.

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Mykola Serhiyovych Bokarius, known as an erudite scientist and talented teacher, the founder of the forensic direction in Ukrainian forensic medicine, did a lot to form the domestic system of forensic examination and specialized expert institutions, in particular the Cabinet of Scientific Forensic Examination in Kharkiv. The scientific, expert and teaching activities of Honored Professor M. S. Bokarius were continued by his eldest son, Mykola Mykolaiovych who for 25 years headed the Kharkiv Institute of Forensic Examinations and made a significant contribution to the training of personnel at other Kharkiv institutes: medical and legal (he founded Department of Forensic Science of the latter). The fate of the youngest son of Mykola Serhiyovych, namely: Vitalii was determined by the war: after graduating from the Kharkiv Medical Institute, he went to the front. No information about him has survived in printed sources; the authors used the memoirs of his son, military doctor Serhii Vitaliiiovych.

Keywords: M. S. Bokarius Professor emeritus; Mykola Mykolaiovych Bokarius; Vitalii Mykolaiovych Bokarius; forensic science and criminalistics; history; dynasty; medical education.

Research Problem Formulation

In the scientific literature to date, there is no comprehensive study of the contribution of the Bokarius family as a dynasty of forensic doctors to development of forensic medicine and expert science in Ukraine. And the life path of V. M. Bokarius was generally ignored by scientists, historians and teachers for a long time.

Article Purpose

For investigating and generalizing significance of the Bokarius dynasty for development of forensic medicine and forensic science in Ukraine. To cover the scientific path of three representatives of this dynasty: father of Mykola Serhiiovych and the sons of Mykola Mykolayovych and Vitalii Mykolaiovych.

Research Methods

In order to achieve this goal, general scientific methods were used: description, comparison, analysis, generalization.

Analysis of Essential Researches and Publications

In their research papers, Ukrainian scientists (mainly employees of National Scientific Center «Hon. Prof. M. S. Bokarius Forensic Science Institute» of the Ministry of Justice of Ukraine, Yaroslav Mudryi National Law University of the Ministry of Education and Science of Ukraine, the Kharkiv National Medical University of the Ministry of Health of Ukraine) paid tribute to Professor Emeritus Mykola Serhiyovych Bokarius, focusing on individual stages of

his activities ¹, scientific achievements ², or life ³. To some extent, the scientific and life path of the eldest son of M. S. Bokarius (Mykola Mykolayovych) ⁴ has been studied, but even a narrow circle of interested people ⁵ know about the younger one (Vitalii Mykolaiovych Bokarius) only from the memoirs of his son, Sergei Bocarius ⁶. Unfortunately, as noted above, a comprehensive study of the contribution of the Bokarius family as a dynasty of forensic doctors to the development of forensic

- 1 Дольний А. Приклад, вартий наслідування. *За радянського лікаря*. 1940. № 28. С. 2 ; Комаха В. О. Бокаріус Микола Сергійович — один із фундаторів і перший керівник Харківського науково-дослідного інституту судових експертиз (до 90-річчя заснування Харківського НДІСЕ). *Юридические записки*. 2013. № 2. С. 124 ; Циганенко А. Я. Учень та вчитель. Світлій пам'яті професора Миколи Миколайовича Бокаріуса / Історія в історіях: Харківська вища медична школа у спогадах, документах і фотографіях ; за заг. ред.: В. М. Лісового, Ж. М. Перцевої. Харків, 2015. С. 236 ; Ключев О. М., Угровецький О. П., Сімакова-Єфремян Е. Б., Спіцина Г. О., Філіпенко Н. Є. До 150-річчя з дня народження Заслуженого професора Миколи Сергійовича Бокаріуса : монографія. Харків, 2019. 176 с. URL: <https://nncise.org.ua/diyalnist/naukova> (date accessed: 15.10.2024) ; *Актуальні питання судової експертизи і криміналістики* : зб. мат-лів міжнар. наук.-практ. конф., присвяч. 150-річ. з дня народж. Засл. проф. М. С. Бокаріуса (Харків, 18—19.04.2019). Харків, 2019. С. 4—28. URL: <https://drive.google.com/file/d/1LIjBduUEvfGdV2KsUTwMKLi6Qv-VKRzo3/view> (date accessed: 15.10.2024) ; Бокаріус Л. В., Бокаріус С. В., Філіпенко Н. Є. Медицина — професія їхньої долі. *Архів кримінології та судових наук*. 2020. № 2. С. 33—45. URL: http://nbuv.gov.ua/UJRN/acrf2020_2_11 (date accessed: 15.10.2024) ; Перцева Ж. Н. Н. С. Бокариус — выдающийся педагог высшей медицинской школы / Вірні клятві Гіпократу: розповіді про тих, хто є візирцем для прийдешніх поколінь лікарів ; за ред.: В. М. Лісового, В. А. Капустника, Ж. М. Перцевої ; укладачі: Ж. М. Перцева, І. В. Киричок, О. В. Семененко. Харків, 2020.
- 2 Наместникова Л. Н. Светлой памяти учителя / Історія в історіях С. 230 ; Фесюнін В. М., Тяпкін А. С. «Архів кримінології та судових наук» і наукова спадщина М. С. Бокаріуса. *Архів кримінології та судових наук*. 2020. № 2. С. 77—86. URL: http://nbuv.gov.ua/UJRN/acrf2020_2_16 (date accessed: 15.10.2024) ; Ключев О. М., Бокаріус Л. В., Тяпкін А. С. Дослідження наукової спадщини М. С. Бокаріуса — обов'язок працівників наукової установи, що носить його ім'я. *Теорія та практика судової експертизи і криміналістики*. 2021. Вип. 23. С. 83—98. DOI: 10.32353/khrife.1.2021.06 (date accessed: 15.10.2024).
- 3 Бокариус Н. Н. Жизнь и деятельность заслуженного профессора Николая Сергеевича Бокариуса. Неопубл. 1966. Фонд музею історії ХНМУ. ФОР 7/2-26. ОФ 5736.
- 4 Якимович И. К 30-летнему юбилею профессора Н. С. Бокариуса. 1895—1925 гг. *Административный вестник*. 1925. № 5—6. С. 17—18 ; Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Отец и сын Бокариусы: жизнь, отданная судебной медицине. *Universitates. Наука и просвещение*. 2009. № 2. С. 12—23. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024) ; Лесовой В. Н., Перцева Ж. Н., Ольховский В. А., Кравченко Ю. Н. Династия судебных медиков Бокариусов. *Теорія та практика судової експертизи і криміналістики*. 2014. Вип. 14. С. 441—448. URL: <https://khrife-journal.org/index.php/journal/issue/view/13/2014-1> (date accessed: 15.10.2024).
- 5 Островський С. Віталій Бокаріус. *За радянського лікаря*. 1939. № 43. С. 2.
- 6 Спогади С. В. Бокаріуса. 2016. Фонд музею історії ХНМУ. ФОР 7/2-25. НДФ 453 ; Бокаріус С. В., Філіпенко Н. Є. Віталій Миколайович Бокаріус — славетний продовжувач великої династії. *Актуальні питання судової експертизи і криміналістики* С. 18. URL: <https://drive.google.com/file/d/1LIjBduUEvfGdV2KsUTwMKLi6QvV2KRzo3/view> (date accessed: 15.10.2024).

medicine and forensic science in Ukraine has not been carried out to date, although enterprising scientists have made some attempts in this direction, turning to the descendants of the famous dynasty for help⁷.

Main Content Presentation

The foundation of the Imperial Kharkiv University (now *V. N. Karazin Kharkiv National University*) in 1804 was of crucial importance, as it contributed to the educational and scientific development of not only the city, but also the entire region. The famous Ukrainian historian D. Bahalii wrote that *“it was a real “holiday of enlightenment” for the city, for the whole of Ukraine”*⁸. The University gave the world a galaxy of outstanding scientists — not only theorists, but also practitioners, in particular, doctors who throughout their lives worked tirelessly for the benefit of the health of the people, giving all their strength and knowledge to this noble cause.

Some dynasties from generation to generation passed on professional skills, responsibility for family business, the best family traditions. The surnames of doctors Danilevsky, Khazhinsky and Bobin are well known to Kharkiv residents, but the most famous among them (at least in the first half of the 20th century) is the surname of forensic doctors Boka-

rius. This family has devoted more than 100 years of professional life to the service of their cause, making an invaluable contribution to the creation and development of a domestic forensic medical school.

The founder of this dynasty was a unique person, tireless worker, a talented teacher, an erudite scientist Mykola Serhiiovych Bokarius. He was born in 1869 in Odessa and received his secondary education at the Richelieu Gymnasium, where his father worked. In addition to his son, the family had five daughters. Life was in need, and Mykola, whose pedagogical abilities woke up quite early, began to work in the fifth grade of the gymnasium: with the permission of the director, he headed a physical office and prepared devices for physics classes, for which he received a salary of 10 karbovanets per month. He was engaged in tutoring and thus helped the family⁹.

The guy dreamed of studying at the university, especially after meeting with the doctor of the Odessa City Hospital D. H. Tiunieiev. Mykola's childhood and youth passed in close communication with him, under the constant influence of his instructions and advice, which the guy, to the best of his ability and understanding, later successfully used on his life's journey.

Subsequently, on the first pages of the manual *“Forensic Medicine in the Presentation for Lawyers”*, he will devote the following words to *the teacher*: *“Considering*

7 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. URL: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024) ; Лесовой В. Н., Перцева Ж. Н., Ольховский В. А., Кравченко Ю. Н. Указ. соч. URL: <https://khrife-journal.org/index.php/journal/issue/view/13/2014-1> (date accessed: 15.10.2024) ; Бокариус Л. В., Бокариус С. В., Філіпенко Н. Є. Зазнач. твір. URL: http://nbuv.gov.ua/UJRN/acrf_2020_2_11 (date accessed: 15.10.2024).

8 Багалеї Д. І. Опыт истории Харьковского университета (по неизданным материалам). В 2 т. Харьков. Т. 1. 1893—1898. С. 190. URL: <https://ekhnur.karazin.ua/items/bf7324af-9b96-4f31-a4c2-b0f138f46413/full> (date accessed: 15.10.2024).

9 Перцева Ж. Н. Указ. соч. С. 246.

*myself morally obliged to the influence of my dear Dmytro Herasymovych, who is unforgettable for me, I dedicate this my humble work with deep gratitude and reverence for His Bright Memory”*¹⁰. A special impression on him was made by the attitude of Tiunieiev to patients, who “*not only treated the patient, but also loved him with great love and affection, with a kind, cheerful word he was able to revive hope in the most serious patients*”¹¹.

In 1890, M. S. Bokarius was enrolled in the Medical Faculty of the Imperial Kharkiv University, and he forever linked his fate with this city. Already in his student years, his effective nature was revealed: his relentless pursuit of knowledge and enlightenment, organizational skills. Under the guidance of Professor V. Y. Danilevsky, he wrote articles for the People's Encyclopedia, which was being prepared for publication by members of the Kharkiv Medical Society, and worked on organizing rural reading rooms and libraries. Even after graduating from the university, he continued to organize free readings for the public in different parts of the city for some time. It is worth noting that the 2nd year student was left with a mother and two sisters to support after his father's death, so Mykola worked part-time as a tutor and

a painter, preparing tables and drawings for some university departments¹².

After successfully graduating from the university (1895), M. S. Bokarius worked as a resident of the faculty surgical clinic under the guidance of the famous professor V. F. Grube (until 1897)¹³. He was engaged in pathoanatomical and pathohistological studies and demonstrated these materials at lectures. In 1897, he was elected assistant prosecutor at the Department of Forensic Medicine under the guidance of Professor F. O. Patenko. M. S. Bokarius devoted the next 34 years of his life to this work¹⁴.

In 1901, he became a prosecutor; he defended his doctoral dissertation “*Florence's crystals, their chemical nature and forensic value*”¹⁵ (1902). In the same year, M. S. Bokarius was appointed to the position of private associate professor¹⁶. The direction of his activity eloquently testifies to the diversity of his interests and tireless work capacity. It should be noted that at that time such a specialization as forensic medicine did not exist: the study of dead bodies was the responsibility of city hospitals and hospital inspectors, which is why the university department of forensic medicine did not have material for forensic autopsies. In order to avoid this, Mykola Serhiyovych took over

10 Бокариус Н. С. Судебная медицина в изложении для юристов. Харьков, 1915. С. 2. URL: <https://dspace.nlu.edu.ua/jspui/handle/123456789/5172> (date accessed: 15.10.2024).

11 Там же.

12 Перцева Ж. Н. Указ. соч. С. 247.

13 Бокариус Н. С. Автобиография. 1931. Фонд музею історії ХНМУ. ФОР 7/2-25. ОФ 2634. С. 1.

14 Ключев О. М., Угровецкий О. П., Сімакова-Єфремян Е. Б., Спіцина Г. О., Філіпенко Н. Є. Знач. твір. URL: <https://nncise.org.ua/diyalist/naukova> (date accessed: 15.10.2024).

15 Бокариус Н. С. Кристаллы Florence'a, их химическая природа и судебно-медицинское значение : дис. ... д-ра мед. Харьков, 1902. 163 с. : ил. URI: <https://repo.knmu.edu.ua/handle/123456789/12908> (date accessed: 15.10.2024).

16 Медицинский факультет Харьковского университета за первые сто лет его существования (1805—1905) ; под ред. проф. И. П. Скворцова и проф. Д. И. Багалея. Харьков, 1905—1906. С. 258. URI: <https://escrptorium.karazin.ua/handle/1237075002/2138> (date accessed: 15.10.2024).

the management of the Kharkiv cadaver room on a voluntary basis (1902) and performed these duties for almost 20 years, thus providing students with material for practical work¹⁷. In 1903, M. S. Bokarius began teaching a private course: *Department of Forensic Macro- and Microscopic researches*¹⁸ and a year later (1904) published a research paper on the study of the strangulation furrow¹⁹. The methodology he proposed for determining the lifetime/postmortem nature of this furrow became an integral part of forensic medicine textbooks. At the same time, Mykola Serhiiovych worked thoroughly on the restructuring of the educational process — he added new disciplines to the curriculum: a course on first aid before the arrival of a doctor (2nd year), a practical course on forensic autopsies (4th year), a course on microscopic and microchemical studies and material evidence (5th year).

In 1907, M. S. Bokarius proposed a new reagent for the production of crystals during the study of seminal fluid. These crystals entered the literature as *Bokarius crystals*. In 1910, Mykola Serhiiovych was approved as the head of the Department of Forensic Medicine, in the same year he received the degree of Doctor of Medicine and the title of Professor²⁰, and was the first in Russia to conduct a fingerprint ex-



Fig. 1. Professor M. S. Bokarius

amination. He invented an original fingerprinting magnifier design that allowed the details of papillary patterns to be localized for comparison²¹.

M. S. Bokarius collected content for future textbook, since students studied according to foreign manuals, which did not always meet the needs of the time²².

In 1910, M. S. Bokarius published his first book, a guide for students, “Forensic Microscopic and Microchemical Studies of Physical Evidence”²³, and a year later (1911), at his own expense, he published the first domestic textbook on forensic

17 Перцева Ж. Н. Указ. соч. С. 248.

18 Медицинский факультет С. 125. URI: <https://escriptorium.karazin.ua/handle/1237075002/2138> (date accessed: 15.10.2024).

19 Бокариус Н. С. О значении странгуляционной борозды при повешении. Харьков, 1904. 16 с.

20 Кононенко В. И. Николай Сергеевич Бокариус. *Врачебное дело*. 1956. № 12. С. 2.

21 Бокариус Н. С. Лупа для работ над дактилоотпечатками. *Архив криминологии и судебной медицины*. 1927. Т. 1. Кн. 2—3. С. 867.

22 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 13. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

23 Бокариус Н. С. Судебно-медицинские микроскопические и микрохимические исследования вещественных доказательств: опыт руководства для врачей, студентов и фармацевтов. Харьков, 1910. 212 с. URL: <https://dspace.nlu.edu.ua/jspui/handle/123456789/3177> (date accessed: 15.10.2024).

medicine with the note “in a concise presentation for students,” the main goal of which the professor saw as the transformation of the student from a passive listener into an active and independent participant in pedagogical process²⁴. In his teaching, Mykola Serhiyovych preferred practical work, so he made it as visual as possible, and brought lectures and classes as close as possible to the conditions of practical expert activity²⁵. “Professor M. S. Bokarius believed that it was possible to teach a student forensic medicine only in practice, so he attached great importance to visibility in the educational process, he published textbooks with color illustrations, many of which he prepared and drew himself. From the very beginning of his teaching career, Mykola Serhiyovych began collecting visual aids and literature, prepared dummies and preparations, and eventually organized the Institute of Forensic Medicine (1913) in a special annex at the University. In this unique institution, he gathered the richest library and equipment, prepared premises and a laboratory, and most importantly, founded a museum of forensic medicine with exhibits of various branches of application of this science. The walls of the institution were decorated with statements that illustrated the content of the classes: *Repetition is the key to learning, Life is short, art is eternal, Doubt is part of correct judgment, Care of a forensic doctor is the smallest details, You cannot redo a poorly performed autopsy*, etc. Unfortunately, the Institute has not been preserved. It was located on Veterinary Square near the then educational building of the Medical Faculty on the street. Sum-

ska, 41. It was demolished in March 1932 during the development of Dzerzhinsky Square (now Freedom Square)”²⁶.



Fig. 2. Commemorative plaque in honor of Hon. Prof. M. S. Bokarius (46 Chernyshevskaya Str., Kharkiv)

Simultaneously with his work at the University, Mykola Serhiyovych taught a lot of the basics of medical knowledge in educational institutions of various levels: since 1896, for almost 15 years, he read plastic anatomy at the Kharkiv Art School (now the *Kharkiv State Academy of Design and Arts*) and published the first lithographed textbook on plastic anatomy (1908); at the Faculty of Law of the University (1905–1920), he taught forensic medicine; at pedagogical courses: course of school hygiene; at higher women's courses: anatomy; and at pharmaceutical courses — pharmaceutical legislation; he also worked as the director of the gymnasium and the 1st Kharkiv Dental School²⁷.

24 Бокариус Н. С. Краткий курс судебной медицины: в конспективном изложении для студентов. Б. м., 1911. 465 с.

25 Перцева Ж. Н. Указ. соч.

26 Бокариус М. С. / Історія Харкова у пам'ятних дошках. Фактографічні та бібліографічні відомості. URL: <http://mevorydoskikharkov.blogspot.com/2017/02/blog-post.html> (date accessed: 15.10.2024).

27 Бокариус Н. С. Автобиография С. 2–3.



Fig. 3. In the museum of the Institute of Forensic Medicine (1930)

M. S. Bokarius made a significant contribution to the formation and development of Ukrainian forensic medicine. Even at the beginning of his work at the Department of Forensic Medicine (1897), he not only put forward the idea of the need for special training of forensic medical experts and their interaction with forensic specialists (both during training and in further work), but also actively implemented such interaction in his own scientific activities.

Well-known professor M. M. Hrodzynskyi wrote: *“It is unnecessary to say that forensic science is a science, and it is unnecessary to prove the connection between forensic medicine and forensic science, but it is not superfluous to remind that this connection was established by Mykola Mykolayovych Bokarius. It is quite reasonable to consider Myko-*

*la Serhiyovych as the founder of the forensic direction in forensic medicine”*²⁸.



Fig. 4. M. S. Bokarius and colleagues (1904)

In 1915, M. S. Bokarius began work on a guide for lawyers, during which he made another discovery: he noticed not 2, but 3 phases in the formation of corpse

28 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 16. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

spots²⁹. For independent work of students in practical classes, he developed and issued 10 methodological instructions and equipped individual workplaces with the necessary tools and preparations in accordance with the topic of classes³⁰.

During the First World War, Mykola Serhiyovych managed the unloading of sanitary trains with the wounded, organized training courses for junior medical workers (nurses, disinfectants, etc.), actively worked in the chemical section of the Military Technical Assistance Committee in the fight against suffocating gases³¹.

M. S. Bokarius received a new impetus after the October 1917 revolution, when the young Ukrainian republic began to form new institutions of state power and higher education. There was an urgent need for forensic medical examination and state forensic expert institutions, and Professor Bokarius devoted himself to this cause. The People's Commissariat of Health of the Ukrainian SSR created a forensic medical department (1920), headed by Mykola Bokarius. This was the beginning of the national forensic medical examination at the state level. Later (1922), this department was abolished, and the Chief Forensic Medical Inspectorate was introduced (1923), which was also headed by M. S. Bokarius. Soon, M. Bokarius and S. Savchenko (investigator for particularly important cases of the People's Commissariat of Justice of the Ukrainian SSR) together prepared a reasoned report on the

need to establish a Cabinet of Scientific and Forensic Expertise in Kharkiv. In July 1923. The Council of People's Commissars of the Ukrainian SSR adopted a resolution on the establishment of such a Cabinet in Kharkiv, with M. S. Bokarius appointed as its head. In 1925, the Cabinet was reformed into the Kharkiv Scientific Research Institute of Forensic Expertise, which was undoubtedly the most outstanding scientific and organizational achievement of M. S. Bokarius³².



Fig. 5. M. S. Bokarius with the staff of forensic science (M. M. Bokarius is first to the left in the 1st row)

At this stage, the issue of personnel training arose. Therefore, under the leadership of M. S. Bokarius, semi-annual courses were organized for the first time in the country (1925), where doctors, forensic medical inspectors from different cities of Ukraine improved their knowledge³³. The same year, on initiative of the professor, the first Congress of Medical Examiners of Ukraine was held³⁴.

29 Ключев О. М., Угровецкий О. П., Сімакова-Єфремян Е. Б., Спіщина Г. О., Філіпенко Н. Є. Зазнач. твір. С. 58, 67. URL: <https://nncise.org.ua/diyalnist/naukova> (date accessed: 15.10.2024).

30 Перцева Ж. Н. Указ. соч. С. 249.

31 Бокариус Н. С. Автобиография ... С. 3—4.

32 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 12—23. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

33 Бокариус Н. С. Автобиография ... С. 6.

34 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).



Fig. 6. M. S. Bokarius with delegates of the 1st All-Ukrainian Congress of Medical Examiners (1925)

In addition to working with forensic experts, Mykola Serhiyovych took an active part in the training of investigation personnel (justice and police). He taught forensic medicine at the Red Law Courses of the Kharkiv Provincial Department of Justice, at the Law Courses of the People's Commissariat of Justice of the Ukrainian SSR and at the All-Ukrainian Higher School of Command at the Main Directorate of Police of the Ukrainian SSR ³⁵.

Mykola Mykolayovych prepared several reference publications for criminalists ³⁶, in particular: *Reference Manual for Criminal Investigation and Police Officers in the Compilation of a Verbal Portrait* ³⁷ (1924), which title page states that it was 'compiled and drawn by Professor M. Bokari-

us' ³⁸, a consultant to the Criminal Investigation of the Republic; fundamental research paper: *Initial External Examination of a Corpse during Police and Investigation* ³⁹ (1925). Contemporaries argued that this manual "due to its exhaustive completeness and originality has no equal not only in domestic but also in world literature" ⁴⁰. Subsequently, the scientist published contour images of human body ⁴¹ parts prepared by him (1930), which illustrated forensic medical findings and facilitated their evidentiary design.

M. S. Bokarius is the author of 47 scientific works, widely known not only in our country: Western European scientists in their works referred to them and quoted them in their manuals on forensic medicine. Mykola Serhiyovych took an equally active part in the preparation of various regulations, rules and instructions that normalized the conduct of expert research. It can even be argued that during the 1920s–1930s, he participated in the issuance of each order on forensic or forensic examination in Ukraine ⁴².

All this work took place in parallel with teaching at Kharkiv institutes: medical and legal. M. S. Bokarius had a reputation as an excellent educator and teacher. Each of his lectures was a fascinating quintessence of vast experience combined

35 Бокариус Н. С. Автобиография ...

36 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

37 Бокариус Н. С. Справочный подручный альбом для работников уголовного розыска и милиции при составлении словесного портрета. Харьков, 1924. 88 с.

38 Там же. С. 2.

39 Его же. Первоначальный наружный осмотр трупа при милицейском и розыском дознании. Харьков, 1925. 542 с. : ил.

40 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 16. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

41 Бокариус Н. С. Контурные изображения частей тела человека для приложения к протоколам судебно-медицинских вскрытий. Харьков, 1930.

42 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 12–23. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

with encyclopedic education and brilliant teaching⁴³. In the welcoming address of the graduates of the Women's Medical Institute (1915), which was signed by 150 young doctors, we find the following sentence: *"We saw in you such a teacher whose science merges with life into a harmonious whole"*⁴⁴.

It is worth mentioning M. S. Bokarius' character traits. His versatile in-depth knowledge, strict internal organization, dedication, exactingness, honesty, accuracy and dedication to work were perfectly complemented by his openness, responsiveness and friendliness. Mykola Serhiyovych had great authority and trust of the students. He was elected both the Dean of the School of Medicine (1920) and the Head of the Academic Department of the Kharkiv Medical Academy (1921). It was a difficult period: there was a reorganization, a catastrophic lack of time, but M. S. Bokarius, in accordance with his official duties, admitted students strictly (although it could start at 5–6 p.m. and end at 11–12 p.m., but no one left the queue, as everyone was sure that M. S. Bokarius would see everyone and help solve their problem)⁴⁵.

M. S. Bokarius' personal expert practice includes not only the autopsy of more than 3,000 corpses, but also more than 5,000 expert studies of various physical evidence. As a forensic practitioner, he had a reputation as the most experienced expert, who in difficult cases was repeatedly approached by practical workers not only in various cities of the Ukrainian SSR, but also in other Union republics⁴⁶.

The talent of M. S. Bokarius as an innovative scientist is also evidenced by the journals he founded: "Archive of Criminology and Forensic Medicine" (1926–1927; in Russian and in the languages of contributors) and "Issues of Criminalistics and Scientific Forensic Examination" (1931–1932; in Ukrainian), manuscripts sent by scientists and practitioners from many countries of the world. Mykola Serhiyovych communicated with the authors in their native language, because, according to contemporaries, he knew 17 languages. In addition, he knew and loved art well, had bright creative abilities: he played chess skillfully, drew beautifully and composed poems. The children inherited their father's penchant for art: in particular, the youngest daughter became a pianist and organist⁴⁷.

M. S. Bokarius worked until the last days of his life. The scientist died on December 24, 1931, after a serious illness. Obituaries in honor of his memory published not only domestic foreign journals: Turin, Brussels, Warsaw, New York, Buenos Aires, Havana, Ottawa, Tokyo, etc. The fruitful scientific and pedagogical activities of M. S. Bokarius in the field of forensic medicine and criminalistics were highly appreciated by the government of the Ukrainian SSR: he was one of the first scientists to receive the honorary title of Honored Professor (1925). After his death, his name was given to Kharkiv Research Institute of Forensic Examinations, the founder and Head of which he was from the day of its foundation (currently: *National Scientific*

43 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 17. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

44 Вітальна адреса М. С. Бокаріусу від випускниць ЖМІ. 1915. Фонд музею історії ХНМУ. ФОП 7/2-25. ОФ 3913. С. 3.

45 Бокариус Н. Н. Жизнь и деятельность С. 32–34.

46 Якимович И. Указ. соч. С. 17.

47 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 12–23. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

Center «Hon. Prof. M. S. Bokarius Forensic Science Institute»⁴⁸.

M. S. Bokarius' successor both at the department and at the Institute was his son from his first marriage, Mykola Mykola-yovych Bokarius, who was born on July 10, 1899, in Kharkiv. In raising his children (in addition to Mykola, the family had an older son, Yurii, and daughters, Kseniia and Zinaida), Bokarius followed the rule that was once expressed by M. I. Pyrohov: *“The real subject of education is to prepare a person to be a person”*⁴⁹. Children studied at gymnasiums, learned languages, played music and drew, and read a lot.



Fig. 7. Father and son: Mykola Serhiyovych and Mykola Mykolayovych Bokarius

On his birthday (1910), Mykola received a gift from his father, the first book published by him “Forensic microscopic and microchemical studies of physical

evidence” with a verse manuscript dedication, which the father opened to his very young son the only, in his opinion, correct way of life; the way to the world of science, the world of ideas. The father believed that the son would understand him and follow this path. The future fulfilled the hopes of his parents, because it was this son who continued his scientific activity.

Mykola graduated with honors from the gymnasium (1917) and entered the medical faculty of Kharkiv University. At that time, he was already working: from the age of 15, while still studying at the gymnasium, he served as a clerk in the city cadaver rest. As a student, he helped his father in organizing courses during the First World War, and in 1919 — in practical classes at the Department of Forensic Medicine at the Women's Medical Institute⁵⁰.

In the history of our country, that turbulent time was filled with cataclysms that tragically affected the Bokarius family: the eldest son Yurii died in the flames of the civil war, the eldest daughter Ksenia went abroad with her husband, the younger Zinaida unexpectedly died tragically. Mykola stayed with his father (whose university studies were extended for 7 years): he supported and helped, learned to be disciplined, collected, punctual and conscientious⁵¹.

M. M. Bokarius was transferred (1921) from the Don Regional Health Department to the Kharkiv Medical Academy to continue his studies. The cover letter stated that, despite the difficulties, Mykola

48 Ключев О. М., Угровецкий О. П., Сімакова-Єфремян Е. Б., Спіцина Г. О., Філіпенко Н. Є. Зазнач. твір. С. 135—136. URL: <https://nncise.org.ua/diyalnist/naukova> (date accessed: 15.10.2024).

49 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 22. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

50 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 12—23. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

51 Лесовой В. Н., Перцева Ж. Н., Ольховский В. А., Кравченко Ю. Н. Указ. соч. С. 443. URL: <https://khrife-journal.org/index.php/journal/issue/view/13/2014-1> (date accessed: 15.10.2024).

Mykolaiovych proved to be an excellent organizer, an honest and reliable worker⁵². These were exactly the qualities that his father brought up in him.

Before graduating from the university (1922), M. Bokarius began working as an instructor at the Department of Forensic Medicine at the Kharkiv Medical Institute. After graduation, he continued to work at the department, but as a preparator and later as an assistant. He assisted his father in conducting various courses, preparing books for publication, and doing administrative work. In 1924, he headed the identification section and then the forensic biological research section at the Institute of Scientific and Forensic Expertise. During his father's illness, he performed his duties both at the department and at the Institute. Profound professional knowledge, extensive practical experience and broad educational background helped Mykola Mykolaiovych to successfully replace his father. In 1931, he was promoted to the rank of professor, and in 1932 he became the head of the Department of Forensic Medicine at the Kharkiv Medical Institute⁵³.

He told about his first independent steps in these positions much later to the long-term rector of Kharkiv Medical Institute A. Ia. Tsyhanenko, who considered himself his student. Anatolii Yakovych recalled: *"First he was afraid of the great responsibility that lay in the distant 1931 on his still young shoulders. He was afraid not because he lacked knowledge or experience, but because he felt a great responsibility before the name of his father, his inheritance, to which he now had to*

*be equal, to respond and continue to maintain the level of his creative achievement"*⁵⁴. Life has shown that he has withstood this challenge with honor.

In the 1930s, M. M. Bokarius lived a busy life, just as his father had done before. In addition to heading the Institute of Scientific and Forensic Expertise, he was the head of the departments of forensic medicine at the 1st and 2nd KMI, and the Ukrainian Institute for the Improvement of Doctors. From December 1931 until he left for evacuation (1941), he taught forensic medicine at the Law Institute, and from 1939 he was the head of the Department of Criminalistics and Forensic Medicine. At the same time, he taught law courses, supervised the practice of police cadets, gave courses and individual lectures on forensic medicine for prosecutors, investigators, police, military prosecutors, etc.⁵⁵ Paying, like his father, considerable attention to visualization, he organized exhibitions, museums, laboratories, and in 1937 published "Lectures on Forensic Medicine" in 2 parts (part 1 "Procedural Part", part 2 "Asphyxia")⁵⁶.



Fig. 8. M. M. Bokarius at the Institute of Scientific and Forensic Examination gives an explanation to visitors (1931)

52 Бокаріус Н. Н. Автобіографія. 1941. Фонд музею історії ХНМУ. ФОР 7/2-26. ОФ 4613. С. 1, 2.

53 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

54 Циганенко А. Я. Зазнач. твір. С. 236.

55 Бокаріус Н. Н. Автобіографія ... С. 5–6.

56 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 21–20. URI: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

During the Second World War, during the occupation of Kharkiv by the Nazis, M. M. Bokarius, together with the 1st Kharkiv Medical Institute, was evacuated. While working at the Medical Institute, he taught forensic medicine at the Chkalov branch of the All-Union Correspondence Law Institute. By order of the Government of the Ukrainian SSR, he was appointed to the State Commission for the Investigation of the Atrocities of the German-Fascist Invaders in the Occupied Territory of the Kharkiv and Donetsk Regions. Conclusions from the documents prepared by M. M. Bokarius were heard at the first public trial of fascist criminals, organized in Kharkiv in November 1943, and at the Nuremberg trial (from the mouth of the state prosecutor from the USSR R. A. Rudenko). Mykola Mykolaiovych was awarded the Order of the Red Banner of Labor for his activities during the war ⁵⁷.

After returning to Kharkiv, M. M. Bokarius made a lot of efforts to restore the work of the Department of Forensic Medicine in Kharkiv Medical Institute and the Institute of Forensic Examination, which, according to the memoirs of contemporaries, *“actually did not exist, but there were only people. They worked a lot, and always together with everyone and even more than everyone, M. M. Bokarius himself worked, not disgusting with any work: whether it was taking out the garbage or cleaning the floor”* ⁵⁸.

At the same time, Mykola Mykolaiovych did not abandon his scientific activities: it was at this time that he wrote works on limb injuries in a military setting and the role of accidental material evidence in the practice of investigation and inquiry, and developed practical guidelines on the technique of scientific investigation of crimes. He devoted a number of studies to the issues of forensic traumatology – injuries caused by firearms and blunt objects, in particular, a device for measuring incoming gunshot wounds and determining the caliber of bullets with an accuracy of 0.01 mm ⁵⁹. M. M. Bokarius published almost 200 scientific works, the main topics of which are forensic medicine and criminalistics. Many collections and individual scientific papers on forensic medicine and criminalistics were also published under the guidance and editorship of Mykola Mykolaiovych ⁶⁰.

M. M. Bokarius devoted his whole life to the development of domestic forensic medicine and criminalistics, the introduction of the results of scientific research into practice, education and upbringing of scientists and practitioners of expert activity. For almost 30 years, he headed the Department of Forensic Medicine at Kharkiv Medical Institute (1932–1961). According to contemporaries, he is *“encyclopedically educated person, an excellent teacher who widely used a rich practical material in the classroom. His erudition won listeners from the first words of the story. Lecturers*

57 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. С. 12–23. URL: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

58 Наместникова Л. Н. Указ. соч. С. 231.

59 Бокариус Н. Н., Соколов Б. И. К установлению калибра пуль по огнестрельным повреждениям костей черепа. Сборник научных работ по судебной медицине и криминалистике, посвященный памяти засл. проф. Н. С. Бокариуса. 1956. Вып. 5. С. 35. URL: https://drive.google.com/file/d/1yCiCsVh9l45ekr_YMiI8qaZZpOXTyQPd/view (date accessed: 15.10.2024).

60 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. URL: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

*from other departments came to listen to Mykola Mykolaiovych's lectures"*⁶¹.

At Kharkiv Medical Institute, he was repeatedly appointed Vice-Rector for Academic Affairs (1952–1956, 1957–1960, 1962–1964). M. Bokarius authority at the Institute was unconditional: he earned universal recognition and respect for his analytical mind, diligence, accuracy, deep understanding of the essence of the educational process, and ability to organize it. His character traits — intelligence and punctuality, obligation and friendliness, sensitivity and kindness — attracted students and young researchers to him, and he willingly worked with them. Under his supervision, 4 doctoral and 26 PhD theses were completed and successfully defended. Many of his graduates headed the departments of medical and law institutes not only in our country, but also in Germany, Romania, and others. The students of this authoritative scientist and talented teacher remembered him as a sensitive person who was ready to help not only in their studies but also in life issues⁶².

As one of the most famous forensic physicians in our country, M. M. Bokarius was repeatedly invited as an expert to solve the most complex cases of forensic practice. His experience in commission examinations was especially appreciated. In the postwar period, M. M. Bokarius was awarded the Order of Lenin for his special merits. He was a member of the editorial board of the All-Union Journal of Forensic Medicine, a republican forensic expert

(1933–1937), and for several years held the position of senior regional and city forensic expert. He was equally responsible for his work as a member of the scientific councils of the People's Commissariat of Health of the Ukrainian SSR, the State Central Research Institute of Forensic Medicine of the People's Commissariat of Health of the RSFSR, and the All-Union Institute of Legal Sciences. Having left the post of Director (1946) of the Kharkiv Scientific Research Institute of Forensic Expertise (until 02.06.1944 — Kharkiv Institute of forensic examinations) for health reasons, he remained its scientific consultant for many years and participated in the work of its Academic Council until the last day⁶³.

M. M. Bokarius was elected a deputy of the Kharkiv City Council of several convocations, a member of the governing bodies of the societies of forensic doctors and criminologists from Kharkiv to the All-Union. In 1948, on his initiative, the Kharkiv Society of Forensic Physicians and Criminalists was founded and under his leadership. On May 28, 2008, on the occasion of the 60th anniversary, this Society received the honorary name of its founder: Professor M. M. Bokarius. The scientist died after a serious illness on November 2, 1966 at the age of 67, buried next to his father at the second Kharkiv city cemetery⁶⁴.

In addition to Mykola Mykolaiovych, representatives of the following generations of the Bokarius dynasty devoted their lives to forensic medicine: the daughter of M. M. Bokarius, Kira, and his brother, the

61 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. URL: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

62 Там же. С. 21. URL: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

63 Лесовой В. Н., Перцева Ж. Н., Ольховский В. А., Кравченко Ю. Н. Указ. соч. С. 445. URL: <https://khrife-journal.org/index.php/journal/issue/view/13/2014-1> (date accessed: 15.10.2024).

64 Лесовой В. Н., Цымбал М. Л., Перцева Ж. Н., Ольховский В. А. Указ. соч. URL: <https://repo.knmu.edu.ua/handle/123456789/494> (date accessed: 15.10.2024).

son of Mykola Serhiiovych from his second marriage: Vitalii.

Vitalii was born in 1921, when his older brother was already 22 years old. Vitalii's mother, Nina Markivna Asvadurova, a pupil of the Sorbonne, prosecutor of the Institute of Forensic Medicine, worked together with Mykola Serhiiovych. His latest book *Forensic Medicine for Physicians and Lawyers* is no ⁶⁵ longer young, seriously ill professor dedicated to "closest long-term employees in our constant, friendly, joint, tireless work in our equally beloved field of medical education; students passing through our Institute; prosecutor Nina Markivna Asvadurova and assistant Mykola Mykolayovych Bokarius, who now carefully protect my aging forces, dedicate my humble work with warm sincere gratitude" ⁶⁶.

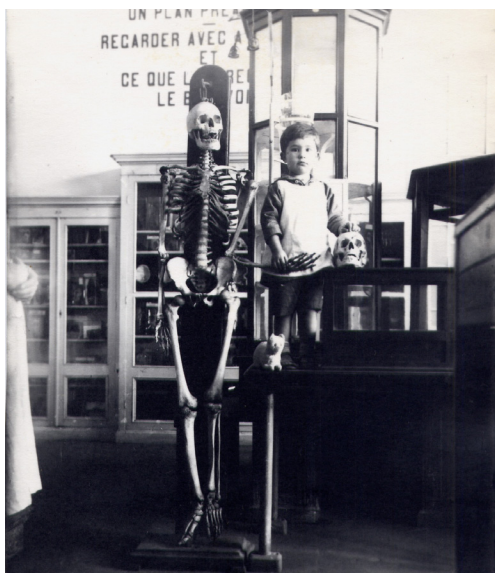


Fig. 9. Vitalii Bokarius at the Institute of Forensic Medicine (1923)

From early childhood, Vitalii was surrounded by things related to his future profession. The family archive contains a photo of little Vitalii standing next to a human skeleton. Since the family lived on the territory of the Institute of Forensic Medicine, the guy was able to read books from the institute library and get acquainted with individual exhibits of the institute museum much earlier than children of his age. Encyclopedically educated person and talented teacher Mykola Mykolayovych Bokarius taught younger children at home according to a program much wider than the school one. In order to make it more interesting, his father designed and made visual aids, prepared drawings. After the death of his father, 10-year-old Vitalii was enrolled in the fifth grade at school, although he was prepared for the eighth grade: he lacked age ⁶⁷.

As a father and brother, Vitalii graduated from school "perfectly" and after a short hesitation made a choice in favor of medicine: he lost to the medical faculty of the 1st Kharkiv Medical Institute (1938). The institute newspaper "For the Soviet Doctor" repeatedly told about his training and attitude to classes and science: in one of the issues, it was about his physics classes in a scientific circle (over the use of ultrashort waves in medicine and the ultrasound generator and microprojector built by him in the laboratory were mentioned) ⁶⁸, in another issue the excellent student Vitaly Bokarius, who knows three foreign languages, was described

65 Бокариус Н. С. Судебная медицина для медиков и юристов. Харьков, 1930. 690 с. URL: <https://dspace.nlu.edu.ua/jspui/handle/123456789/5173> (date accessed: 15.10.2024).

66 Ключев О. М., Угровецкий О. П., Сімакова-Сфремян Е. Б., Спіцина Г. О., Філіпенко Н. Є. Зазнач. твір. С. 147—148. URL: <https://nncise.org.ua/diyalnist/naukova> (date accessed: 15.10.2024).

67 Лесовой В. Н., Перцева Ж. Н., Ольховский В. А., Кравченко Ю. Н. Указ. соч. С. 446. URL: <https://khrife-journal.org/index.php/journal/issue/view/13/2014-1> (date accessed: 15.10.2024).

68 Островський С. Зазнач. твір.

as a modest young man, accurate in work and study ⁶⁹.

V. M. Bokarius graduated from the institute with honors (1942) and went to the front in September. He served in one of the evacuation hospitals of the 2nd Ukrainian Front. This highly educated, purposeful, organized and at the same time modest, friendly and sensitive officer became interested in forensic medicine during the war years. For his selfless work as a forensic expert of the 57th Army from November 1944 to April 1945, he was awarded the Order of the Patriotic War, 2nd degree. The award letter states that Captain V. M. Bokarius *"through promptness of his work provided timely assistance to the investigative bodies in a number of complex cases. In divisions and hospitals, he trained up to 30 medical experts. He personally conducted 49 forensic medical examinations of corpses. During offensive operations, Bokarius repeatedly traveled to the military district, where he personally conducted examinations in medical battalions and regimental medical posts under enemy artillery fire and enemy air raids on urgent orders from the command"* ⁷⁰.

In March 1945, Vitalii Mykolaiovych was recalled from the front and sent to Moscow to the Military Law Academy for advanced training. He met Victory Day in the hospital, where he was treated for the consequences of severe concussion. After graduating from the Academy, he served in Chernivtsi (Lviv Military District) until the end of 1946, and then in Leningrad in the Military Medical Museum of the Armed Forces of the USSR. As the son of V. M. Bokarius, Serhii, also a doctor, recalls, *"his father was an ambitious person*

and a scientist by nature, like Mykola Serhiyovych and Mykola Mykolayovych. He always wanted to do only science and never thought about a military career, but the war ordered for him" ⁷¹.

Unfortunately, the archival certificate of service of V. M. Bokarius in the Military Medical Museum does not give a clear idea of the content of his work there. Thus, the certificate states that he headed the 15th research department of the Museum (1946–1949), was a senior researcher of the 4th (1949–1954) and 2nd research departments (1954–1956) ⁷². It is only known that Vitalii Mykolaiovych took an active part in the creation and design of the museum exposition: the Halls of Fascist Crimes Committed During the Great Patriotic War ⁷³.



Fig. 10. V. M. Bokarius (1945)

High-quality professional training, tireless hard work, a broad worldview, the ability to defend one's own opinion and unshakable principles earned V. M. Bokarius

69 Дольний А. Зазнач. твір.

70 Спогади С. В. Бокаріуса С. 2.

71 Там само. С. 4–5.

72 Архівна довідка. Фонд музею історії ХНМУ. ФОП 7/2-26. НДФ 454. С. 1.

73 Спогади С. В. Бокаріуса С. 5.

a well-deserved authority among his colleagues. As part of a group of experts, he traveled to the site of the duel of M. Yu. Lermontov (1947), conducted forensic and ballistic examinations, and participated in the examination of the embalmed body of M. I. Pyrohov (1948). It is worth noting that the Kharkiv Medical School left its mark on the latter event, combining the scientific activities of the Bokarius family members. The fact is that the city of Vinnytsia has an exceptional role in the history of Ukrainian medicine and surgery, on the outskirts of which, in a small estate with the poetic name: *Cherry*, outstanding surgeon M. I. Pyrohov lived and worked for his last 17 years. After his death, his body was embalmed and placed in a tomb at the request of his wife. The events of the Civil War, and then the Second World War, caused what seemed like irreparable damage to the body of M. I. Pyrohov. The USSR government transferred this estate to the Main Military Sanitary Directorate and instructed anatomists of the Kharkiv Medical Institute to restore M. I. Pyrohov's body (1944). Professor R. D. Synelnykov, a student of M. S. Bokarius, led and successfully coped with this work: access to the body of M. I. Pyrohov was restored (1946). And the son of Mykola Serhiyovych Bokarius, Vitalii, took part in the examination of the condition of the body of the outstanding surgeon in 1948⁷⁴.

V. M. Bokarius had a large library, where he carefully preserved books from his father's collection. He worked extensively with literature on forensic medicine, in particular foreign literature, and became the compiler of a series of bibliographic collections on forensic medicine, forensic psychiatry, criminalistics,

and forensic chemistry for 1951–1956, as well as the author of the bibliography *Foreign Literature on Forensic Medicine for 1944–1955*. In 1955, V. M. Bokarius defended his dissertation for the PhD in Medicine “*M. I. Pyrohov and Forensic Medicine*”. In choosing the topic of the dissertation, according to the author, the main role was played by the absence in the literature of that time of works dedicated to the activities of Mykola Ivanovych in the field of forensic medicine, to the issues he developed, which were of great importance for forensic examination. In this way, Vitalii Mykolaiovych acted as a historian of medicine⁷⁵.



Fig. 11. Mykola Mykolayovych and Vitalii Mykolaiovych Bokarius at the conference (1956)

In December 1956, V. M. Bokarius moved to the position of teacher of the Department of Forensic Medicine of the Military Medical Academy named after S. M. Kirov. In 1958 he received the title of associate professor. Due to his illness, V. M. Bokarius retired as a lieutenant colonel of the medical service (1960), but continued to work, but at the Leningrad Institute for the Improvement of Doctors. Just

74 Бокаріус Л. В., Бокаріус С. В., Філіпенко Н. Є. Зазнач. твір. С. 39. URL: http://nbuv.gov.ua/UJRN/acrf.2020_2_11 (date accessed: 15.10.2024).

75 Спогади С. В. Бокаріуса ...

like his predecessors, father and brother, he was an excellent teacher, bringing visibility to the teaching process. According to contemporaries, not only students, but also teachers from other faculties sought to attend his lectures, the audience was always crowded. “We wanted to listen to him”, they said about V. M. Bokarius: this was facilitated by high-quality professional training, a large amount of knowledge and the ability to express their thoughts correctly and interestingly ⁷⁶.

His knowledge of foreign languages is worth mentioning separately. As a worthy descendant of M. S. Bokarius, who knew 17 foreign languages, Vitalii Mykolaiovych was fluent in French, German, and English, knew Italian and Spanish, and, of course, Latin. When Italian professor D. Petrucci, who studied the issue of homunculus, came to the Leningrad State Institute for Advanced Training of Physicians, V. Bokarius simultaneously translated his lecture from French, because there was no more experienced translator in the city (1960). Doctors from different foreign countries came to this institute for training, and Vitalii Mykolaiovych communicated with them in their languages, as later recalled with interest and admiration by B. S. Lakiza, PhD, Associate Professor of the Department of Forensic Medicine of Kharkiv Medical Academy of Postgraduate Education, who was on a business trip there ⁷⁷.

Like the elder Bokarius, Vitalii attracted people to him with his friendliness, kindness, intelligence, and even fair se-

verity, if circumstances demanded it. He was amazingly self-controlled and never allowed himself to raise his voice, let alone swear, even in extreme situations: he once admitted that “not a single petty officer made him swear during the entire war!” ⁷⁸.

V. M. Bokarius, as a father and brother, knew and loved art, had artistic talent, wrote poetry. His home was often visited by frontline and Kharkiv friends, interesting people and teachers from the institutes where he served, forensic experts and criminalists who came on business trips ⁷⁹.

All this has created a high reputation for V. M. Bokarius among the medical community of the country. He was nearing completion of his doctoral dissertation, which he did not have time to defend. In January 1969, after a serious illness, Vitalii Mykolaiovych died at the age of 48 ⁸⁰. The German magazine *Forum der Kriminalistik* in No. 3 for 1969 published the obituary of V. M. Bokarius, in which he noted his successful work as an employee of the military forensic medical service of the USSR ⁸¹.

Conclusions

Ancient philosopher argued that the memory of outstanding people has the same meaning for those who live as their living presence. We believe that the memory of Kharkiv citizens — members of the Bokarius family of forensic doctors, who made an invaluable contribution to the development of domestic forensic medicine,

76 Бокаріус Л. В., Бокаріус С. В., Філіпенко Н. Є. Зазнач. твір. URL: http://nbuv.gov.ua/UJRN/acrfs_2020_2_11 (date accessed: 15.10.2024).

77 Там само. С. 39–40.

78 Там само. С. 36.

79 Спогади С. В. Бокаріуса С. 3.

80 Ehre ihrem andenken. Doz. Dr. Med. V. N. Bokarius. *Forum der Kriminalistik*. 1969. № 3. S. 39.

81 Ibid. S. 102.

will live for a long time in order to bring up pride for our country and its talented people in the younger generation by their example.

**Значення родини Бокаріусів
для розвитку судової медицини
України (оглядова стаття)**

**Жаннета Перцева,
Ольга Виноградова**

Із нагоди 220-ї річниці заснування Харківського національного університету імені В. Н. Каразіна і, відповідно, Харківського національного медичного університету та з метою акцентувати увагу на ролі родини Бокаріусів у розвитку судової медицини і криміналістики в Україні висвітлено науковий шлях трьох представників цієї династії: батька Миколи Сергійовича й синів Миколи Миколайовича та Віталія Миколайовича. Для досягнення поставленої мети застосовано загальнонаукові методи: опис, порівняння, аналіз, узагальнення. Родина Бокаріусів віддала служінню судовій медицині та криміналістиці понад 100 років професійного життя. Микола Сергійович Бокаріус, знаний як ерудований науковець і талановитий педагог, фундатор криміналістичного напрямку в українській судовій медицині, багато зробив для формування вітчизняної системи судово-медичної експертизи і спеціалізованих експертних закладів, зокрема Кабінету науково-судової експертизи в м. Харків. Наукову, експертну й викладацьку діяльність Заслуженого професора М. С. Бокаріуса продовжив старший син — Микола Миколайович, який упродовж 25 років очолював Харківський інститут судових експертиз і зробив вагомий внесок у підготовку кадрів інших харківських інститутів — медичного та юридичного (заснував кафедру криміналістики останнього). Долю молодшого сина Миколи Сер-

гійовича — Віталія — визначила війна: по закінченні Харківського медичного інституту він пішов на фронт. Відомостей про нього у друкованих джерелах не збереглося, авторки послуговувалися спогадами його сина — військового лікаря Сергія Віталійовича.

Ключові слова: Заслужений професор М. С. Бокаріус; Микола Миколайович Бокаріус; Віталій Миколайович Бокаріус; судова експертиза і криміналістика; історія; династія; медична освіта.

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Participants

The authors have contributed solely to intellectual discussion underlying this document, case law research, writing and editing, and assumes responsibility for its content and interpretation.

Declaration of Competing Interest

Authors declare no conflict of interest.

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On the Issue of Exempting Dividends Received from the Participation of Individuals in Company Capital from Taxation

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The article discusses the economic consequences arising within the context of disproportionate double taxation of corporate profits under legal regulation. These consequences are associated with investment transparency, risk factors in investment promotion, and specifically with the accumulation of unsubstantiated capital reflected in corporate financial statements. This is especially relevant in situations where limited alternative investment opportunities lead to the distribution of profits (dividend payments) and reinvestment in charter capital without proper documentation of these operations, as prescribed by regulation. The avoidance of taxing (withholding tax on) dividends paid to individuals participating in a company's capital may become grounds for legal regulation violations. This could lead to forensic financial-economic expertises within criminal or judicial proceedings through the submission of special questions. However, in the subtext of presenting an expert opinion in this article, it is argued that companies and individuals accountable under current legal regulations is unjust, given the inadequacies in tax policy and existing legal frameworks. Discussions on the methodology for clarifying the above issue in financial and economic expert investigations are currently important, as the effective and targeted reinvestment of capital directly impacts both the company's ability to meet obligations and maintain financial stability, as well

as the protection of shareholder interests and the organization's future development goals. Scientific methods (analysis and synthesis, generalization, logical and structural, etc.) have been applied.

Keywords: double taxation of profits; tax disproportion; dividends; investors; capital accumulation; tax credit; tax exemption; financial and economic expertise.

Research Problem Formulation

The disproportion of double taxation of profits refers to the situation where profits are taxed twice at different levels, leading to an unequal distribution of the tax burden between companies and individuals participating in capital.

Efforts to neutralize the situation of double taxation disproportion involve key theories focusing on tax fairness, investment promotion, tax neutrality, reduction of double taxation, and minimization of international disparities. The mechanisms activated within this framework (such as tax credits, tax immunization, and reduced rates) support the formation of fair tax systems and the strengthening of international economic cooperation, allowing for the avoidance of tax burden accumulation and promoting equitable redistribution of capital flows.

The *double taxation immunization* term typically refers to the mechanisms or arrangements that avoid or reduce double taxation. In this context, it should also be acknowledged that double taxation occurs when the same income is taxed two or more times across different jurisdictions, such as in different countries or tax levels.

The purpose of double taxation immunization is to reduce or eliminate this double taxation. This system can take various forms depending on a country's tax legislation. Generally, three main mechanisms related to double taxation immunization are commonly applied:

1. *Tax Credit:* In this mechanism, shareholders receive a tax credit for the tax that the company has already paid in the form of profit tax. Thus, shareholders can reduce their personal income tax by utilizing this credit.
1. *Tax Exemption:* In this case, dividends are fully or partially exempt from personal income tax for individuals.
1. *Reduced Tax Rate:* In some countries, dividends are taxed at a reduced rate, which also helps mitigate double taxation.

The purpose of universal immunization is to ensure that the income received by individuals or companies is not subjected to double or multiple taxation. To achieve this goal, various countries enter into Double Taxation Avoidance Agreements (DTAAs), which outline specific methods, such as the allocation of tax jurisdictions, the credit method, or pure exemptions.

Analysis of Essential Researches and Publications

Agreements have been signed between the Government of the Republic of Armenia and the governments of several countries to exclude double taxation on income and property and to prevent tax avoidance. Specifically, these agreements involve the Kingdom of Denmark, the Grand Duchy of Luxembourg, the Islamic Republic of Iran, the Government of Romania, as well as

countries such as Indonesia, India, Hungary, Greece, Italy, Kazakhstan, Lebanon, the Republic of Lithuania, the Republic of Latvia, and others ¹.

The taxation of income from dividends received by individuals from their participation in corporate capital, specifically through shares, equity interests, and investments in stocks, is fundamentally linked to the fact that these are often subject to double taxation. Dividends paid by companies to shareholders are already taxed at the corporate level. This leads to the phenomenon of double taxation: first, taxation occurs at the company level, and then income tax is withheld from individuals when they receive dividends from those same funds. Exempting dividends from income tax would help eliminate this double taxation of capital, making investments more attractive.

James Mirrlees ², in his article *An Exploration in the Theory of Optimum Income Taxation*, presents the key principles of optimal income taxation theory. He argues that high tax rates on capital, imposed on income from investments or dividends, can reduce overall investment attractiveness. This is because investors will demand a higher return to compensate for the losses incurred due to taxation or may completely avoid making investments. Such a situation could decrease the level of investments in

the economy, which would, in the long run, slow down economic growth.

It should be noted that double taxation in the discussed situation can arise at two levels of taxation:

- 1) *Corporate Level*: The company that pays dividends to shareholders has already taxed its profits at the corporate level and paid profit tax to the state budget (in Armenia, the profit tax rate is currently 18 %);
- 2) *Individual Level*: When an individual receives dividends, they are taxed as income (in Armenia, the current income tax rate for dividends received by individuals is 5 %).

Thus, it follows that in these situations, the dividend, which has already been taxed at the corporate level as profit tax, is taxed once again during the individual's income taxation. This effectively can be viewed as double taxation.

Article 149, Part 1 of the Tax Code ³ of the Republic of Armenia provides the following provision: "*For the purpose of determining the tax base, the following income shall also be considered as reduced income: <...> 4) income received from shares, bonds, or other securities evidencing investment listed on the stock exchange operating in the Republic of Armenia, except for bonds issued by banks that have a maturity period of less than two years from the date of placement*".

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- 1 Agreements between the Government of Armenia and the governments of several countries to eliminate double taxation on income and property and to prevent tax evasion / Ministry of Finance of the Republic of Armenia : Of. web. URL: https://minfin.am/hy/page/krknaki_harkman_hamadzaynagrer/ (date accessed: 25.11.2024).
 - 2 British economist and representative of neo-Keynesianism James Alexander Mirrlees was awarded the Nobel Prize in Economic Sciences in 1996 for his research on information asymmetry. Mirrlees J. A. An Exploration in the Theory of Optimum Income Taxation. *The Review of Economic Studies*. Apr 1971. Vol. 38. No. 2. Pp. 175–208. URL: <https://www.uib.cat/depart/deaweb/webpersonal/amedeospadaro/workingpapers/bibliosecpub/MirrleesRES1971.pdf> (date accessed: 25.11.2024).
 - 3 The Tax Code of the Republic of Armenia, adopted on October 4, 2016 (number HO-165-N), in force since January 1, 2018. URL: <https://www.arlis.am/DocumentView.aspx?docid=145780> (date accessed: 25.11.2024).

Moreover, according to Part 2 of the same article: *“For the purpose of determining the tax base, the income specified in Part 1 of this article shall not be considered as reduced income (shall not be deducted from gross income) if <...> 4) it is received as dividends, except for dividends received from shares listed on the stock exchange operating in the Republic of Armenia”*.

According to Part 8 of Article 150 of the Tax Code of the Republic of Armenia, *“The income tax on dividends is calculated at a rate of five percent, taking into account the deductions specified in Article 149 of the Code”*. Additionally, it is important to reference the provision outlined in Part 4 of Article 159: *“Income received in the form of dividends will be reimbursed from the state budget in the amount of the investment made in the charter or share capital of the same organization that pays the dividends – provided that the investment is made in accordance with the legislation during the tax year in which the dividends are received – up to the amount of the taxes paid from dividends to the state budget, according to the procedures established by the Government”* (This provision came into force on January 1, 2017).

It should be noted that the provisions of the Tax Code of the Republic of Armenia regarding the taxation of dividends received by citizens of Armenia apply to profits attributed to periods after January 1, 2018, as a distribution of profits on the dividends received by participants.

Regarding profit distribution, that is, the type of dividend policy adopted by the company, R. Brealey and S. Myers consider it one of the top unresolved issues in finance theory. According to their perspective, dividend policy should be isolated from other

financial management issues. In this context, the primary question will be about the expected effectiveness of changes in dividend policy, taking into account the company's capital budgeting, borrowings, and the issuance of new shares. This is necessary to clarify how dividend policy impacts the market value of the company⁴.

Domestic and foreign economic literature on dividend payments generally converges on the statement that a company is entitled to decide at its discretion on the issue of dividend payments. This means that the legislation does not obligate the company to pay dividends; rather, it imposes certain restrictions that prohibit the company from declaring (or making a decision to make) dividend payments.

As is well known, extensive scientific discussions on issues related to dividend policy were sparked by the joint article of M. Miller and F. Modigliani, in which the authors demonstrated that under perfect market conditions, the value of a company is not dependent on the choice of dividend payments, but rather on the wealth of shareholders. According to them, the decision regarding the company's ability to generate profits is more dependent on the effectiveness of its reinvestment policy than on the characteristics of profit distribution. In other words, dividend policy is not a factor that affects the market value of the company, leading to the conclusion that dividends should be calculated (declared) on a residual basis after financing acceptable investment projects. Shareholders can create their own dividends by selling their shares based on the need for cash. This approach is known as the Dividend Irrelevance Theory⁵.

4 Brealey R. A., Myers S. C. Principles of Corporate Finance. 7th Ed. The McGraw-Hill Companies, 2003. P. 433. URL: <https://www.passeidireto.com/arquivo/157292980/brealey-myers-principles-of-corporate-finance-7th-ed-e-book> (date accessed: 25.11.2024).

5 Miller M. H., Modigliani F. Dividend Policy, Growth, and the Valuation of Shares. *The Journal of Business*. 1961. Art. 34 (4). Pp. 411–433. DOI: [10.1086/294442](https://doi.org/10.1086/294442) (date accessed: 25.11.2024).

Research Methods

Scientific methods (analysis and synthesis, generalization, logical and structural, etc.) have been applied.

Article Purpose

In this context, exempting dividends received by individuals from taxation already implies an important economic concept that is, of course, directly related to the optimization of the tax burden on income derived from capital. From a fundamental economic perspective, this claim can be examined through the theories of efficient resource allocation and investment promotion. Exempting dividends from taxation for individuals can particularly stimulate growth in investments within the securities market. In this sense, it is logical that a reduction in the tax burden increases the net return on investments, making them more attractive to investors. In turn, the growth in investments contributes to the increase in corporate capital, which can lead to enhanced economic activity and improved efficiency in resource allocation.

It should also be noted that a reduction in the taxation of income from investments can lead to an increase in state budget revenues in the long term by expanding the tax base. In the context of the Laffer curve, excessive taxation leads to a decrease in economic activity and, consequently, a reduction in tax revenues. Exempting dividends received by individuals from taxation, on the contrary, can stimulate economic growth and, in the long run, increase state revenues through indirect taxes and an expanded tax base.

According to A. Laffer, the optimal tax rate begins at 35 % for income taxation.

When the tax rate reaches 40–50 %, the growth in budget revenues starts to slow down. If the rate rises above 50 %, entering what is called the “prohibited zone”, there is a sharp decline not only in budget revenues but also in savings and investments.

The Laffer Curve ⁶ has been empirically confirmed in the United States at least three times over the past 100 years: during the Harding-Coolidge tax reform in the mid-1920s, the reduction of tax rates under President Kennedy in the mid-1960s, and the tax reforms under President Reagan in the early 1980s. In other words, the Laffer Curve’s effect directly improves the country’s economic growth indicators – not only in the U.S., but also in the United Kingdom during the 1980s, Ireland in the 1990s, and beyond.

Main Content Presentation

Logically, countries that encourage business development – aiming to ensure economic growth by diversifying investments in theory – can implement tax incentives or special regulatory frameworks that lower tax rates on dividends.

Thus, in summary, the thesis of “exempting dividends received by individuals from income tax” can be justified from the following key fiscal and socio-economic perspectives.

1. *Double Taxation of Capital*: Dividends from shares originate from the profits generated by a company’s economic activities, which have already been subject to corporate income tax. If these dividends are further taxed at the individual level through income tax, it leads to double taxation of capital, reducing investors’ profitability. Such double taxation can result in fundamental economic distortions, such as

6 Laffer A. B. The Laffer Curve: Past, Present, and Future. *Backgrounder*. 2004. June 1. No. 1765. 16 p. URL: <https://iife.edu.vn/wp-content/uploads/2020/04/Laffer-Couver-Last-Present-and-Future-bg1765.pdf> (date accessed: 25.11.2024).

reduced investment and slower economic growth.

2. *Accumulation of Capital*: When retained earnings are neither reinvested – meaning the share of equity capital is not increased – nor distributed among individual investors in the form of dividends to avoid dividend taxation, capital accumulation primarily occurs within small and medium-sized enterprises.

3. *Transparency of Investments*: Exempting dividends from income tax ensures transparency in investments in company shares and protects shareholder interests. This is an economically important tool, as timely payment of dividends enables the efficient and equitable allocation of capital, fostering the development of financial markets.

4. *Risk Factor in Investment Promotion*: Unlike deposits or bonds, stocks carry higher risks. A shareholder may lose their investment without receiving any income if the company does not make a profit. From an investment promotion perspective, taxing dividends in the presence of such risks can be disproportionate, reducing individuals' motivation to invest in stocks that are riskier but potentially more profitable.

Taxing dividends received by individuals from investments in a company's capital can harm the investment environment by reducing economic growth potential, distorting capital allocation, and hindering high-risk, high-return investments. Therefore, a tax policy that exempts dividends from income tax for individuals not only eliminates the inefficiencies associated with double taxation but also promotes economic growth by attracting long-term investments and strengthening the financial stability of companies.

Continuing this line of thought, it is important to note that exempting dividends received by individuals from participation in a company's capital from taxation can

also be viewed through the lens of additional economic aspects and mechanisms that reinforce the arguments in favor of this tax policy.

- First, it should be noted that taxing dividends negatively impacts private savings. The high tax rate on income generated from capital investments does not provide incentives for individuals to direct their savings towards investment opportunities. Exempting dividends from taxation promotes an increase in the level of private savings, which, according to neoclassical economic theory, contributes to the growth of capital in the economy. Ultimately, this can enhance productivity and lead to long-term economic growth.
- High tax rates on dividends can drive investors to employ capital concealment mechanisms, such as offshore schemes. This, in turn, contributes to the growth of the shadow economy and reduces the transparency of financial flows. Notably, exempting dividends from income tax encourages the repatriation of capital from the shadow sector, which, in the long term, can enhance macroeconomic stability.
- Modern tax systems implement various approaches to dividend taxation. Countries where dividends are either completely exempt from taxation or taxed at reduced rates demonstrate higher investment activity. Some countries utilize *double taxation immunization* and tax credit systems, thereby reducing the tax burden on investors and providing positive signals for attracting foreign investments. This, in turn, reflects the characteristics of the country's economic policy and investment environment.

The provision of a tax credit is based on the principle that taxes should be collected only once-during the phase of direct profit generation, rather than being taxed again at the stage of dividend distribution. It is important to note that the mechanism for providing a tax credit typically operates as follows: if a company's profit has already been taxed with corporate income tax, then the dividends received by an individual may either not be taxed additionally or the individual may be granted a tax credit that is equal to the corporate income tax paid by the company ⁷.

Additionally, the tax credit system is often aligned with the principles of shareholder neutrality and tax neutrality, aimed at ensuring that shareholders do not bear a heavier tax burden. On the other hand, the provision of tax credits is also based on the theory of mitigating double taxation disparity, within which governments implement legal and economic interventions to provide investors with a fair tax environment ⁸.

Below are examples of some countries that employ specific approaches to dividend taxation:

In *Hong Kong, Malaysia, Saudi Arabia, and Brazil*, dividends are exempt from personal income tax and are not taxed in any way, which adds special appeal to the in-

vestment environment. This approach increases capital flows by encouraging both domestic and foreign investments ⁹.

Estonia and Latvia also stand out by exempting dividends received by individuals from taxation, which is connected to their unique tax systems where tax is levied only upon profit distribution. Instead of annual corporate profit taxation, taxes are applied only when profits are distributed among shareholders. If a business earns a profit in a given year, the owners can choose to reinvest that profit into the business's growth without incurring tax. This is equivalent to providing the full value of new investments. This system has been in place in Estonia since 2000 and in Latvia since 2018 ¹⁰.

In *Singapore*, dividends are not taxed at the individual level if they are received from resident companies operating under Singapore's "one-tier tax system". This aims to avoid double taxation and encourage investments by making dividends more accessible to individuals. However, certain exceptions, such as dividends from real estate investment trusts, are taxed due to regulatory requirements ¹¹.

In *Cyprus*, the tax rate on dividends for resident individuals is set at 0 %. This means that regardless of whether the dividends are received from Cyprus or abroad, individuals who are tax residents of Cyprus

7 Musgrave P. B. *Tax Policy in a Global Economy : Selected Essays*. Cheltenham, UK ; Northampton, MA : E. Elgar Publ., 2002. 488 p. URL: <https://archive.org/details/taxpolicyin-globa0000musg/page/n5/mode/2up> (date accessed: 25.11.2024).

8 Avi-Yonah R. S. Globalization, Tax Competition, and the Fiscal Crisis of the Welfare State. *Harvard Law Review*. 2000. Vol. 113. No. 7. Pp. 1573–1676. URL: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=208748 (date accessed: 25.11.2024).

9 Taxes & Duties. Profits Tax / GovHK. URL: <https://www.gov.hk/en/residents/taxes/profits/index.htm> (date accessed: 25.11.2024).

10 Bunn D. Better than the Rest / Tax Foundation. Oct 9 2019. URL: <https://taxfoundation.org/blog/estonia-tax-system-latvia-tax-system/> (date accessed: 25.11.2024) ; Estonia. Corporate – Taxes on corporate income / PWC. Worldwide Tax Summaries. July 19 2024. URL: <https://taxsummaries.pwc.com/estonia/corporate/taxes-on-corporate-income> (date accessed: 25.11.2024).

11 What is taxable, what is not. Dividends / A Singapore Government Agency Website. URL: <https://www.iras.gov.sg/taxes/individual-income-tax/basics-of-individual-income-tax/what-is-taxable-what-is-not/dividends> (date accessed: 25.11.2024).

(defined as those staying in Cyprus for 183 days or more) are exempt from taxation on the dividends they receive. However, there is a special defense contribution that applies, which is 17 % for dividends received from Cyprus and 30 % for those received from abroad ¹².

In *Australia*, there is a “franking credits” system that allows shareholders to receive tax credits related to income from dividends. By reducing the tax burden on investors, this system encourages both domestic and foreign investments ¹³.

In the United States, dividend taxation is implemented through a “tax credit” mechanism. This system allows for a partial reduction of double taxation on dividends by offering tax credits for corporate tax and personal income tax (with rates ranging from 0 % to 20 %) ¹⁴.

In Canada, a *double taxation immunization* mechanism is in place, under which investors are granted tax credits related to taxes already paid at the corporate level (with rates ranging from 15 % to 33 %) ¹⁵.

In the United Kingdom, a *double taxation immunization* system is applied, which reduces the impact of double taxation on dividend taxation policy. Domestic inves-

tors can benefit from certain allowances, providing a relatively favorable environment for investments (with rates ranging from 7.5 % to 39.35 %) ¹⁶.

Thus, the examples of the aforementioned countries demonstrate that more lenient approaches to dividend taxation can enhance investment activity and particularly increase the interest of foreign investors ¹⁷.

In Ukraine, for example, dividends received by individuals are not entirely exempt from income tax. They are subject to an 18 % income tax rate and a special military tax of 1.5 %, resulting in a total tax obligation of 19.5 % for individuals. However, taxation rules may differ in certain cases, such as when dividends are received from a non-resident legal entity. From the perspective of preventing double taxation, Ukraine has international agreements with several countries that help avoid double taxation. This means that if the source of the dividends is in a country where the tax treaty specifies a lower tax burden, the tax obligation in Ukraine can be adjusted according to that agreement ¹⁸.

Many member countries of the Organisation for Economic Co-operation and

12 Tax on dividends in Cyprus / Estate of Cyprus. URL: <https://estateofcyprus.com/tax-on-dividends-in-cyprus/> (date accessed: 25.11.2024) ; Cyprus Tax Facts 2024 / Deloitte. 29 Feb 2024. URL: <https://www.deloitte.com/cy/en/services/tax/perspectives/cyprus-tax-facts-2024.html> (date accessed: 25.11.2024).

13 Franking credits / Australian Government. Australian Taxation Office. 23 June 2024. URL: <https://www.ato.gov.au/search-results#q=franking%20credits> (date accessed: 25.11.2024).

14 Tax Credits / IRS. URL: https://www.irs.gov/site-index-search?search=tax+credits&field_pup_historical_1=1&field_pup_historical=1 (date accessed: 25.11.2024).

15 Tax credits and benefits for individuals / Government of Canada. Nov 15 2024. URL: <https://www.canada.ca/en/services/taxes/child-and-family-benefits.html> (date accessed: 25.11.2024).

16 Search GOV.UK / GOV.UK. URL: <https://www.gov.uk/search/all?keywords=double+taxation+immunity&order=updated-newest> (date accessed: 25.11.2024).

17 Worldwide Tax Summaries Online / PWC. Worldwide Tax Summaries. URL: <https://taxsummaries.pwc.com> (date accessed: 25.11.2024) ; Strong action is needed to make retirement systems more inclusive, resilient and innovative : Press release / OECD. 2 Dec 2024. URL: <https://www.oecd.org/en.html> (date accessed: 25.11.2024).

18 Tax Code of Ukraine of Dec 2 2010 No. 2755-VI (as amended and supplemented). URL: <https://zakon.rada.gov.ua/laws/show/2755-17?lang=en> (date accessed: 25.11.2024).

Development (OECD) establish criteria for tax incentives aimed at determining the significance of investments (strategic participation). These criteria primarily include requirements for a minimum level of participation in the capital of the dividend-paying company and a minimum holding period for the shares.

In some countries, an investment value threshold in the dividend-paying company is also applied. For instance, in Belgium, a minimum investment of 2.5 million euros is required to qualify for dividend tax exemption, regardless of the percentage of ownership in the company. Meanwhile, in Luxembourg and Switzerland, an alternative condition allows a minimum investment of 1.2 million euros or 1 million Swiss francs, respectively, provided that the investor holds at least a 10 % participation.

By the way, an interesting and promising approach is seen in Indonesia, where dividends received from abroad can be exempted from taxation if the funds are reinvested in the national economy within a specified period. This approach could potentially not only attract foreign investments into the country but also stimulate the development of the national economy's real sector.

Notable examples also include several other countries where dividends are taxed as income.

**The tax rates on dividend income
in several developed
and developing countries ¹⁹**

Country	Tax rate, %
Ireland	51
Denmark	42
France	30–34

Germany	26.38
Philippines	10–25
Japan	20.32
South Africa	20
Indonesia	10–20
Turkey	15
Russia	13–15
Argentina	7–13
China	10
India	10
Mexico	10
Slovakia	7
Norway	5.2
Greece	5
Armenia	5

One of the most frequently cited arguments against exempting dividends from taxation is that this approach may deepen income inequality, as higher-income households typically have larger capital investments in stocks. Nevertheless, a policy of tax exemption could also encourage middle-class participation in investment processes, enabling broader demographic engagement.

Expanding access to investment opportunities can contribute to a more equitable distribution of capital income, which, in the long term, may reduce income inequality. However, such measures should be complemented by a comprehensive tax policy aimed at reducing overall inequality through alternative taxation mechanisms.

One important consequence of exempting dividends from income tax could be an increase in corporate governance efficiency. When dividends are not subject to income tax, individual shareholders have a stronger incentive to demand that management distribute profits as dividends

19 Strong action URL: <https://www.oecd.org> (date accessed: 25.11.2024) ; Worldwide Tax URL: <https://taxsummaries.pwc.com> (date accessed: 25.11.2024) ; Leading in an evolving tax and business landscape / KPMG. URL: <https://home.kpmg/xx/en/home/services/tax.html> (date accessed: 25.11.2024) ; Welcome to Deloitte International Tax Source / Deloitte. Oct–Nov 2024. URL: <https://www.dits.deloitte.com> (date accessed: 25.11.2024).

rather than reinvest them in less efficient projects.

This approach promotes a more efficient allocation of capital within the company. Logically, companies that have adopted a policy of regular dividend distribution and accordingly distribute their profits tend to demonstrate a higher level of transparency and accountability toward investors.

Thus, *exempting dividends from income tax not only stimulates investment but also enhances corporate governance and ensures a fairer distribution of capital income.*

Based on the analysis presented, the key factors that could influence the adoption of a unique dividend taxation policy in a given country's economy have been identified.

- *Level of Economic Development:* The degree of economic progress significantly impacts the formation of tax policy. Developed economies typically implement more advanced tax systems, which include dividend taxation to ensure state budget replenishment and to stimulate the flow of investments.
- *Risk Component of the Investment Environment:* In countries where the investment environment is stable and balanced, governments often apply favorable conditions for dividend taxation, encouraging capital inflows and economic development. Conversely, in more risky investment environments, dividend taxation may be tightened to create alternative sources of financing.
- *Level of Social Welfare and Social Equity:* In countries with a high standard of living, favorable conditions for dividend taxation may be applied as a tool for social development. Stimulating investments supports economic diversity and welfare, which

contributes to the strengthening of the social component of public policy.

- *Mechanisms for Ensuring Social Equality:* In some countries, tax policy is built on the principles of social equality. Dividend taxation or its absence can contribute to the fairness of resource distribution within society or support the funding of social programs, based on theories of public cohesion.

Conclusions

In light of the above, the issue of unjustified accumulation of capital reflected in companies' financial statements becomes particularly relevant in the context of existing tax legal regulations, especially regarding the implementation of *financial and economic expertise*. This relevance arises from the limited alternative investment options and the economic consequences resulting from the lack of proper documentation for profit distribution (dividend payments) and reinvestment operations in the charter capital.

Avoiding taxation (withholding tax) on dividends paid to individuals participating in the company's capital can constitute a violation of legal regulations. As a result, financial and economic expertise may be initiated and conducted, particularly in cases involving criminal proceedings and bankruptcy court proceedings, to provide an interim evidentiary basis for determining the characteristics of insolvency.

Discussions regarding the methodology for addressing the aforementioned issue in financial and economic expert research are important, as the effective and purposeful reinvestment of capital directly impacts both the company's ability to meet its obligations and its financial stability, as well as the protection of shareholders' interests

and the organization's future development goals.

Discussions regarding the application of methodology in expert research should specifically address the following:

- *Analysis of the Company's Financial Condition:* This includes examining the structure of retained earnings and the dynamics of their accumulation over the years;
- *Analysis of Profit Distribution Policy:* This involves assessing the possibilities for reinvesting profits to clarify future investment opportunities;
- *Assessment of Economic Consequences:* This entails observing the potential negative impacts associated with the mismanagement of accumulated capital and determining the "real insolvency" features of the organization.

Thus, the discussion of the aforementioned issues is crucial at the relevant stages of selecting and applying methodology, ensuring the quality of financial analysis and the reliability of the results of expert research. However, in the subtext of expert opinion, it is important to raise the following question: to what extent is the disproportionate definition and application of liability measures against companies and individuals justified by legal regulations within the framework of tax policy, given the current level of economic development, socio-economic situation, and the ongoing improvement of an adequate tax policy in the Republic of Armenia?

**Щодо питання звільнення
від оподаткування дивідендів,
отриманих фізичними особами
від участі в капіталі компанії**

Карен Мамиконян, Ануш Арутюнян

Розглянуто економічні наслідки, що виникають через непропорційне подвійне оподаткування прибутку підприємств

в умовах правового регулювання. Ці наслідки пов'язані з інвестиційною прозорістю, чинниками ризику в разі залучення інвестицій і, зокрема, з накопиченням необґрунтованого капіталу, відображеного у фінансовій звітності компаній. Особливо це стосується випадків, коли обмежені можливості альтернативного інвестування призводять до розподілу прибутку (виплати дивідендів) і реінвестицій у статутний капітал без належного документального оформлення цих операцій згідно з нормативно-правовими актами. Ухилення від оподаткування (утримання податку з чогось) дивідендів, виплачених фізичним особам, що беруть участь у капіталі компанії, може стати підставою для порушення законодавства. Це може потребувати проведення судових фінансово-економічних експертиз у межах кримінального або судового провадження шляхом постановки спеціальних питань. Однак у контексті викладення висновку експерта наголошено на тому, що відповідальність компаній і фізичних осіб за чинними правовими нормами є несправедливою з огляду на недосконалість податкової політики й наявної нормативно-правової бази. Дискусії щодо методології з'ясування окресленого питання у фінансово-економічних експертних дослідженнях сьогодні є актуальними, оскільки ефективне та цільове реінвестування капіталу безпосередньо впливає як на спроможність компанії виконувати свої зобов'язання й підтримувати фінансову стабільність, так і на захист інтересів акціонерів і майбутні цілі, пов'язані з розвитком організації. Застосовано наукові методи (аналізу та синтезу, узагальнення, логіко-структурний та ін.).

Ключові слова: подвійне оподаткування прибутку; податкова непропорційність; дивіденди; інвестори; накопичення капіталу; податковий кредит; звільнення від оподаткування; фінансово-економічна експертиза.

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Declaration of Competing Interest

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Prospects for Determining the Market Value of Combat Small Arms Based on the Data of Purchase and Sale Agreements in Ukraine

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Development and resolution of an expert task in the course of a forensic commodity examination of military property, equipment, and weapons should be aligned with the requirements for property valuation in Ukraine. The Article's Purpose is to determine the cost of weapons (which is always complicated by the lack of information and legal uncertainty of the market functioning) by analyzing agreements concluded as a result of the procedures for completed public procurement of pistols (general scientific and special methods are employed for this purpose). It has been proven that there is a market for combat small arms in Ukraine. The market participants have been identified and the mixed structure of imperfect competition has been outlined. The similarity of the small arms market in Ukraine to similar arms markets in developed countries has been traced. Having studied the procedure for calculating the residual value of weapons based on the accounting data of institutions and organizations, the author reveals the inconsistency of such valuation procedures with the methodological guidelines established by the legislation. Utilizing research tools for international economic analysis, the article pinpoints the origin of the

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non-market component in the cost of weapons under agreements concluded in the international market, which includes political and protectionist factors and fails to reflect the ratio of supply and demand for the object of valuation in Ukraine. It is recommended that the market value of weapons in Ukraine be determined according to information from completed agreements. To obtain initial price information on completed small arms purchases, it is suggested to use open information from ProZorro.

Keywords: small arms; forensic commodity examination; weapon valuation; residential value; market value; international market.

Research Problem Formulation

Currently, the need to objectively and timely determine the value (valuation) of property is becoming more acute, which is mandatory, specifically for calculating the amount of damage inflicted (subpara. 10, Part 2, Article 7 of the Law of Ukraine *On Appraisal of Property, Property Rights, and Professional Appraisal Activity in Ukraine*).¹, hereinafter referred to as the Law *On Appraisal of Property*). After the beginning of the Russian armed aggression in 2014, Ukraine has faced the need to respond to new military-political and economic threats. Meanwhile, we observe a significant complication of tasks and an increase in requirements for forensic support of law enforcement activities. Since then, one of the priority areas of foren-

sic commodity examination has been the study of military objects.

In response to the above challenges, the Ministry of Justice of Ukraine has classified the forensic examination of military property, equipment, and weapons as a commodity forensic examination since July 31, 2015². Among the objects of study in this area are combat small arms. One of the principal tasks of the new type of forensic examination is to determine the value of objects used as military property³.

Methodological support for valuing all property types by forensic experts must be carried out under the provisions of Part 4, Article 4 of the Law *On Appraisal of Property*⁴, i.e. using the procedures stipulated by regulatory legal acts on property valuation. However, in contrast to valuing

- 1 Про оцінку майна, майнових прав та професійну оціночну діяльність в Україні : Закон України від 12.07.2001 р. № 2658-III (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2658-14#Text> (date accessed: 16.10.2024).
- 2 Зміни до Інструкції про призначення та проведення судових експертиз та експертних досліджень : затв. наказ. Мін'юсту України від 27.07.2015 р. № 1350/5. URL: <https://zakon.rada.gov.ua/laws/show/z0915-15#n329> (date accessed: 16.10.2024).
- 3 Науково-методичні рекомендації з питань підготовки та призначення судових експертиз та експертних досліджень : затв. наказ. Мін'юсту України від 08.10.1998 р. № 53/5 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/z0705-98#Text> (date accessed: 16.10.2024).
- 4 Про оцінку майна ... URL: <https://zakon.rada.gov.ua/laws/show/2658-14#Text> (date accessed: 16.10.2024).

other property types, the process of determining the value of weapons has a number of significant information issues due to both the characteristics of weapons as objects of forensic examination and the specifics of transferring weapon ownership. Along with the lack of information, a substantial drawback in this area is the legal uncertainty of the procedure for alienating weapons in Ukraine.

Under such conditions, it is impossible to use separate approaches, methods, and valuation procedures to determine the cost of weapons. The search for ways to solve the specified issue has resulted in a compromise manifested as a commodity study based on accounting data (determination of residual value) or using agreements in the international market (determination of market value relying on agreements outside state jurisdiction).

Even with the availability of the required information base, we should state that these decisions also have shortcomings that can call into question forensic examination results. Therefore (in view of the need for an objective and reliable valuation of weapons, the availability of practical experience in this area, and the ability to distinguish information based on agreements in the Ukrainian domestic market), scientific rationale for the expert task of determining the value of weapons

is one of the priority tasks of expert support to justice.

Analysis of Essential Researches and Publications

Since forensic commodity examination of military property, equipment, and weapons was introduced not so long ago, its scientific development is still at the stage of formation. In a previous research paper ⁵ we emphasized that combat small arms differ fundamentally from consumer goods in terms of cost formation factors, while the application of existing methodological approaches is challenging and markedly complex.

What is more, there are developments of specialists from specialized institutions that are essential for valuation procedure application. Thus, various researchers have suggested a procedure for a multidisciplinary comparative valuation of weapons and military equipment samples using the criterion of “technical excellence – cost – resource” to select the optimal equipment option ⁶; approach to justifying the choice of a comparative analysis method for assessing the technical level of complex technical systems for military purposes ⁷; algorithm for measuring weapon characteristics by constructing

5 Дивнич А. В., Стативка Д. И., Дивнич О. Д. Проблемные аспекты экспертной оценки снятого с производства боевого стрелкового оружия. *Армянский журнал судебной экспертизы и криминалистики*. 2020. № 4. С. 81–88. URL: http://journal.nbe.am/wp-content/uploads/2020/12/Amsagir_042_2020_for-web.pdf (date accessed: 16.10.2024).

6 Нор П. І., Борохвостов І. В. Методика комплексної порівняльної оцінки зразків озброєння та військової техніки. *Озброєння та військова техніка*. 2016. № 3 (11). С. 14–18. URL: http://nbuv.gov.ua/UJRN/ovt_2016_3_4 (date accessed: 16.10.2024).

7 Павленко А. Г. Підхід до обґрунтування вибору методу порівняльного аналізу для оцінки технічного рівня складних технічних систем військового призначення. *Збірник наукових праць Державного науково-дослідного інституту випробувань і сертифікації озброєння та військової техніки*. 2019. Т. 1. № 1. С. 135–142. URL: <https://dndivsovt.com/index.php/journal/article/view/202> (date accessed: 16.10.2024).

a fuzzy valuation model⁸; calculation ratios for estimating the cost of an anti-aircraft missile system at different stages of its life cycle using costing⁹ and the calculation of the cost price for importing property and military-purpose equipment and weapons¹⁰; mathematical model of cost by calculating the combat effectiveness of valuation objects;¹¹ estimation of a unit value of maintenance using the example of unmanned aircraft systems¹²; practical application of the hierarchy analysis method when assessing the technical level of military equipment models¹³, and the development of a methodology for disaggregating complex technical systems and their characteristics to assess the quality of weapons and military equipment¹⁴. These research papers can prove useful in determining the utility parameters

of a forensic object, for example, using a comparative approach.

Let's stress that adequate application of principles, methodological approaches, and valuation procedures when valuing a specific forensic examination object is directly related to a forensic commodity examination. The forensic expert is personally responsible for ensuring its reliability (Article 14 of the Law On Forensic Examination¹⁵). At the same time, the developments of specialists from specialized military institutions reveal military-economic analysis of weapons and military equipment samples and are aimed primarily at comparative analysis when making a choice among several acquisition options. Although they use a comparative approach, the market value is one of the set values (output parameters). In addition, the objective of the

- 8 Білокур М. О. Функціональне відображення значень ваг в штучній нейронній мережі визначених властивостей при оцінюванні альтернативних зразків озброєння. *Озброєння та військова техніка*. 2020. № 2. С. 20—31. URL: http://nbuv.gov.ua/UJRN/ovt_2020_2_4 (date accessed: 16.10.2024).
- 9 Ланецький Б. М., Лук'янчук В. В., Ніколаєв І. М., Зубарев О. В. Методичний підхід до оцінювання вартості зенітного ракетного комплексу на різних стадіях життєвого циклу. *Озброєння та військова техніка*. 2021. № 3. С. 12—20. URL: http://nbuv.gov.ua/UJRN/ovt_2021_3_3 (date accessed: 16.10.2024).
- 10 Борохвостов В. К., Рябець О. М., Сушак М. Б. Питання формування ціни на продукцію військового призначення, що закуповується за імпортом. *Озброєння та військова техніка*. 2016. № 3. С. 8—13. URL: http://nbuv.gov.ua/UJRN/ovt_2016_3_3 (date accessed: 16.10.2024).
- 11 Науменко М. Удосконалена математична модель вартості багатоцільових тактичних винищувачів. *Системи озброєння і військова техніка*. 2021. № 1 (65). С. 98—106. DOI: [10.30748/soivt.2021.65.14](https://doi.org/10.30748/soivt.2021.65.14) (date accessed: 16.10.2024).
- 12 Леженін С. І., Стещенко П. М. Методичні особливості оцінювання фінансових витрат у системі вибору альтернативних зразків безпілотних авіаційних комплексів військового призначення. *Збірник наукових праць Державного науково-дослідного інституту авіації*. 2016. Вип. 12. С. 102—108. URL: http://nbuv.gov.ua/UJRN/Znpdndia_2016_12_18 (date accessed: 16.10.2024).
- 13 Романчук Я. П., Сокіл Б. І., Баранов А. В. Використання методу аналізу ієрархій для оцінювання технічного рівня військових автокранів. *Озброєння та військова техніка*. 2021. № 2. С. 35—43. URL: http://nbuv.gov.ua/UJRN/ovt_2021_2_6 (date accessed: 16.10.2024).
- 14 Чуприна В. М., Чередніков О. М., Феденько В. М. Застосування методів декомпозиції при випробуваннях складної військової техніки. *Збірник наукових праць Державного науково-дослідного інституту випробувань і сертифікації озброєння та військової техніки*. 2023. Т. 16. № 2. С. 97—102. DOI: [10.37701/dndivsovt.16.2023.14](https://doi.org/10.37701/dndivsovt.16.2023.14) (date accessed: 16.10.2024).
- 15 Про судову експертизу : Закон України від 25.02.1994 р. № 4038-XII (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/4038-12#Text> (date accessed: 16.10.2024).

analysis is to determine the optimal choice in terms of price / quality criteria. Such market value is either applied as a constant or as a compounding procedure that does not observe the principle of supply and demand as of the valuation date.

Peculiarities of conducting a forensic examination to determine the value of weapons were outlined by V. Bondar ¹⁶ for the first time in domestic industry-specific scientific periodicals (concerning the compliance of the existing information base with the methodological approaches envisaged by national valuation standards). This study justifies the reason for determining the residual value of military property, equipment, and weapons, as well as the possibility of estimating the market value based on international market data.

There is no scientific research on the possibility of determining the market value of small arms based on the data of purchase and sale agreements in Ukraine.

Thus, the scientific development in the field of forensic commodity examination of small arms is still insufficient and requires further development.

Article Purpose

Trace the formulation of an expert task for valuing weapons in Ukraine, study available expert capabilities and prerequisites for current forensic practice.

Providing the example of published agreements for the supply of short-barreled small arms, empirically test possibilities of tackling the information gap in the domestic national market to conduct forensic commodity examinations. Charac-

terize the market participants and summarize its structure.

Critically analyze each of the options for determining the value that are practiced today. Delve into the nature and procedure for estimating the residual value of small arms. Establish the degree to which it corresponds to the real value in monetary terms. Employing research tools of international economic analysis, compare the factors determining the cost of weapons in international markets with the established definition of market value according to the national valuation standard.

Research Methods

General scientific (analysis, synthesis, generalization, description, observation, etc.) and special methods have been applied, specifically international economic analysis tools.

Main Content Presentation

As of today, there are no special legal regulations governing the process of valuing weapons in observance of national standards. Therefore, when solving the issues addressed by the forensic commodity examination of military property, equipment, and weapons regarding determining its value, one should use the general principles for property valuation.

The approximate list of questions addressed by the forensic commodity examination of military property, equipment, and weapons has been supplemented with the following:

16 Бондар В. М. Визначення вартості майна і техніки військового призначення та озброєння. *Криміналістика і судова експертиза*. 2016. Вип. 61. С. 440—450. URL: <https://digest.kndise.gov.ua/wp-content/uploads/2021/06/2016.pdf> (date accessed: 16.10.2024).

- “What is the residual value of an object as of a certain date?”¹⁷;
- “What is the object’s market value of a certain date (considering information provided to the forensic expert regarding purchase and sale agreements for similar objects concluded in the international market)?”¹⁸.

The prerequisite for determining the value as the “equivalent of the valuation object’s cost”, which “is reflected in the probable amount of money”, that is, in “the largest amount of money that the seller can receive and the buyer can agree to pay” (paragraphs 2 and 3 of National Standard No. 1 *General Principles of Valuation of Property and Property Rights*, hereinafter referred to as *National Standard No. 1*)¹⁹, is exchange. Invariance of value estimates can be achieved by adding to the sample agreements that are concluded with the fulfillment of basic conditions:

- absence of exchange restrictions;
- free (“uncoerced”) expression of the will of the parties to an agreement;
- based on the optimality of the agreement according to the criteria for adequate professionalism (“with knowledge of the matter”) of parties’ representatives, expediency (“prudence”) of the agreement, and awareness of the market situation (“after conducting appropriate marketing”).

All other juristic acts in which these conditions are not met usually take into account the influence of third-party (non-market) incentives resulting in a shift in valuations. That is why the market va-

lue of a valuation object, provided that the sample of agreements used in the course of valuation is representative, is the most objective measure of its value.

In view of the above, we examined the agreements concluded as a result of completed public procurement procedures in Ukraine from 27.07.2015 (dates of amendments)²⁰ to 30.06.2024: all published purchases of short-barreled combat small arms (220 tenders with the status of completed procurements, with the indicated current contract amount of UAH 68,368,437.65), belonging to the commodity group ДК 021:2015:35320000-3 *Firearms* (search by lots using the descriptor “pistol”).

It should be pointed out that here we are only studying the existence of facts of concluding and executing arms purchase and sale agreements, data on which are suitable for consideration in the course of forensic examinations. Therefore, we have not separately considered information about the volume of purchases under the agreements.

Procedures with hidden information (with the announcement *Temporarily concealed so that the invaders would not spy*), as well as those that did not contain information about the subject of procurement or did not have an electronic copy of the contract made public, have not been analyzed. The sample includes 79 procurements, including those executed under the following terms:

- public tenders – 24 (including public tenders with peculiarities, pub-

17 Науково-методичні рекомендації URL: <https://zakon.rada.gov.ua/laws/show/z0705-98#Text> (date accessed: 16.10.2024).

18 Там само.

19 Національний стандарт № 1 «Загальні засади оцінки майна і майнових прав»: затв. пост. КМУ від 10.09.2003 р. № 1440 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/1440-2003-п#Text> (date accessed: 16.10.2024).

20 Зміни до Інструкції URL: <https://zakon.rada.gov.ua/laws/show/z0915-15#n329> (date accessed: 16.10.2024).

lic tenders with publication in English);

- sub-threshold procurements – 2;
- procurement without the use of the electronic system (basic) – 24;
- negotiation procedure – 15;
- simplified procedure – 14.

We should note the comparison of the results of public procurement with the usual market conditions. Peculiarities of budget expenditures should be considered. These include, first of all, the general (with some exceptions) prohibition of prepayments (Part 1 of Article 49 of the Budgetary Code of Ukraine ²¹), long payment terms, etc.

The analyzed agreements meet all the conditions of market turnover. The business transaction of purchase and sale envisages that the party (a seller) shall transfer or take an obligation to transfer property (goods) into possession of the other party (a buyer) and the buyer shall accept or take an obligation to accept the property (goods) and to pay a certain amount of money for it (Part 1, Article 655 of the Civil Code of Ukraine ²²). If such an operation is technically possible, economically feasible, and permitted, it observes the principle of “most efficient use”, which should also be borne in mind when determining

the object’s market value (paras. 10 and 13 of National Standard No. 1 ²³). Despite some legal uncertainty and the lack of key principles governing arms trafficking in Ukraine ²⁴, which raises some doubts about the implementation of the *permissibility* criterion ²⁵, representatives of a certain range of subjects (e.g., executors of the state defense procurement contract) are authorized to carry out such business transactions under the Law of Ukraine *On Defense Procurement* ²⁶.

In light of the above-mentioned legal restrictions on the purchase of weapons, we have identified groups of buyers of pistols based on the procedures of completed public procurements: units of the National Police of Ukraine (NP) – 37 agreements; the National Anti-Corruption Bureau of Ukraine (NABU) – 18 agreements; branches of JSC *Ukrzaliznytsia* (UZ) – 9 deals; educational institutions (EIs) – 8 agreements; critical infrastructure enterprises (excluding JSC *Ukrzaliznytsia* and post offices) (CIE) – 2 agreements; national postal operator (Ukrposhta/UP) – 2 agreements; units of the State Administration of Affairs (SAA), the Security Service of Ukraine (SSU) and the Specialized Scientific and Production Association (SSPA) – 1 agreement each (see Fig. 1).

21 Бюджетний кодекс України від 08.07.2010 р. № 2456-VI (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2456-17#Text> (date accessed: 16.10.2024).

22 Цивільний кодекс України від 16.01.2003 р. № 435-IV (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/435-15#Text> (date accessed: 16.10.2024).

23 Національний стандарт № 1 URL: <https://zakon.rada.gov.ua/laws/show/1440-2003-n#Text> (date accessed: 16.10.2024).

24 Літошко В. В. Правове регулювання обігу вогнепальної зброї в Україні: проблеми та перспективи *Нове українське право. Спецвипуск*. 2022. Т. 2. С. 36–41. DOI: 10.51989/NUL.2022.6.2.5 (date accessed: 16.10.2024).

25 Соколов О. С. Перспективи реформування українського законодавства у сфері обігу зброї з урахуванням положень європейських правових актів. *Вісник Луганського державного університету внутрішніх справ імені Е. О. Дідоренка*. 2019. Вип. 4 (88). С. 147–157. DOI: 10.33766/2524-0323.88.147-157 (date accessed: 16.10.2024).

26 Про оборонні закупівлі : Закон України від 17.07.2020 р. № 808-IX (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/808-20#Text> (date accessed: 16.10.2024).

Each of these buyers, as an independent budget holder, concluded an agreement or had the opportunity to purchase from several sellers during the analyzed period (National Research and Production Association *Fort* of the Ukrainian Ministry of Internal Affairs, *Ibis* LLC, *Tactical Systems* LLC, *Everford* LLC, *Strelchuk O. M. IE*, *Europe Arm Sport* LLC, *Phobos* PE). Such a decentralized structure of arms supply has been formed in developed countries as well. For instance, in the United States, which is a leader in the arms trade, procurement is carried out by the individual military services within the Department of Defense. Each service has its own budget ²⁷.

The diagram of trade relations shown in Fig. 1 indicates that Ukraine also faces a common scenario where there are few buyers and many sellers: oligopsony.

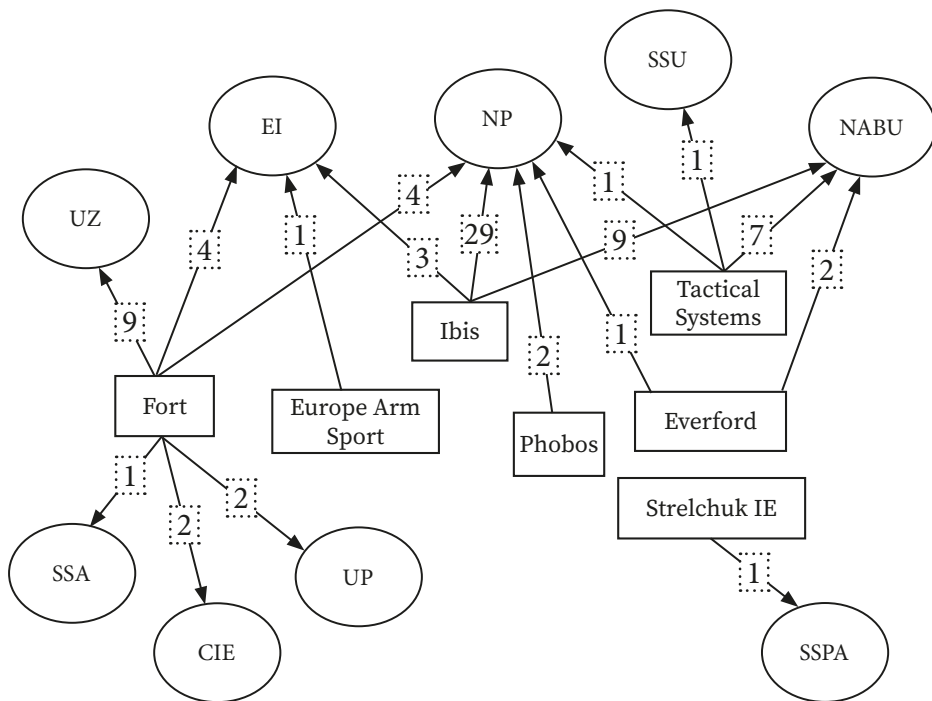


Fig. 1. Relations between buyers and sellers for the supply of combat small arms (using the example of pistols) in Ukraine (31.07.2015 – 30.07.2024) ²⁸

At the same time, a more careful analysis of business transactions demonstrates that the modal value of the number of sellers (in the terminology of the *ProZorro* platform:

²⁷ Ткач І., Синявський В., Яковчук Є., Рудий М., Корчицький В., Сергієнко Р. Аналіз міжнародного досвіду з організації системи державних закупівель озброєння та військової техніки. *Social Development and Security*. 2021. Т. 11. № 2. С. 178–197. DOI: [10.33445/sds.2021.11.2.16](https://doi.org/10.33445/sds.2021.11.2.16) (date accessed: 16.10.2024).

²⁸ Developed by the authors based on the analysis of data from the electronic platform ProZorro: See Модуль аналітики bi.prozorro.org. 12.1. Етап закупівель (всі роки). URL: <https://bi.prozorro.org/sense/app/2595af2b-985f-4771-aa36-2133e1f89df0/overview> (date accessed: 16.10.2024).

“unique lot participants”) was one. That is, oftentimes only one potential participant responds to one purchase offer.

Additionally, the above-mentioned short list of sellers met the needs of almost all buyer groups covered by the study. For instance, the State Research and Production Association *Fort* executed almost 28% of orders, the largest importer *Ibis* LLC – almost 52% (the number of completed purchases in Fig. 1 is indicated by the arrows denoting completed business transactions) corresponding to an oligopolistic market structure.

Let's note that in developed countries, there is also the problem of significant market and political power held by arms manufacturing companies through their interaction with government organizations²⁹.

Therefore, using the example of summarized agreements for the supply of short-barreled weapons (pistols), it can be concluded that there is a hybrid market form characteristic of the arms markets of most developed countries³⁰.

The block diagram of weapons supply, even taking into account only partial disclosure of information in open sources, is sufficient evidence for the existence of a national market for combat small arms characterized by oligopolistic and oligopsonic dynamics.

Conclusions about the characteristics of these market segments can also be drawn from the forensic examination of materials containing information about agreements on other types of weapons.

Despite the available information on the domestic arms market, the prevailing view today is that market transformation in the domestic arms industry is inadequate³¹. Arguments about the inadequacy of modern market infrastructure limit the possibilities of forensic examination of weapons to the post-Soviet practice of determining indicators of the so-called residual value, as well as market value. However, this is done within the framework of agreements on the international market.

Issues of applying the indicator of weapon residual value

The “residual value” term (sometimes also called *book value/carrying value*) is inherited from the administrative-command economy of the former USSR: it means the difference between the initial cost of an object and the amount of its wear. This concept is still leveraged today, for example, in tax accounting. From out perspective, the main problem in defining and further applying the residual value indicator is the following:

- *first*, by failing to take into account the supply/demand ratio for similar new properties in relation to the valuation object at the time of valuation. Usually, the initial cost is considered as a constant value that does not change from the date of registration;
- *secondly*, in determining the amount of wear and tear of the object not in accordance with the actual change in

29 Smith R. P. Defence Acquisition and Procurement: How (Not) to Buy Weapons. Cambridge University Press, 2022. 84 p. DOI: 10.1017/9781009189644 (date accessed: 16.10.2024).

30 Adams W., Adams W. J. The Military-Industrial Complex: A Market Structure Analysis. *The American Economic Review*. 1972. Vol. 62. № 1/2. Pp. 279–287. URL: <http://www.jstor.org/stable/1821553> (date accessed: 16.10.2024).

31 Гулятьєв А. А., Сіренко В. Є., Чернега М. А. Проблеми ціноутворення на продукцію військового призначення та можливі підходи до їхнього розв'язання *Озброєння та військова техніка*. 2017. № 4. С. 11–19. URL: http://nbuv.gov.ua/UJRN/ovt_2017_4_3 (date accessed: 16.10.2024).

its utility, but in conformity with the ratios (percentages of the initial cost) established by legal regulations.

Thus, the Methodology for Determining the Residual Value of the Property of the Armed Forces of Ukraine and Other Military Units (hereinafter referred to as the *Methodology for Determining*)³² outlining the calculation of the cumulative wear-and-tear of weapons according to the storage conditions, level of operation, and actual quality of an object is still in use today. However, only the use of the quality condition coefficient allows, to some extent, for the adjustment of the wear and tear on weapons based on their actual technical condition.

We can clearly point out that the above factors are multicollinear, and their unidirectional influence can either amplify or dampen the response of the dependent cost variable to changes in a particular attribute. What is more, we have already stressed³³ that assuming the same weight (significance) of such factors can lead to almost the same value of the cumulative wear index (CWI):

- 1) an object with “current” storage, 21 years of operation, but with minimal allowable rounds and in excellent technical condition (CWI = 0.72);

- 2) an object after “long-term” storage, 1 year of operation, and with maximum allowable rounds and uninterrupted operation (CWI = 0.7).

That is, the impact of the accumulated error in this method of calculating the residual value significantly distorts valuation results and does not reflect the actual value of the object under study. An example of this practice is court decisions, which demonstrate that the book / residual value of identical small arms samples from the same category varies substantially (see Table).

It should be emphasized that the Methodology for Determining³⁴ considers the possibility of using the purchase price of military property in the past as the cost of its replacement / reproduction. In this case, the residual value calculated under the Methodology for Determining³⁵ contradicts the concept of residual replacement / reproduction value set forth in clause 3 of National Standard No. 1³⁶, according to which the costs of reproduction / replacement should be determined on the date of valuation considering market prices (paragraph 15). Therefore, the results of such a valuation of weapons do not meet the requirements of Article 9 of the Law on Property Valuation³⁷. An analysis of the

32 Методика визначення залишкової вартості майна Збройних Сил України та інших військових формувань : затв. пост. КМУ від 29.05.1998 р. № 759 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/759-98-%D0%BF#Text> (date accessed: 16.10.2024).

33 Дивнич А. В., Статівка Д. І. Узгодження впливу параметрів корисності у моделі вартості стрілецької вогнепальної зброї. *Сучасне матеріалознавство та товарознавство: теорія, практика, освіта* : мат-ли VII Міжнар. наук.-практ. інтернет-конф. (Полтава, 12–13.03.2020). Полтава, 2020. С. 75–78. URL: http://dspace.puet.edu.ua/bitstream/123456789/8517/1/Конф_Сучас_матеріалозн_2020.pdf (date accessed: 16.10.2024).

34 Методика визначення ... URL: <https://zakon.rada.gov.ua/laws/show/759-98-%D0%BF#Text> (date accessed: 16.10.2024).

35 Там само.

36 Національний стандарт № 1 ... URL: <https://zakon.rada.gov.ua/laws/show/1440-2003-п#Text> (date accessed: 16.10.2024).

37 Про оцінку майна ... URL: <https://zakon.rada.gov.ua/laws/show/2658-14#Text> (date accessed: 16.10.2024).

information published in the Unified State Register of Court Decisions ³⁸ has shown that courts, when adopting their decisions, often do not indicate the type of costs on the basis of which the weapons were valued, or the document (expert conclusion, official memorandum, etc.) confirming their cost.

Examples of courts applying the residual and book values of small arms samples

Information source	Price, UAH/unit	Object name, quantity
<i>Examples of residual value application</i>		
Judgment of the Voznesenskyi City District Court of the Mykolaiv Region dated 14.03.2012 in case No. 1407/1 –14/11	87,05	Nagant revolver, 7.62 mm caliber, Category 5 (139 units)
	111,17	TT pistol, 7.62 mm caliber, Category 5 (137 units)
	127,06	TT pistol, 7.62 mm caliber, Category 4 (75 units)
	134,38	PM pistol, 9 mm caliber, Category 4 (98 units)
	179,17	PM pistol, 9 mm caliber, Category 4 (49 units)
	156,77	PM pistol, 9 mm caliber, Category 4 (102 units)
	201,56	PM pistol, 9 mm caliber, Category 4 (1 unit)
	880,70	Walther PP, 7.65 mm caliber, Category 5 (36 units)
	867,37	Walther PP, 9 mm caliber, Category 5 (25 units)
	945,94	Mauser pistol, 7.63 mm caliber, Category 5 (23 units)
	293,57	Mauser pistol, 7.65 mm caliber, Category 5 (9 units)
	708,29	Colt pistol, 11.43 mm caliber, Category 5 (19 units)
	1118,35	Parabellum pistol, 9 mm caliber, Category 5 (22 units)
	1144,71	APS pistol, 9 mm caliber, Category 4 (1 unit)
	671,90	PSM pistol, 5.45 mm caliber, Category 4 (3 units)
	3979,95	SVDN rifle, 7.62 mm caliber, Category 5
	4238,86	SVDN-2 rifle, 7.62 mm caliber, Category 5
	3452,59	SVD rifle, 7.62 mm caliber, Category 4 (3 units)
	297,22	AKMS rifle, 7.62 mm caliber, Category 4 (2 units)
	254,76	AKMS rifle, 7.62 mm caliber, Category 4 (3 units)
	457,25	AKS-74U rifle, 5.45 mm caliber, Category 4 (4 units)
	1540,27	MG-42 machine gun, 7.92 mm caliber, Category 2
Judgment of the Apostolivskyi District Court of Dnipropetrovsk Region dated 05/26/2022 in case No. 171/606/22	6260,84	AKS-74 rifle
<i>Example of book value application</i>		
Ruling by the investigating judge of the Zavodsky District Court of Mykolaiv dated 06/10/2022 in case No. 487/1723/22	216,00	PM pistol with 2 mags

38 Єдиний державний реєстр судових рішень : офіц. сайт. URL: <https://reyestr.court.gov.ua/> (date accessed: 16.10.2024).

The decisions (*see Table*) showing the residual and book value of weapons in cases of theft and loss of military property disregard paragraph 2 of the Procedure for Determining the Amount of Damage Resulting from the Theft, Shortage, Destruction (Damage) of Material Assets, which states that “*the amount of damage <...> shall be determined by conducting an independent valuation*”³⁹, i.e. taking into account the provisions of para. 5 of Article 9 of the Law On Appraisal of Property⁴⁰ and by assessing the market value of property.

Therefore, the current practice of determining the residual value based on accounting data does not meet the requirements of current legislation.

The issue of applying market value considering agreements in the international market

Until recently, the scientific community believed⁴¹ that concealing information about agreements would make it possible to conduct marketing research on defense products in Ukraine. It was argued that such analysis could be conducted only in foreign markets.

Agreements made in the international market should be divided into those concluded with Ukrainian resident entities and those concluded without their participation.

In this respect, it should be promptly highlighted that agreements concluded

without the participation of Ukrainian residents and outside the jurisdiction of Ukraine are not applicable. The main terms and conditions (in particular, the price) stipulated therein are formed under the influence of factors other than the economic and legal factors of Ukraine.

On the other hand, even in international agreements which participants are Ukrainian residents, prices and conditions of the global market are applied (Part 1, Article 14 of the Law of Ukraine *On Prices and Pricing*⁴²). That is, unlike the economic and legal environment of Ukraine, a similar internal discrepancy in prices specified in foreign trade contracts has not yet been resolved.

Moreover, the inconsistency in the content of agreements concluded in the international market is currently accompanied by a complete decline in foreign economic activity in the field of arms exports.

For instance, exports of all types of combat small arms peaked in 2010–2012. With the onset of the Russian-Ukrainian war in 2014, the number of weapons sold on the foreign market decreased drastically. After Russia fully invaded Ukraine, exports ceased, with the exception of 18 units sold in 2022 in the *revolvers and pistols* category (*see Fig. 2*). Therefore, at this time, it is not possible to provide a sample of price values based on international market agreements.

39 Порядок визначення розміру збитків від розкрадання, нестачі, знищення (псування) матеріальних цінностей : затв. пост. КМУ від 22.01.1996 р. № 116 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/116-96-п#Text> (date accessed: 16.10.2024).

40 Про оцінку майна ... URL: <https://zakon.rada.gov.ua/laws/show/2658-14#Text> (date accessed: 16.10.2024).

41 Іванова І. М. Особливості формування вартості продукції оборонного призначення. *Стратегічні пріоритети*. 2016. № 2. С. 82–87. URL: http://nbuv.gov.ua/UJRN/spa_2016_2_11 (date accessed: 16.10.2024).

42 Про ціни і ціноутворення : Закон України від 21.06.2012 р. № 5007-VI (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/5007-17#Text> (date accessed: 16.10.2024).

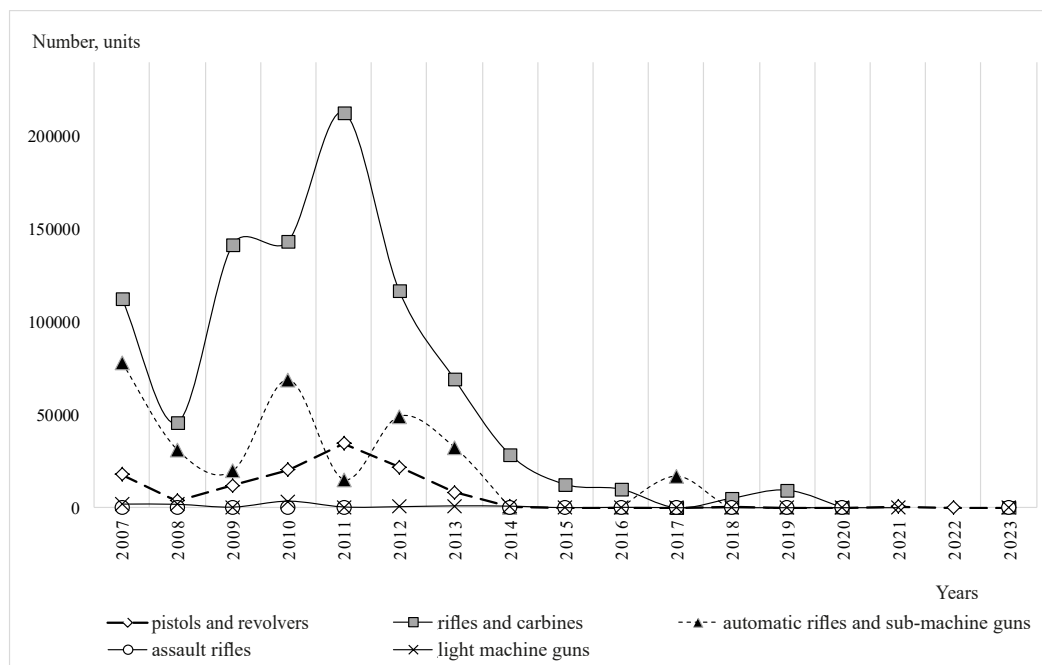


Fig. 2. Export of firearms and small arms by Ukraine (2007 –2023) ⁴³

A separate expert task is resolving the issue of comparing weapons that are the subject of international agreements with the object of valuation submitted for a forensic examination. Recognizing these goods as similar property requires accurate information about materials and production technology.

Along with the degree of utility, recognizing the value parameters of weapon samples relying on the similarity criterion is also complicated. Forensic experts should bare in mind that the price of weapon samples offered in the international market is often shaped by:

- reasoning about political expediency, since “the participants in the

international arms market are actually not individual economic entities, but states or even power blocs” ⁴⁴. This is related to the state of international economic relations between counterparts. Among the constructivist, liberal, and realist theories of international relations, the arguments in favor of constructivism are quantitatively confirmed, based on judgments about shared identity, belief in a clear link between security and economic cooperation, and only in certain cases the hypotheses about agreements that stem from practical (realistic) principles or

⁴³ Prepared by the authors using data from the State Service for Export Control of Ukraine: See *Обсяги міжнародних передач озброєнь 2007—2023 / Держслужба експортного контролю України : офіц. сайт.* URL: <https://www.dsecu.gov.ua/ua/obsiagy-peredach-ozbroyen> (date accessed: 16.10.2024).

⁴⁴ Dunne J. P., Sköns E. The Military Industrial Complex. *Working Papers*. 2009. No. 907. 17 p. URL: <http://carecon.org.uk/DPs/0907.pdf> (date accessed: 16.10.2024).

free market principles (liberalism) are confirmed ⁴⁵;

- subsidizing production ⁴⁶ to improve price competitiveness in the market (sometimes for dumping). Because the beneficiaries of arms transfers are states, not individual economic entities, World Trade Organization rules do not apply to such agreements;
- protectionism of national regulatory authorities, which, by introducing protective customs barriers, import licensing procedures, etc., are trying to provide additional economic incentives to their own manufacturers ⁴⁷;
- exerting pressure on the global arms market through so-called “gray” (without official notification of deliveries) and “black” (illegal) exports, while measures to counter the proliferation of illegal arms are failing ⁴⁸;
- sanctions on international arms transfers to individual states. To date, no algorithm has been developed to detect and subsequently adjust the amount of the markup to market value in case of “atypical”

motivation of the buyer state. For instance, the existence of schemes to violate the international arms embargo on weapons or their components has been repeatedly disclosed (for example, the supply of weapons to Russia ⁴⁹). Since international economic sanctions disrupt trade relations not only between the initiator and the target country, but also between a substantial number of third parties, so-called sanctions opportunism is often observed ⁵⁰. Under such circumstances, with the increase in the risks of revelation, a “special interest of the buyer” arises, which leads to the increase in market value, transforming into the so-called special value. Therefore, taking into account such agreements in the market analysis is methodologically incorrect and leads to a bias in valuation.

More and more arms transfer agreements now stipulate subjects of a complex nature, which makes it difficult for a researcher to separate the cost of the actual weapon from the contract price. According to the global trend, foreign economic arms contracts are concluded in the form

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- 45 Willardson S. L., Johnson R. A. Arms transfers and international relations theory: Situating military aircraft sales in the broader IR context. *Conflict Management and Peace Science*. 2022. Vol. 39. Is. 2. Pp. 191–213. DOI: [10.1177/0738894221992034](https://doi.org/10.1177/0738894221992034) (date accessed: 16.10.2024).
- 46 García Alonso M. C. Price competition in a model of arms trade. *Defence and Peace Economics*. 1999. Vol. 10 (3). Pp. 273–303. DOI: [10.1080/10430719908404927](https://doi.org/10.1080/10430719908404927) (date accessed: 16.10.2024).
- 47 Anicetti J. Paying the buyer: from one off defense offsets to strategic alliances. Florence : EUI, 2022. URL: <https://hdl.handle.net/1814/73767> (date accessed: 16.10.2024).
- 48 Wisotzki S. Efforts to curb the proliferation of small arms and light weapons: from persistent crisis to norm failure? *Z Friedens und Konfliktforsch.* 2021. Vol. 10. Pp. 247–271. DOI: [10.1007/s42597-022-00073-9](https://doi.org/10.1007/s42597-022-00073-9) (date accessed: 16.10.2024).
- 49 Денков Д., Мірошніченко Б. Діряве ембарго. Як Росія обходить санкції на імпорту зброї / Українська правда. 22.04.2022. URL: <https://www.epravda.com.ua/publications/2022/04/22/686100/> (date accessed: 16.10.2024).
- 50 Preble K. A. Economic Sanctions and Opportunism : Abstract of Ph. D. Thesis. Albany, 2021. 24 p. URL: <https://www.proquest.com/openview/c973f76928e66c4a06bfd7d757567898/1?pq-origsite=gscholar&cbl=18750&diss=y> (date accessed: 16.10.2024).

of offset agreements. The subject of the contract is supplemented by the condition of technology transfer⁵¹ and creation of own production facilities in the territory of the importing country⁵². The logic of the choice between purchasing ready-made weapons and concluding an offset agreement lies in the alternative of obtaining benefits in the short and long term, respectively⁵³.

Obviously, such offset agreements do not follow the similarity criterion and cannot be taken into account while a forensic commodity examination. However, in the context of a priori limited access to the content of agreements or possible classification of their part on technology exports, if only the price and volume of delivery of goods are disclosed, it is possible that the valuation of arms samples may be biased and, accordingly, an expert error may occur.

Overall, accounting for information based on agreements in the international market has certain peculiarities, since the price of weapons is not formed under the influence of purely economic factors. The specificity of arms as a commodity group lies primarily in the fact that there is no income from their purchase. In fact, the incentive to spend on arms is the increase in socio-political risks accompanied by a substantial impact of external factors (externalities). That is why the cost of arms in international transfers will always include a non-market component.

Instead, research based on prices formed in the national economic envi-

ronment and within the jurisdiction of Ukraine is possible due to the concentration of information within agreements on the domestic market.

A summary of possible scenarios for determining the cost of small arms is shown in Fig. 3.

Conclusions

Under the current conditions of information deficiency and legal uncertainty of the arms market functioning in Ukraine, the recommended expert task for valuing weapons is to estimate the residual value and market value, considering agreements on the international market.

Meanwhile, the results of a forensic commodity examination of weapons may have biased estimates when addressing these issues. Determination of the residual value based on the accounting data of institutions (organizations) whose balance sheet includes the relevant property is not methodologically sound, since the initial data for the calculation — the value of the initial cost and the amount of wear — do not reflect the actual value of the valuation object.

Market value assessment of small arms based on agreements on the international market may include a non-market component due to political or protectionist measures. Such market data do not reflect the influence of value-forming economic and legal factors in Ukraine and notably narrows the analytical framework and forensic examination capabilities.

51 Anicetti J. Defence offsets and the global arms trade: explaining cross-national variations. *European University Institute*. 2024. DOI: 10.2870/30303 (date accessed: 16.10.2024).

52 Чепков І. Б., Зубарев В. В., Свергунов О. О. Глобальні тенденції розвитку офсетної політики при експорті / імпорті озброєнь. *Озброєння та військова техніка*. 2016. № 3. С. 3–7. URL: http://nbuv.gov.ua/UJRN/ovt_2016_3_2 (date accessed: 16.10.2024).

53 Palavenis D. Offset versus off-the-shelf in arms procurement: the Boxer infantry fighting vehicle in Lithuania as a case study. *Journal of Baltic Studies*. 2021. Vol. 52. Is. 4. Pp. 565–584. DOI: 10.1080/01629778.2021.1969421 (date accessed: 16.10.2024).

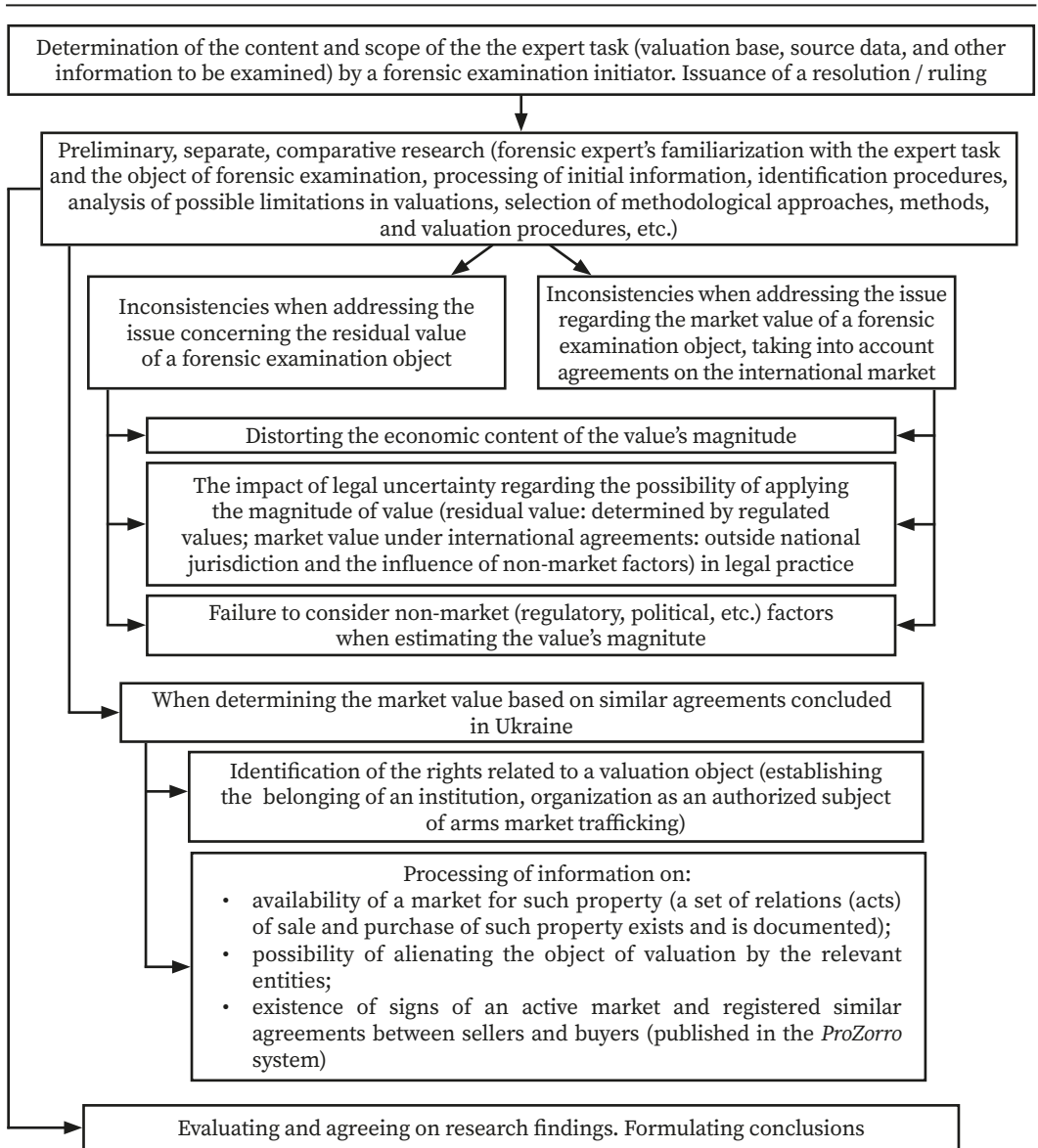


Fig. 3. Algorithm for bridging the gaps in determining the cost of weapons (in conformity with the requirements of clauses 50 and 51 of National Standard No. 1⁵⁵ and Section IV of the Instructions on the Organization of Conducting and Registration of Expert Proceedings in Units of the Expert Service of the Ministry of Internal Affairs of Ukraine ⁵⁶)

55 Національний стандарт № 1 URL: <https://zakon.rada.gov.ua/laws/show/1440-2003-п#Text> (date accessed: 16.10.2024).

56 Інструкція з організації проведення та оформлення експертних проваджень у підрозділах Експертної служби Міністерства внутрішніх справ України : затв. наказ. МВС України від 17.07.2017 р. № 591. URL: <https://zakon.rada.gov.ua/laws/show/z1024-17#Text> (date accessed: 16.10.2024).

The issue of analyzing information on international market agreements disappears if a sample of price values is studied within the existing domestic market of Ukraine. The latter is characterized as an imperfectly competitive market, the structure of which corresponds to the arms markets of developed countries. The corresponding initial price regarding agreements for completed purchases is displayed on the *ProZorro* resource.

To ensure the results of small arms valuation are consistent with mandatory national standards, we recommend asking a forensic expert questions about the market value of the object based on similar agreements concluded in Ukraine.

**Перспективи визначення
ринкової вартості
бойової стрілецької
вогнепальної зброї
за даними угод купівлі-продажу
в Україні**

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Формувати та виконувати експертне завдання під час проведення товарознавчої експертизи військового майна, техніки й озброєння потрібно з урахуванням вимог до оцінки майна в Україні. Метою статті є визначення вартості зброї (що завжди ускладнено нестачею інформації та правовою невизначеністю функціонування ринку) за допомогою аналізування угод, укладених за результатами процедур завершених публічних закупівель пістолетів (для чого застосовано загальнонаукові та спеціальні методи). Доведено існування ринку бойової стрілецької вогнепальної зброї в Україні. Виокремлено суб'єктів ринку та схарактеризовано змішану структуру недосконалої конкуренції. З'ясовано подібність ринку стрілецької зброї в Україні до аналогічних ринків зброї в розвинених країнах. Дослідженням

порядку обчислення залишкової вартості зброї на підставі облікових даних установ і організацій визначено невідповідність таких оцінних процедур законодавчо закріпленим методологічним вимогам. Із застосуванням дослідницького інструментарію міжнародного економічного аналізу визначено походження неринкової компоненти у вартості зброї за укладеними на міжнародному ринку угодами, яка містить політичні та протекціоністські чинники й не відображає співвідношення попиту та пропозиції на об'єкт оцінки в Україні. Рекомендовано визначати ринкову вартість зброї в Україні на підставі інформації про завершені угоди. Для отримання вихідної цінової інформації про завершені закупівлі стрілецької зброї запропоновано послуговуватися відкритими відомостями з інтернет-ресурсу *ProZorro*.

Ключові слова: стрілецька зброя; товарознавча експертиза; оцінка зброї; залишкова вартість; ринкова вартість; міжнародний ринок.

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Declaration of Competing Interest

Authors declare no conflict of interest.

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Legal Principles of Justice Administration: Implementing the European Union's Experience into Ukrainian Legislation

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The research paper's purpose is to analyze the legal framework for administering justice in the European Union from the standpoint of justice principles enshrined in various legal regulations (and their actual implementation as reflected in the practice of the Court of Justice of the European Union and the European Court of Human Rights) as a component of general law principles, and to compare them with the corresponding provisions of current Ukrainian legislation. To fulfill the goal, a systematic approach was chosen from general scientific and special scientific methods; the ones most widely applied are: historical-legal, formal-legal, systemic-structural, and comparative-legal. The paper presents a systematic analysis of the current legislation and case-law of the European Union and Ukraine, singling out the principles of justice administration and the current legal positions of the courts on their application and protection. The author pinpoints that there is a high correlation between individual principles of justice within their system and suggests that the principles of justice should be viewed comprehensively, according to the most related groups. From the researcher's perspective, current Ukrainian legislation contains a unified system of basic principles of justice, which meets the European standards, and the national judicial practice of ensuring their observance is developed with due consideration of European case law.

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Keywords: principles of justice; principles of law; European Union; trial; case law; European law sources.

Research Problem Formulation

When considering the legal basis for justice administration, we prioritize the principles of its administration, which in turn are inextricably linked to general law principles.

For instance, V. Komarov et al. distinguish between organizational-functional principles and functional principles. Thus, the organizational and functional principles include the principles of justice administration only by a court based on equality of citizens before the law, independence of judges and their subordination to the law, single-person and collegial consideration of civil cases, the state language of court proceedings, open court. The group of functional ones comprises: the principles of legitimacy, optionality, adversariality, publicity and judicial guidance, procedural equality of parties, three-instance nature and ensuring appeal and cassation appeal of court decisions, orality, immediacy, bindingness of court decisions¹.

Let us stress that modern legal literature contains many classifications of the principles of law both at the level of a single state and within the framework of international law. O. Sniherov and N. Filipenko, elaborating on this concept, believe that “the main principles of coordination are: legality; equality of subjects of co-

ordination activity in definition of problematic issues concerning crime and corruption counteraction, development of offers regarding measures directed on their overcoming; independence of each subject during implementation of agreed decisions; responsibility of heads of bodies within their competence for high-quality and timely implementation of agreed measures; publicity of coordination activities, publication of working results in the media within the framework that do not contradict the requirements of the legislation on protection of human and civil rights, freedoms, state and other secrets”².

As stated by V. Baraniak, the principles of interaction between an investigator and a forensic expert (in the context of organizational support principles for law enforcement and law application activities) presuppose:

- the principle of legitimacy. That is, the interaction between an investigator and a forensic expert should stem from clear legal regulation and be carried out according to the competence of each of them;
- the principle of purposefulness. Interaction purposes can be both successful conduct of an individual investigative action (e.g., conducting an interrogation in the presence and with the participation of a forensic expert), and obtaining information (e.g., in the form of new materials required for

1 Комаров В. В., Бігун В. А., Баранкова В. В. та ін. Курс цивільного процесу / за ред. В. В. Комарова. Харків, 2011. С. 124. URL: <https://files.znu.edu.ua/files/Bibliobooks/Inshi44/0033905.pdf> (date accessed: 20.08.2024).

2 Снігерьев О. П., Філіпенко Н. Є. Окремі питання взаємодії та координування роботи судово-експертних установ України з іншими суб'єктами під час здійснення превентивної діяльності *Теорія та практика судової експертизи і криміналістики*. 2020. Вип. 21. С. 201–202. DOI: [10.32353/khrife.1.2020.13](https://doi.org/10.32353/khrife.1.2020.13) (date accessed: 20.08.2024).

providing a conclusion), and ultimately: criminal offense investigation;

- *the principle of role differentiation;*
- *the principle of coherence”³.*

We agree with the classification proposed by A. Kolodii. It states that the principle of justice is a component of law enforcement principles, similar to the principle of legal liability⁴.

In our opinion, it is quite appropriate that belonging of the principles of justice to the law enforcement sector reflects their legal nature and principal task: protection of the violated right and legally protected interest of a person who has applied to the court for such protection. Within the European Union's (hereinafter referred to as the EU) justice system, its principles contribute to harmonization of legal rules of its Member States, ensure their uniform interpretation, and fill gaps in legislation.

Therefore, the study of justice administration principles in the EU, their correlation with each other, and their causal relationship in the event of a violation will lead to the development of a single stable system and the revelation of the legal nature of such principles, which consequently will accelerate the integration of European standards into the national judicial system and enhance the efficiency of their application during justice administration.

Article Purpose

Analyze the legal grounds for justice administration in the EU set forth in the current

EU legal regulations and peculiarities of their actual implementation outlined in the practice of the Court of Justice of the European Union (hereinafter referred to as the CJEU) and the European Court of Human Rights (hereinafter referred to as the ECtHR), with the intention of forming their system. Determine correlation between them and conformity of Ukrainian legislation with these European standards.

Research Methods

Given the peculiarities of the purpose, the author chose a systematic approach and applied general scientific and special scientific research methods: *historical and legal* (contributed to the retrospective analysis on the formation and classification of the principles of justice); *systemic and structural* (employed for a systematic consideration of the principles of justice as a component of general law principles); *formal legal* (laid the groundwork for the disclosure of certain legal concepts); *comparative legal* (helped to compare the content and implementation of certain principles of justice in order to establish the fact of their correlation).

Applying these methods helped to validate and clarify the scientific findings and recommendations of this scientific study.

Analysis of Essential Researches and Publications

Legal principles for justice administration in the EU were analyzed by domestic

3 Бараняк В. М. Нормативно-правове регулювання, організація і тактика взаємодії слідчого з експертом. *Вісник Національного університету «Львівська політехніка». Серія : Юридичні науки.* 2015. № 813. С. 218. URL: http://nbuv.gov.ua/UJRN/vnulpurn_2015_813_34 (date accessed: 20.08.2024).

4 Колодій А. М. Принципи права: генеза, поняття, класифікація та реалізація *Альманах права.* 2012. Вип. 3. С. 42—46. URL: <http://dspace.nbuv.gov.ua/handle/123456789/63807> (date accessed: 20.08.2024).

(in particular, V. Bryntsev ⁵, V. Komarov ⁶, I. Nazarov ⁷, V. Opryshko at el. ⁸, O. Salenko ⁹, N. Filipenko) and foreign researchers (A. Jose ¹⁰, L. Pech ¹¹, T. Tridimas ¹²) at el. At the same time, taking into account numerous normative sources and the lack of a unified classification, the study of the EU's justice administration principles is still relevant today in terms of enhancing the efficiency of their application to fulfil goals of the judicial system.

Main Content Presentation

It is essential to point out that the EU's principles of justice are a component of many legal regulations. However, there is still no single, universal, exhaustive list of unified rules. In this connection, for the analysis of the consolidation of justice principles in the system of EU legislation sources, the author of this scientific research applied the following differentiation:

- *primary legislation* (EU treaties): the Treaty Establishing the European Community (Treaty Establishing the

European Economic Community; Treaty of Rome, 1957), the Treaty on European Union (Maastricht Treaty, 1992; hereinafter referred to as *the EU Treaty*), the Treaty of Amsterdam amending the EU Treaty, the Treaties establishing the European Communities (Amsterdam Treaty, 1997), the Treaty of Nice amending the Treaty on European Union, the Treaties establishing the European Communities (Nice Treaty, 2001), The Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community (Lisbon Treaty, 2007), the Charter of Fundamental Rights of the European Union (2000; hereinafter referred to as *the Charter*), etc.;

- *EU secondary legislation*: regulations, directives, judgments (decisions);
- *international treaties*: the Convention for the Protection of Human Rights and Fundamental Freedoms (European Convention on Human

- 5 Бринцев В. Д. Стандарти правової держави: втілення у національну модель організаційного забезпечення судової влади : монографія. Харків, 2010. 464 с. URL: https://library.nlu.edu.ua/POLN_TEXT/MONOGRAFIJ_2011/Brincev_2010.pdf (date accessed: 20.08.2024).
- 6 Комаров В. В., Бігун В. А., Баранкова В. В. та ін. Знач. твір. URL: <https://files.znu.edu.ua/files/Bibliobooks/Inshi44/0033905.pdf> (date accessed: 20.08.2024).
- 7 Назаров І. В. Судові системи країн Європейського Союзу та України: генезис та порівняння : монографія. Харків, 2011. 432 с.
- 8 Опришко В. Ф., Омельченко А. В., Фастовець А. Ф. Право Європейського Союзу. Загальна частина. Київ, 2002. 460 с.
- 9 Саленко О. В. Міжнародні стандарти у сфері судустрою та статусу суддів, їх зміст і класифікація. *Національний юридический журнал: теорія і практика*. 2014. № 3. С. 263–269. URL: <http://surl.li/vfdwtm> (date accessed: 20.08.2024).
- 10 Gutiérrez-Fons J. A., Lenaerts K. The constitutional allocation of powers and general principles of EU law. *Common Market Law Review*. 2010. Vol. 47. Is. 6. Pp. 1629–1669. DOI: [10.54648/cola2010069](https://doi.org/10.54648/cola2010069) (date accessed: 20.08.2024)/
- 11 Pech L. The Rule of Law as a Well-Established and Well-Defined Principle of EU Law. *Hague Journal on the Rule of Law*. 2022. Vol. 14. Pp. 107–138. DOI: [10.1007/s40803-022-00176-8](https://doi.org/10.1007/s40803-022-00176-8) (date accessed: 20.08.2024).
- 12 Tridimas T. Fundamental Rights, General Principles of EU Law, and the Charter. *Cambridge Yearbook of European Legal Studies*. 2014. Vol. 16. Pp. 361–392. DOI: [10.1017/S1528887000002676](https://doi.org/10.1017/S1528887000002676) (date accessed: 20.08.2024).

Rights) (hereinafter referred to as *the Convention*), etc.;

- *case law*: judicial practice of the CJEU.

A systematic analysis of the above sources of law has made it feasible to differentiate between the following fundamental principles for justice administration in the EU: rule of law, legitimacy, right to fair trials, independence and impartiality of the judiciary, the principle of access to justice, effective judicial protection, equality before the law, non-discrimination, transparency of the trial and subsidiarity. The list is not comprehensive: principles not mentioned here will be the subject of further research papers.

The principles are closely linked, which follows from the structure of legal regulations in which these principles are enshrined, namely: several principles are often combined in one article; analysis findings are presented by effectively combining interrelated principles in the part where the meaning requires it.

Rule of law and legitimacy

As regards the principle of the rule of law, let us point out that it is mostly set forth in the Preamble to the Charter (which states that the EU is founded on the principles of democracy and the rule of law)¹³.

As for the EU Treaty, it contains two references to the rule of law: it is viewed as the basis of the EU's activities (Article 2, Section I) and as the principle of the EU's activities in the international arena (Article 21, Part 1, Section V)¹⁴.

The Preamble to the Convention enshrines the principles of freedom and the rule of law and interprets them as the common heritage of European states on a par with political traditions and ideals¹⁵.

It should be highlighted that the Charter does not include a direct reference to the principle of legitimacy, but at the same time upholds the principle of equality before the law, which, in our opinion, underlies the principle of legitimacy (Article 20, Section III)¹⁶.

Referring to case law in the context of the rule of law, it is worth quoting the position of the CJEU in the case of *Parti Ecologiste 'Les Verts' v. European Parliament*: “The European Economic Community is a community based on the rule of law, in as much as neither its Member States nor its institutions can avoid a review of the question whether the measures adopted by them are in conformity with the basic constitutional charter, the treaty”¹⁷.

Also significant in this regard is the case of *Internationale Handelsgesellschaft mbH v. Einfuhr – und Vorratsstelle für*

13 Хартія основних прав Європейського Союзу / Євросоюз : офіц. сайт. URL: http://data.europa.eu/eli/treaty/char_2016/oj (date accessed: 20.08.2024).

14 Консолідована версія Договору про Європейський Союз : учин. в Маастрихті 07.02.1992 р. (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/994_b06 (date accessed: 20.08.2024).

15 Конвенція про захист прав людини і основоположних свобод (Європейська конвенція з прав людини) : від 04.11.1950 р. ; ратифік. Законом України від 17.07.1997 р. № 475/97-ВР ; чинна для України з 11.09.1997 р. (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/995_004#Text (date accessed: 20.08.2024).

16 Хартія основних прав URL: http://data.europa.eu/eli/treaty/char_2016/oj (date accessed: 20.08.2024).

17 *Parti écologiste “Les Verts” v European Parliament. Action for annulment – Information campaign for the elections to the European Parliament. Case 294/83 . Judgment of the Court of 23 April 1986.* URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A61983CJ0294> (date accessed: 20.08.2024).

Getreide und Futtermittel, in which *Internationale Handelsgesellschaft* challenged the decision of the German authorities acting in conformity with European Economic Community regulations, regarding the import of grain, claiming that the regulations applied violated its economic rights and principles enshrined in the Basic Law (Constitution) of Germany. The Court stated in its decision that “the law stemming from the treaty, an independent source of law, cannot because of its very nature be overridden by rules of national law, however framed, without being deprived of its character as community law and without the legal basis of the community itself being called in question”¹⁸, thus affirming the principle of the rule of law in EU law over the national law of the Member States. Consequently, EU regulations and other acts have priority even over the constitutional rules of the Member States.

Current domestic legislation enshrines the principle of the rule of law in

Article 8 of the Constitution of Ukraine¹⁹, Articles 2 and 6 of the Law of Ukraine *On the Judiciary and the Status of Judges*²⁰, Articles 2 and 10 of the Civil Procedure Code of Ukraine²¹, Articles 2 and 11 of the Code of Commercial Procedure of Ukraine²², Articles 2 and 6 of the Code of Administrative Proceedings of Ukraine²³, Articles 7–8 of the Criminal Procedure Code of Ukraine²⁴.

The principle of legitimacy is set forth in Articles 5–6 of the Law *On the Judiciary and the Status of Judges* (which states that justice shall be administered in accordance with the judicial procedures established by law and courts shall administer justice on the basis of the Constitution and the laws of Ukraine), as well as P. 2 Art. 10 of the Civil Procedure Code of Ukraine, Part 2 Art. 11 of the Code of Commercial Procedure Of Ukraine, P. 1 Art. 7 of the Code of Administrative Proceedings of Ukraine, Art. 9 of the Criminal Procedure Code of Ukraine²⁵

- 18 *Internationale Handelsgesellschaft mbH v. Einfuhr – und Vorratsstelle für Getreide und Futtermittel*. Case № 11–70. Judgment of the Court of 17 December 1970. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A61970CJ0011> (date accessed: 20.08.2024).
- 19 Конституція України : Закон України від 28.06.1996 р. № 254к/96-ВР (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text> (date accessed: 20.08.2024).
- 20 Про судоустрій і статус суддів : Закон України від 02.06.2016 р. № 1402-VIII (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/1402-19#Text> (date accessed: 20.08.2024).
- 21 Цивільний процесуальний кодекс України від 18.03.2004 р. № 1618-IV (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/1618-15#Text> (date accessed: 20.08.2024).
- 22 Господарський процесуальний кодекс України від 06.11.1991 р. № 1798-XII (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/1798-12#Text> (date accessed: 20.08.2024).
- 23 Кодекс адміністративного судочинства України від 06.07.2005 р. № 2747-IV (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2747-15/ed20240719#Text> (date accessed: 20.08.2024).
- 24 Кримінальний процесуальний кодекс України від 13.04.2012 р. № 4651-VI (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 20.08.2024).
- 25 Цивільний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1618-15#Text> (date accessed: 20.08.2024) ; Господарський процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1798-12#Text> (date accessed: 20.08.2024) ; Кодекс адміністративного URL: <https://zakon.rada.gov.ua/laws/show/2747-15/ed20240719#Text> (date accessed: 20.08.2024) ; Кримінальний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 20.08.2024).

and Art. 7 of the Code of Ukraine on Administrative Offenses²⁶.

As to the current national judicial practice, it is worth mentioning the resolution of the Supreme Court of Ukraine (hereinafter referred to as *the SCU*) dated November 20, 2018 in case No. 910/4722/16, in which the legal position of the ECHR was applied in the case of Ukraine-Tyumen vs. Ukraine²⁷: “The principle of legitimacy requires the State to afford judicial procedures that offer the necessary procedural guarantees and therefore enable the judiciary to effectively and fairly resolve property disputes and ensure the right to “peaceful enjoyment of property”²⁸.

Furthermore, in its resolution dated May 23, 2018 in case No. 237/1459/17, the Supreme Court adopted a legal position on the application of Article 9 of the Criminal Procedure Code by courts of appeal when deciding whether to initiate appeal proceedings, reflecting the principle of legitimacy in criminal proceedings²⁹.

Right to fair trials, independence and impartiality of the judiciary

The requirement of independence criterion for the formation of the judiciary is contained in Article 19, Section III of the

EU Treaty, which points out that “judges and advocates general of the Court of Justice and judges of the General Court shall be chosen from among persons whose independence is beyond doubt”.³⁰.

Article 47 of Section VI of the Charter states that “everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal previously established by law”³¹.

A similar rule is included in Part 1 of Article 6 of the Convention, under which “everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal established by law”³². In this way, the human right to a fair trial and the principle of independence and impartiality of judges are guaranteed.

The Universal Declaration of Human Rights also requires “a fair and public hearing by an independent and impartial tribunal” (Article 10)³³, and Part 1 of Article 14 of the International Covenant on Civil and Political Rights stipulates the following: “In the determination of any criminal charge against a person, or of his rights and obligations in a suit at law, everyone shall be entitled to a fair and public hearing by

26 Кодекс України про адміністративні правопорушення від 07.12.1984 р. № 80731-X (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/80731-10/ed20240623#Text> (date accessed: 20.08.2024).

27 Справа «Україна-Тюмень» проти України» (заява № 22603/02): ріш. ЄСПЛ від 22.11.2007 р. URL: https://zakon.rada.gov.ua/laws/show/974_595#Text (date accessed: 20.08.2024).

28 Постанова ВС України від 20.11.2018 р. Справа № 910/4722/16. URL: <https://reyestr.court.gov.ua/Review/78378672> (date accessed: 20.08.2024).

29 Постанова ВС України від 23.05.2018 р. Справа № 237/1459/17. URL: <https://reyestr.court.gov.ua/Review/74475877> (date accessed: 20.08.2024).

30 Консолідована редакція URL: http://data.europa.eu/eli/treaty/teu_2016/oj (date accessed: 20.08.2024).

31 Хартія основних прав ... URL: http://data.europa.eu/eli/treaty/char_2016/oj (date accessed: 20.08.2024).

32 Конвенція про захист URL: https://zakon.rada.gov.ua/laws/show/995_004#Text (date accessed: 20.08.2024).

33 Загальна декларація прав людини: прийнята і проголошена резолюцією 217 А (ІІІ) Генеральної Асамблеї ООН від 10.12.1948 р. URL: https://zakon.rada.gov.ua/laws/show/995_015#Text (date accessed: 20.08.2024).

a competent, independent and impartial tribunal”³⁴.

Independence as the judiciary principle is also envisaged in Articles 1 and 2 of the Magna Carta of Judges (fundamental principles) — in particular, in Article 2: “Judicial independence and impartiality are essential prerequisites for the operation of justice”³⁵.

In its judgments, the CJEU has repeatedly emphasized the need for justice to be administered by an independent and impartial court (specifically in the case of *Associação Sindical dos Juizes Portugueses v Tribunal de Contas*): “The concept of independence presupposes, in particular, that the body concerned exercises its judicial functions wholly autonomously, without being subject to any hierarchical constraint or subordinated to any other body and without taking orders or instructions from any source whatsoever, and that it is thus protected against external interventions or pressure liable to impair the independent judgment of its members and to influence their decisions”³⁶.

Ukrainian judges also rely on the ECHR judgment in the case of *Oleksandr Volkov v. Ukraine*. The document stresses

the importance of judicial independence and human rights protection and recognizes the violation of the right to an independent and impartial tribunal³⁷.

In Ukrainian legislation, the principle of the right to a fair trial is envisaged in Articles 2 and 7, Part 7 of Article 56 of the Law On the Judiciary and the Status of Judges, Article 2 of the Civil Procedure Code of Ukraine, the Code Of Commercial Procedure Of Ukraine and the Code of Administrative Proceedings of Ukraine, Part 1 of Article 21 of the Criminal Procedure Code of Ukraine; the independence and impartiality of judges are set forth in Articles 126, 129 of the Constitution, Articles 1, 6, 7 and 48 of the Law On the Judiciary and the Status of Judges, Article 2 and Part 5 of Article 12 of the Civil Procedure Code of Ukraine, Articles 2 and Part 5 of Article 13 of the Code Of Commercial Procedure Of Ukraine, Article 2 of the Code of Administrative Proceedings of Ukraine, Articles 2, 21, Part 6 of Article 22 and Part 2 of Article 23 of Criminal Procedure Code of Ukraine³⁸.

As for judicial practice, we should mention the decision of the Supreme Court’s ruling dated 25.03.2019 in case

34 Міжнародний пакт про громадянські і політичні права : ратифік. Указ. Презид. ВР УРСР від 19.10.1973 р. № 2148-VII (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/995_043#Text (date accessed: 20.08.2024).

35 Consultative Council of European Judges. Magna Carta of Judges (Fundamental Principles). Strasbourg, 17 November 2010. CCJE (2010)3 Final. URL: <https://rm.coe.int/16807482c6> (date accessed: 20.08.2024).

36 Associação Sindical dos Juizes Portugueses v Tribunal de Contas. Case № C-64/16. Judgment of the Court (Grand Chamber) of 27 February 2018. URL: <https://curia.europa.eu/juris/liste.jsf?num=C-64/16> (date accessed: 20.08.2024).

37 Справа «Олександр Волков проти України» (заява № 21722/11) : ріш. ЄСПЛ від 09.04.2013 р. URL: https://zakon.rada.gov.ua/laws/show/974_947#Text (date accessed: 20.08.2024).

38 Про судоустрій URL: <https://zakon.rada.gov.ua/laws/show/1402-19#Text> (date accessed: 20.08.2024) ; Цивільний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1618-15#Text> (date accessed: 20.08.2024) ; Господарський процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1798-12#Text> (date accessed: 20.08.2024) ; Кодекс адміністративного URL: <https://zakon.rada.gov.ua/laws/show/2747-15/ed20240719#Text> (date accessed: 20.08.2024) ; Кримінальний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 20.08.2024) ; Конституція України URL: <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text> (date accessed: 20.08.2024).

No. 1806/2–1093/2011, in which the following legal position on the principle of fair trial was specified: *“Fairness of a trial should be ensured, including in the court’s administration of justice, without a formal approach to considering each individual case.*

*Adherence to the principle of fair trial is highly important during consideration of judicial cases, since its implementation serves as a guarantee that a party, regardless of the level of his/her professional training and understanding of certain requirements of civil proceedings, will be able to ensure the protection of his/her interests”*³⁹.

Access to justice and effective judicial protection

From the author’s perspective, ensuring access to justice is intertwined with effective means of protection. This is because access to justice is, by its legal nature, a fundamental right guaranteeing any person the right to apply to court for protection of his or her violated right. However, if proper, effective judicial protection does not ensure such recourse, a person’s rights and freedoms may be left unprotected, and the right to his/her protection will not be exercised.

That is why formulation of the rule of Art. 47, Section VI of the Charter, which establishes not only the principle of access to justice: *“Everyone is entitled to a fair and public hearing”, “everyone shall have the possibility of being advised, defended”,* but also an efficient method of protection: *“Everyone whose rights and freedoms guaranteed by the law of the Union are*

violated has the right to an effective remedy before a tribunal”, as well as the need to provide legal aid to ensure effective access to justice, is considered to be quite expedient⁴⁰.

Similar provisions are contained in Article 9 of the International Covenant on Civil and Political Rights. As set forth in Part 4: *“Anyone who is deprived of his liberty by arrest or detention shall be entitled to take proceedings before a court, in order that that court may decide without delay on the lawfulness of his detention and order his release if the detention is not lawful”.* This ensures not only the principle of access to justice, but also the principle of effective judicial protection, which consists, in particular, in administering justice expeditiously and protecting human rights⁴¹.

Moreover, Article 13 of the Convention also enshrines the right to efficient judicial protection: *“Everyone whose rights and freedoms as set forth in this Convention are violated shall have an effective remedy before a national authority notwithstanding that the violation has been committed by persons acting in an official capacity”*⁴².

It is appropriate to mention some directives of the European Parliament and the Council when examining means of adopting the principles of access to justice and effective judicial protection:

- Directive 2004/38/EU of the European Parliament and of the Council of 29 April 2004 on the right of citizens of the Union and their family members to move and reside freely within the territory of the Member States

39 Постанова ВС України від 25.03.2019 р. Справа № 1806/2-1093/2011. URL: <https://reyestr.court.gov.ua/Review/80715944> (date accessed: 20.08.2024).

40 Хартія основних прав URL: http://data.europa.eu/eli/treaty/char_2016/oj (date accessed: 20.08.2024).

41 Міжнародний пакт URL: https://zakon.rada.gov.ua/laws/show/995_043#Text (date accessed: 20.08.2024).

42 Конвенція про захист URL: https://zakon.rada.gov.ua/laws/show/995_004#Text (date accessed: 20.08.2024).

stipulates, particularly, the right to legal protection in the event of refusal to issue, cancel, or extend a residence permit ⁴³;

- Directive 2013/32/EU of the European Parliament and of the Council of 26 June 2013 on common procedures for granting and withdrawing international protection (recast) contains provisions on the right to effective legal protection in asylum procedures ⁴⁴;
- Directive 2013/48/EU on the right of access to a lawyer in criminal proceedings and on European arrest warrants stipulates that Member States must provide suspects or accused persons in criminal proceedings, as well as requested persons in proceedings under a European arrest warrant, with effective legal protection under national law in case of a breach of the rights established by this Directive ⁴⁵.

The titles of the above-mentioned documents already indicate that it is essential for the European judicial system to respect not only the independence of the

judiciary, but also the moral and ethical aspects that should ensure an appropriate quality of cooperation, since the lack of mutual respect can lead to conflicts, which in turn can result in disregard for the fundamental principles of legitimacy and respect for the rights and freedoms of a man and citizen ⁴⁶. This opinion is supported by O. Fedkovych, who states that *"in modern conditions the state's responsibility for ensuring access to justice, independence and impartiality of courts, law enforcement and law enforcement agencies, their efficiency and fairness has increased"* and justifies the priority of their approximation to the justice system. As emphasized by the scholar, the Ukrainian legal policy *"should stem from the idea of a holistic approach to the justice system in both functional and organizational aspects, which implies narrowing the gap between the professions of judge, prosecutor, investigator, and forensic expert, while unifying the criteria for selection of staff, their training, retraining and advanced training; developing the basis for the transfer of staff from one legal profession to another, provided that the personnel ideology is unified"* ⁴⁷.

- 43 On the right of citizens of the Union and their family members to move and reside freely within the territory of the Member States amending Regulation (EEC) No 1612/68 and repealing Directives 64/221/EEC, 68/360/EEC, 72/194/EEC, 73/148/EEC, 75/34/EEC, 75/35/EEC, 90/364/EEC, 90/365/EEC and 93/96/EEC (Text with EEA relevance) : Directive 2004/38/EC of the European Parliament and of the Council of 29 April 2004. URL: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex:32004L0038#d1e409-77-1> (date accessed: 20.08.2024).
- 44 On common procedures for granting and withdrawing international protection : Directive 2013/32/EU of the European Parliament and of the Council of 26 June 2013. URL: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex%3A32013L0032#tit_1 (date accessed: 20.08.2024).
- 45 On the right of access to a lawyer in criminal proceedings and in European arrest warrant proceedings, and on the right to have a third party informed upon deprivation of liberty and to communicate with third persons and with consular authorities while deprived of liberty : Directive 2013/48/eu of the European Parliament and of the Council of 22 October 2013. № 2013/48/ЄС. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013L0048#tit_1 (date accessed: 20.08.2024).
- 46 Вільгушинський М. Й. Особливості взаємодії судів із правоохоронними органами. *Наукові записки Інституту законодавства Верховної Ради України*. 2012. № 4 (13). С. 67. URL: http://nbuv.gov.ua/UJRN/Nzizvru_2012_4_16 (date accessed: 20.08.2024).
- 47 Федькович О. В. Роль органів юстиції в організації та забезпеченні функціонування системи правосуддя : дис. ... канд. юрид. наук. Київ, 2007. 222 с.

The decisive factor in ensuring the right of access to a tribunal and effective protection is the decision in *the Unión de Pequeños Agricultores v Council of the European Union* case, which states that “individuals are therefore entitled to effective judicial protection of the rights they derive from the Community legal order, and the right to such protection is one of the general principles of law stemming from the constitutional traditions common to the Member States. That right has also been enshrined in Articles 6 and 13 of the European Convention on Human Rights”⁴⁸.

Let us stress that the Constitution of Ukraine guarantees access to justice, in particular: in Article 8 — appeals to the court in defence of the constitutional rights and freedoms of the individual and citizen; in Article 32 — judicial protection of the right to rectify incorrect information; in Article 55 — everyone is guaranteed the right to challenge in court the decisions, actions or omission of bodies of state power, bodies of local self-government, officials and officers, etc.⁴⁹.

The principle of access to justice is laid down in Part 1 of Article 8 of the Law On the Judiciary and the Status of Judges (“no one may be deprived of the right to have his/her case heard by a court to whose jurisdiction it is as-

signed by procedural law”)⁵⁰, Articles 4 of the Civil Procedure Code of Ukraine and the Code of Commercial Procedure of Ukraine, Article 5 of the Code of Administrative Proceedings of Ukraine, and Article 21 of the Criminal Procedure Code of Ukraine⁵¹.

Effective judicial protection is the goal of civil, commercial, and administrative proceedings (Articles 2 of the Code of Civil Procedure, the Code of Commercial Procedure of Ukraine and the Code of Administrative Proceedings of Ukraine, clause 4 Part 1 Article 34 of the Criminal Procedure Code of Ukraine⁵²).

It should be pointed out that the Supreme Court develops its own legal positions taking into account the ECHR's judgments: for example, in the Supreme Court resolution dated October 18, 2018 in case No. 910/11965/16⁵³, the ECHR's legal position was applied; it secures “the right to have any claim relating to his civil rights and obligations brought before a court or tribunal”, while the “right to a court”, of which the right of access, that is the right to institute proceedings before courts in civil matters, constitutes one aspect. However, that right would be illusory if a Contracting State's domestic legal system allowed a final, binding judicial decision to remain inoperative to the

48 *Unión de Pequeños Agricultores v Council of the European Union*. Case C-50/00 P : Judgment of the Court of 25 July 2002. URL: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62000CJ0050> (date accessed: 20.08.2024).

49 Конституція України URL: <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text> (date accessed: 20.08.2024).

50 Про судоустрій URL: <https://zakon.rada.gov.ua/laws/show/1402-19#Text> (дата звернення: 20.08.2024).

51 Цивільний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1618-15#Text> (date accessed: 20.08.2024) ; Господарський процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1798-12#Text> (date accessed: 20.08.2024) ; Кодекс адміністративного URL: <https://zakon.rada.gov.ua/laws/show/2747-15/ed20240719#Text> (date accessed: 20.08.2024) ; Кримінальний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 20.08.2024).

52 Там само.

53 Постанова ВС України від 18.10.2018 р. Справа № 910/11965/16. URL: <https://reyestr.court.gov.ua/Review/77749354> (date accessed: 20.08.2024).

detriment of one party"⁵⁴. The ECtHR's judgment concluded that the proclamation of access to a judicial authority and the right to court proceedings, without the need for enforcement of a court decision, contradicts the rule of law, which is a clear example of the interlink between the principles of justice, when failure to comply with one of them results in a violation of the other.

Equality before the law and non-discrimination

The principle of equality before the law is concisely implemented in Article 20, Section III of the Charter, Article 7 of the Universal Declaration of Human Rights, and Part 1 of Article 14 of the International Covenant on Civil and Political Rights⁵⁵.

Many provisions of various legal regulations prohibit discrimination, specifically: Article 21, Section III of the Charter (any discrimination based on any ground such as sex, race, colour, ethnic or social origin, genetic features, language,

religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation); Art. 18 (based on nationality) and 19 (based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation) of the EU Treaty; Art. 14 of the Convention (based on sex, race, colour, language, religion, political or other opinion, national or social origin, association with a national minority, property, birth or other status)⁵⁶.

Let us also pinpoint a number of EU Council and European Parliament Directives that directly relate to the principle of non-discrimination (equal treatment): 1) irrespective of racial or ethnic origin⁵⁷ 2) in employment and occupation⁵⁸; for both men and women: access to and supply of goods and services⁵⁹ and non-discrimination in employment and occupation⁶⁰.

Among the resolutions and recommendations of the European Parliament and the Council, the following should be brought

54 Справа «Ромашов проти України» (заява № 67534/01) : ріш. ЄСПЛ від 27.07.2004 р. URL: https://zakon.rada.gov.ua/laws/show/980_227#Text (date accessed: 23.08.2024).

55 Хартія основних прав URL: http://data.europa.eu/eli/treaty/char_2016/oj (date accessed: 20.08.2024) ; Загальна декларація URL: https://zakon.rada.gov.ua/laws/show/995_015#Text (date accessed: 23.08.2024) ; Міжнародний пакт URL: https://zakon.rada.gov.ua/laws/show/995_043#Text (date accessed: 23.08.2024).

56 Хартія основних прав URL: http://data.europa.eu/eli/treaty/char_2016/oj (date accessed: 20.08.2024) ; Консолідована редакція URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12016E/TXT> (date accessed: 20.08.2024) ; Конвенція про захист URL: https://zakon.rada.gov.ua/laws/show/995_004#Text (date accessed: 20.08.2024).

57 Implementing the principle of equal treatment between persons irrespective of racial or ethnic origin : Council Directive 2000/43/EC of 29 June 2000. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32000L0043> (дата звернення: 23.08.2024).

58 Establishing a general framework for equal treatment in employment and occupation : Council Directive 2000/78/EC of 27 November 2000. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32000L0078> (дата звернення: 23.08.2024).

59 Implementing the principle of equal treatment between men and women in the access to and supply of goods and services: Council Directive 2004/113/EC of 13 December 2004. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32004L0113> (date accessed: 23.08.2024).

60 On the implementation of the principle of equal opportunities and equal treatment of men and women in matters of employment and occupation (recast) : Directive 2006/54/EC of the European Parliament and of the Council of 5 July 2006. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32006L0054> (date accessed: 23.08.2024).

into focus: European Parliament Resolution dated 29.05.1990 (90/C 157/01) on the fight against racism and xenophobia⁶¹.

In the judicial practice on equality and non-discrimination, it is appropriate to highlight the judgment in the case of *P v S and Cornwall County Council. Equal treatment for men and women — Dismissal of a transsexual* where it has been explicitly stated that “application of the principle of equal treatment with regard to working conditions, including the conditions governing dismissal, means that men and women shall be guaranteed the same conditions without discrimination on grounds of sex”⁶².

The principle of equality in rights and before the law is contained in Articles 21, 24, and 52 of the Constitution of Ukraine⁶³. Furthermore, the equality of all trial participants before the law and the court is enshrined as a fundamental principle of proceedings in clause 1, Part 1, Article 129 of the Constitution of Ukraine, clause 2, Part 3, Article 2 and Article 6 of the Civil Procedure Code of Ukraine, clause 2, Part 3, Article 2 and Article 7 the Code of Commercial Procedure of Ukraine, clause 2, Part 3, Article 2 and Part 1, Article 8 the

Code of Administrative Proceedings of Ukraine, clause 3, Part 1, Article 7 of the Criminal Procedure Code of Ukraine⁶⁴.

The Law *On the Judiciary and the Status of Judges* comprises several references to the principle of equality before the law and non-discrimination, namely: Part 2 of Article 7 stipulates the foreigners, stateless persons and foreign legal persons shall enjoy the right to judicial protection in Ukraine on an equal footing with citizens and juridical persons of Ukraine; Article 9 envisages that justice in Ukraine shall be administered on the basis of equality of all trial participants before the law and the court, while simultaneously prohibiting discrimination on any grounds and obliging the court to create such conditions under which each trial participant is guaranteed equality⁶⁵. The principle of non-discrimination is also set forth in the current codes: Art. 6 of the Civil Procedure Code of Ukraine, Art. 7 of the Code of Commercial Procedure of Ukraine, Part 2, Art. 8 of the Code of Administrative Proceedings of Ukraine, Art. 10 of the Criminal Procedure Code of Ukraine⁶⁶. We emphasize that current legislation stipulates

61 Resolution of the Council and the Representatives of the Governments of the Member States, Meeting Within the Council of 29 May 1990 on the fight against racism and xenophobia (90/C 157/01). URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:41990X0627&from=PT> (date accessed: 23.08.2024).

62 *P v S and Cornwall County Council. Equal treatment for men and women — Dismissal of a transsexual*. Case C-13/94 : Judgment of the Court of 30 April 1996. URL: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:61994CJ0013> (date accessed: 23.08.2024).

63 Конституція України URL: <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text> (date accessed: 20.08.2024).

64 Там само ; Цивільний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1618-15#Text> (date accessed: 20.08.2024) ; Господарський процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1798-12#Text> (date accessed: 20.08.2024) ; Кодекс адміністративного URL: <https://zakon.rada.gov.ua/laws/show/2747-15/ed20240719#Text> (date accessed: 20.08.2024) ; Кримінальний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 20.08.2024).

65 Про судострій URL: <https://zakon.rada.gov.ua/laws/show/1402-19#Text> (date accessed: 20.08.2024).

66 Цивільний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1618-15#Text> (date accessed: 20.08.2024) ; Господарський процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1798-12#Text> (date accessed: 20.08.2024).

equal rights for trial participants based on language: Part 2 of Article 12 of the Law On the Judiciary and the Status of Judges, Part 2 of Article 9 of the Civil Procedure Code of Ukraine, Part 2 of Article 10 of the Code of Commercial Procedure of Ukraine, Part 2 of Article 15 of the Code of Administrative Proceedings of Ukraine, Article 29 of the Criminal Procedure Code of Ukraine ⁶⁷.

We would like to refer to the decision of the Supreme Court dated 04.07.2019 in case No. 905/1861/16 regarding the observance of the principles of equality before the law and non-discrimination in the current judicial practice. It stresses that any decision of the commercial court shall be adopted in conformity with the principle of equality of all trial participants before the law and the court (under Article 129 of the Constitution of Ukraine ⁶⁸), which means *“ensuring equality of subjective procedural rights of all participants in a trial regardless of their personal qualities (legal status, property status), clarifying the procedural status of trial participants only according to procedural legislation and no other, determining the procedural order for considering cases under a specific procedural form. From a substantive*

point of view, the principle of equality should be viewed as meaning that the substantive law should be applied in the same way to all trial participants (law is the application of the same principles to all individuals)” ⁶⁹.

Transparency of the trial

Within the principle of trial transparency, the Convention envisages that the key point is Part 1 of Article 6 (*“everyone has the right to a fair and public hearing [Emphasis added: D. Barb.] of his/her case”*), which also stipulates that the judgement shall be pronounced in public, together with a statement of grounds, when *“the press and public may be excluded from all or part of the trial in the interests of morals, public order or national security in a democratic society, when the interests of juveniles or the protection of the private life of the parties so require, or to the extent strictly necessary in the opinion of the court in special circumstances where publicity would prejudice the interests of justice”* ⁷⁰.

Part 1 of Article 14 of the International Covenant on Civil and Political Rights contains a similar rule, together with exceptions to these rules ⁷¹: *“All persons shall be equal before the courts and tribunals. In the deter-*

gov.ua/laws/show/1798-12#Text (date accessed: 20.08.2024) ; Кодекс адміністративного URL: <https://zakon.rada.gov.ua/laws/show/2747-15/ed20240719#Text> (date accessed: 20.08.2024) ; Кримінальний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 20.08.2024).

67 Про судоустрій URL: <https://zakon.rada.gov.ua/laws/show/1402-19#Text> (date accessed: 20.08.2024) ; Цивільний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1618-15#Text> (date accessed: 20.08.2024) ; Господарський процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1798-12#Text> (date accessed: 20.08.2024) ; Кодекс адміністративного URL: <https://zakon.rada.gov.ua/laws/show/2747-15/ed20240719#Text> (date accessed: 20.08.2024) ; Кримінальний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 20.08.2024).

68 Конституція України URL: <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text> (date accessed: 20.08.2024)

69 Постанова ВС України від 04.07.2019 р. Справа № 905/1861/16. URL: <https://reyestr.court.gov.ua/Review/82829384> (date accessed: 23.08.2024).

70 Конвенція про захист URL: https://zakon.rada.gov.ua/laws/show/995_004#Text (date accessed: 23.08.2024).

71 Міжнародний пакт URL: https://zakon.rada.gov.ua/laws/show/995_043#Text (date accessed: 23.08.2024).

mination of any criminal charge against him, or of his rights and obligations in a suit at law, everyone shall be entitled to a fair and public hearing <...>. <...> any judgement rendered in a criminal case or in a suit at law shall be made public except where the interest of juvenile persons otherwise requires or the proceedings concern matrimonial disputes or the guardianship of children". The public trial requirement is also set forth in Article 10 of the Universal Declaration of Human Rights ⁷².

The Charter does not explicitly stipulate the principle of trial transparency, but Article 42 outlines the right of access to documents: *"Any citizen of the Union, and any natural or legal person residing or having its registered office in a Member State, has a right of access to documents of the institutions, bodies, offices and agencies of the Union, whatever their medium"* ⁷³. This principle also applies to the justice system since the court is an EU institution.

Let us also mention Article 15 of the EU Treaty which stipulates that the Union's institutions, bodies, offices and agencies *"shall conduct their work as openly as possible"* and have a right of access to documents of the Union's institutions, bodies, offices and agencies, whatever their medium; each institution, body, office or agency shall ensure that its proceedings are transparent and shall elaborate in its own Rules of Procedure specific provisions regarding access to its documents, in accordance with the regulations referred to in Part 2 of Article 15 ⁷⁴.

The case of *K. H. and others v. Slovakia*, where the importance of access to documents for ensuring a fair trial was

emphasized, is also relevant in this aspect. Thus, the applicants argued that the mere possibility to see the files and make handwritten extracts from them did not provide them with sufficient access to corresponding documents on their health. The Court highlighted that *"the originals of the records contained information which the applicants considered important from the point of view of their moral and physical integrity. In particular, the applicants feared that they had been subjected to an intervention affecting their reproductive status. The records would convey not only information about any such intervention, but also whether the applicants had given consent to it and in what circumstances. A typed or handwritten transcript of the records could not faithfully represent the particular features of the original records bearing, in some cases, the applicants' signatures. With photocopies of the records the applicants would not only be able to establish a basis for civil litigation but also to demonstrate to their families and communities, where appropriate, that their infertility was not a result of any deliberate action on their part"*, and concluded that *"the right of access to a court is an inherent aspect of the safeguards enshrined in Article 6. It secures to everyone the right to have a claim relating to his civil rights and obligations brought before a court. Where the individual's access is limited either by operation of law or in fact, the Court will examine whether the limitation imposed impaired the essence of the right and, in particular, whether it pursued a legitimate aim and there was a reasonable relationship of proportionality between the means employed and the aim sought to be achieved"* and accepted the applicants'

72 Загальна декларація URL: https://zakon.rada.gov.ua/laws/show/995_015#Text (date accessed: 23.08.2024).

73 Хартія основних прав URL: http://data.europa.eu/eli/treaty/char_2016/oj (date accessed: 20.08.2024).

74 Консолідована редакція URL: http://data.europa.eu/eli/treaty/tfeu_2016/oj (date accessed: 23.08.2024).

argument that they had been in a state of uncertainty as regards their health and reproductive status following their treatment in the two hospitals concerned and that obtaining the relevant evidence, in particular in the form of photocopies, was essential for an assessment of the position in their cases from the perspective of effectively seeking redress before the courts in respect of any shortcomings in their medical treatment⁷⁵.

Current Ukrainian legislation focuses on ensuring the principle of justice publicity: Article 11 of the Law *On the Judiciary and the Status of Judges* guarantees publicity and openness of the trial (*"court decisions, court hearings and information on cases considered by the court shall be open to the public, except in cases provided by law"*⁷⁶) and includes a link to the Unified State Web Portal of Electronic Services (in particular, the mobile application "Diia") as an alternative method of informing the parties about the case status in court. This is an innovation in current legislation and corresponds to the rapid digitalization of society. What is more, the publicity of a trial is facilitated by the immediate publication of information about the court hearing a case, the parties to the dispute, the subject matter of the claim and the progress of the case in court, open court hearings (except for closed court hear-

ings), permission to record court hearings using technical means, etc., on the official web-portal of the Ukrainian Judiciary.

Publicity and openness of judicial proceedings and their full recording using technical means are enshrined as one of the fundamental principles of judicial proceedings in clauses 3, Parts 3, Articles 2 of the Civil Procedure Code of Ukraine, the Code of Commercial Procedure of Ukraine and the Code of Administrative Proceedings of Ukraine, clause 20, Part 1, Article 7 of the Criminal Procedure Code of Ukraine⁷⁷. Moreover, the publicity of judicial proceedings and the openness of information on a case are outlined in Articles 7 and 8 of the Civil Procedure Code of Ukraine, Articles 8 and 9 of the Code of Commercial Procedure of Ukraine, Articles 10 and 11 of the Code of Administrative Proceedings of Ukraine, Article 27 of the Criminal Procedure Code of Ukraine⁷⁸.

Ukrainian courts of appeal and cassation have repeatedly emphasized the need to observe the principle of transparency and openness of a trial during the proceedings. Thus, in the Supreme Court resolution dated February 22, 2018 in case No. 357/12308/15-k⁷⁹ the court concluded that the rules of current legislation on publicity and recording of a trial using technical means are the fundamental principles of court proceedings, so failure to com-

75 K. H. and others v. Slovakia. Case 32881/04 : Judgment of European Court of Human Rights 28.04.2009. URL: <https://hudoc.echr.coe.int/eng?i=001-92418> (date accessed: 23.08.2024).

76 Про судоустрій URL: <https://zakon.rada.gov.ua/laws/show/1402-19#Text> (date accessed: 20.08.2024).

77 Цивільний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1618-15#Text> (date accessed: 20.08.2024) ; Господарський процесуальний URL: <https://zakon.rada.gov.ua/laws/show/1798-12#Text> (date accessed: 20.08.2024) ; Кодекс адміністративного URL: <https://zakon.rada.gov.ua/laws/show/2747-15/ed20240719#Text> (date accessed: 20.08.2024) ; Кримінальний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 20.08.2024).

78 Там само.

79 Постанова ВС України від 22.02.2018 р. Справа № 357/12308/15-к. URL: <https://reyestr.court.gov.ua/Review/72460326> (date accessed: 20.08.2024).

ply with these provisions is a significant breach of the criminal procedure law requirements and, as set out in clause 1, Part 1, Article 438 of the Criminal Procedure Code of Ukraine⁸⁰, are the grounds for reversing or changing decisions by court of cassation instance.

Subsidiarity

The principle of subsidiarity set out in Article 5 (3) of the EU Treaty concerns the EU's overall activities: *"In areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level"*.

*The institutions of the Union shall apply the principle of subsidiarity as laid down in the Protocol on the application of the principles of subsidiarity and proportionality. National Parliaments ensure compliance with the principle of subsidiarity in accordance with the procedure set out in that Protocol"*⁸¹. This article also obliges each institution to implement the principle of proportionality in accordance with the Protocol on the application of the principles of subsidiarity and proportionality⁸².

Within the ECHR's jurisdiction, the principle of subsidiarity is clearly traced: as envisaged in Part 1 of Article 35 of the Convention, *"the Court may only deal with the matter after all domestic remedies have been exhausted, according to the generally recognized rules of international law, and*

*within a period of four months from the date on which the final decision was taken"*⁸³.

Conclusions

To sum up, the principles of justice in a general sense are essential legal requirements that are both objective and subjective in nature, as these principles have been developed in line with objective reality resulting from the thought process of an individual or group of individuals. The principles shape the form and content of justice on both national and global scales; therefore we deem it highly important that their system ensures respect for the rights and legitimate interests of the parties during court proceedings, along with the adoption of a lawful, fair, and reasoned judgment in a case.

The study demonstrates that justice administration principles as part of the principles of EU law are enshrined in various sources and constitute one system. The analysis confirms the fact of interdependence between the principles of justice, when none of them exists isolation. At the same time, the rules of articles often presuppose the existence of several principles at the same time, confirming this inextricable link. What is more, EU case law also confirms correlation between justice principles, where non-compliance with one of them may result in non-observance of the others. Let us point out that despite this interdependence of justice principles within the system, each of them fulfills its purpose, arising in the administration of justice in general.

80 Кримінальний процесуальний URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 20.08.2024).

81 Консолідована версія Договору URL: https://zakon.rada.gov.ua/laws/card/994_b06 (date accessed: 20.08.2024).

82 Там само.

83 Конвенція про захист URL: https://zakon.rada.gov.ua/laws/show/995_004#Text (date accessed: 20.08.2024).

Stemming from the analysis of current Ukrainian legislation for conformity with the principles of EU justice, which became the subject of this study, it has been shown that they are exhaustively outlined in the Fundamental Law of Ukraine: the Constitution as well as in the Law *On the Judiciary and the Status of Judges* that defines organization of the judiciary and administration of justice in Ukraine. National procedural codes also include a general unified system of basic grounds (principles) for justice. They are more thoroughly discussed in separate articles. The current judicial practice of Ukraine contains detailed legal positions on ensuring conformity with the fundamental principles of court proceedings with regard to both national legislation and the judicial practice of the CJEU and the ECtHR. This in turn promotes the administration of justice in our country on the basis of the rule of law, while respecting European standards to secure everyone's right to a fair trial.

Only through proper adherence to all principles of justice during a trial can the goal of observing the rights and legitimate interests of the parties in the course of proceedings, as well as adopting a lawful, fair, and reasonable decision in a case, be achieved. However, given the strong interdependence within the system, failure to comply with one of the principles may result in a violation of the other. In any case, disregard for at least one of the principles of judicial proceedings may call into question the legitimacy of the entire proceedings and lead to the decision being recognized as not meeting the requirements of the law with its subsequent cancellation.

Let us point out that the topic of justice administration principles retains its significance, given the rapid changes in the judicial system reflecting urgent needs of modern society. Therefore, further study

of the EU's justice administration principles, combined with their appropriate implementation in national legislation, will help accelerate Ukraine's integration into the European community and strengthen the link between the two legal systems in order to protect common social values and achieve goals of their activities.

Наукове забезпечення досудового розслідування втручань у діяльність органів державної влади

Володимир Попов

Мета роботи — визначити стан сучасного наукового забезпечення проблем кримінальної відповідальності й досудового розслідування кримінальних правопорушень, пов'язаних зі втручанням у діяльність представників органів державної влади. Поставлену мету реалізовано завдяки комплексному застосуванню загальнонаукових (аналізу, синтезу й узагальнення), діалектичного, порівняльно-правового, системно-структурного та прогностичного методів. Проаналізовано проблематику наукової розробленості кримінальної відповідальності й розслідування втручання в діяльність представників органів державної влади. Увагу акцентовано на проблемах притягнення особи до кримінальної відповідальності за вчинення кримінальних правопорушень цієї категорії, особливостях їх кримінологічної характеристики, розробленні методів запобігання їм і науково обґрунтованих рекомендацій щодо їх досудового розслідування. Констатовано, що типовим для позначення протиправної діяльності, пов'язаної із будь-яким утручанням у діяльність представників органів державної влади, є такі термінологічні конструкції: «втручання в діяльність» (рідше — «втручання у здійснення повноважень»); «вплив» (або «незаконний вплив»); «перешкодження діяльності». Зважаючи на усталені у правничій літературі підходи запропоновано застосовувати саме термін «втручання в діяльність». З'ясовано, що станом на сьогодні достатньо розроблено лише специфіку притягнення особи до кримінальної відповідальності за вчинення таких правопорушень, а питання криміналістичної характеристики й тактико-організаційних засад їх досудового розслідування

не відповідають належному рівню, особливо зважаючи на актуальні проблеми правозастосовної практики. Окреслено перспективи подальших досліджень у межах порушеної проблематики.

Ключові слова: кримінальне провадження; кримінальна відповідальність; досудове розслідування; втручання в діяльність; орган державної влади; працівник правоохоронного органу; вплив; перешкодження.

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Declaration of Competing Interest

Author declare no conflict of interest.

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Economic and Social Drivers of Cybercrime

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The present paper aims to promote an understanding of relatively recent social phenomena such as cybercrime. Modern global realities of technological advancements and heavy dependence on digital tools emphasize threats cybercrime presents. Therefore, it is important to examine factors driving cybercrime rates to create effective preventive mechanisms. The paper uses regression analysis built on the recently published, first-ever World Cybercrime Index. Cybercrime scores of 94 countries were analyzed based on the effect of 6 predictor variables. Analysis displayed that the degree of economic freedom has an inverse effect on cybercrime scores, and innovation level directly increases cybercrime rates with less probability. It is recommended for researchers interested in the topic to be attentive to future releases of WCI to be able to conduct more massive, time-series analysis.

Keywords: economic factors; cybercrime; regression analysis; economic freedom index.

Introduction

Modern global social and development environments can be described as an era of technological advancements. The daily lives of billions of people are strongly influenced by technology. Most industries and sectors' operations heavily depend on

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computing systems and technological advancements. Such environment promoted the creation of a relatively recent form of delinquency called cybercrime. Cybercrime encompasses a wide range of illegal activities carried out using digital devices or networks. Such activities include various forms of fraud, identity theft, data breaches, computer viruses, scams, and expanded upon in other malicious acts. Similarly to other social occurrences, there are specific reasons and factors driving rates of cybercrime and pushing cybercriminals towards committing illegal activities. It is important to examine the factors influencing the rates of cybercrime across the globe in order to be able to identify conditions encouraging an expansion of digital crimes and prevent them from occurring. Moreover, the economic conditions of people are often one of the main reasons pushing them to commit malicious acts. Additionally, the fields of cyber forensics and criminalistics have become essential in addressing cybercrime. These disciplines focus on the identification, collection, and analysis of digital evidence, which is crucial for tracking cybercriminal activities and developing effective preventive measures. The present research aims to find the relationship between various economic and social factors and the rates of cybercrime across the globe.

Literature Review

One of the most prominent sociological theories that tries to explain social behavior is Rational Choice Theory. Rational choice theory tries to predict human behavior stating that people are rational actors evaluating the cost-benefit of their actions (Abell, 2000; Hechter, 1992; Hodgson, 2012). The theory distinguishes between two main approaches: people maximize manifest payoffs and people maximize

profitability. While the first approach that people maximize manifest payoffs was falsified by empirical analyses, the second claim that society maximizes utility is supported. The utility is unfalsifiable as it is an inherited behavior that can be observed even in non-human organisms. Such wide applicability is perceived as a weakness as it does not account for specificities of history, socio-economic systems, and other distinguishable human factors.

Rational Choice Theory is a great tool for explaining the actions of cybercriminals. Based on the theory, economic benefits are the main driver for people to commit cybercrime (Laszka & Schwartz, 2016; Li & Whinston, 2020; Milgrom & Roberts, 1988). Cybercriminals are accessing the risks of being caught against the financial opportunities they might gain. Li and Whinston (2020) point out that with the development of cyber-currency, the risks of being caught went down as monetary transactions in cryptocurrencies are harder to track. Another factor influencing the actions of cybercriminals is interdependent cybersecurity (Laszka & Schwartz, 2016). If the network security is perceived as weak due to inadequate investments by other users, the perceived costs of engaging in cybercrime are reduced, making it more attractive. Moreover, the rational actions of cybercriminals can also be seen in their reputation management techniques (Holt & Bossler, 2014; Kshetri, 2006). They often honestly return the stolen data after the victims pay a ransom so that future victims will confidently be willing to pay them. Moreover, the lack of law enforcement and international law mechanisms reduces the risks of facing harsh punishments, making such an activity attractive for people seeking economic gains.

Another theory that is applicable to explain cybercrimes is Routine Activity Theory (RAT). RAT is a theory focused

on explaining the patterns in criminal activities (Cohen & Felson, 1979; Felson, 1987; Felson & Clarke, 1998). It shifts its focus from the nature of criminals and concentrates on the environment suitable for crime to occur. RAT emphasizes three key elements for crime to exist: the existence of a motivated criminal, the presence of a suitable target, and the absence of a guardian preventing the crime. Based on the theory, the lack of any of these elements, results in the prevention of crime. The theory explains how daily, routine, actions of people help to bring these three elements together and tries to explore the crime trends. For instance, the Routine Activity Theory explains that the dispersion of activities away from households and families increases opportunities for crime. Also, crime has been rising with the popularization of more durable, light goods, which increased the number of potential targets, and the increase of female labor which raised the absence of unguarded households.

The concept of Routine Activity Theory can be applied to cybercrimes by incorporating its three core pillars of motivated criminals, suitable targets, and absence of guardianship and analyzing their applicability to the scale of cybercrimes (Ahmad & Thurasamy, 2022; Kigerl, 2012; Leukfeldt & Yar, 2016). Existing literature highlights that the most important factor influencing increasing trends of cyberattacks is target visibility. Online routine activities like shopping and banking expose potential targets to criminals. On the other hand, financial gains from a single crime are less significant in predicting the trends as the offenders might exploit the vast accessibility of targets online rather than focusing on high-value individuals. The applicability of RAT to cybercrimes has also been accessed on the international level (Kigerl, 2012). The results displayed that countries with

higher numbers of internet users and loose legal mechanisms against cybercrime are more often encountering cyberattacks. Offenders are more likely to come from places with high unemployment levels and a significant percentage of the population having IT skills.

Unlike Routine Activity Theory, Strain Theory tries to explain the reason for a person to commit delinquencies. Strain Theory is a sociological concept focused on explaining the actions of crimes through the perspective of social influence (Agnew, 1992; Agnew & Brezina, 2019). Unlike other sociological theories focusing on social and individual relations in one's crimes like Social Control Theory and Social Learning Theory, the Strain Theory highlights the negative relations that lead individuals to feel strain due to being treated in undesired ways. Negative relations cause increased negative emotions like anger, which encourages individuals to pursue delinquency as a coping mechanism. The theory emphasizes three main sources of strain: failure to achieve positively valued goals, removal of positively valued stimuli, and presentation of negative stimuli. The theory recognizes that individuals might react to the same environment and conditions differently and suggests possible reasons for a person to copy strain with delinquency: availability of coping resources, individual temperament and personality, social environment, and perceived legitimacy of coping strategies.

General Strain Theory can be useful for explaining the behavior of cybercriminals. Cyberspace can become an effective environment for people to copy their strain (Chism & Steinmetz, 2017; Hay & Ray, 2020). For example, academic failure can lead individuals to pursue cyberbullying as an attempt to feel control and power. Similarly, financial strain can influence one to engage in cybercrimes. A strain for cyber-

crime might also occur for the victims of such cybercrime, who might find committing new cybercrimes a way to copy their negative emotions. Moreover, the empirical evidence supports the application of the Strain Theory to crimes (Hay & Ray, 2020). Research has shown that individuals feeling strain are more likely to engage in some form of cyber offending.

Development theories like the Theory of Economic Development by Joseph A. Schumpeter and the Modernization Theory can suggest a comprehensive basis for understanding the threads between cybercrime patterns and states' economic indicators. Unlike traditional approaches to economic development, Schumpeter (2021) highlights the importance of innovation, entrepreneurship, and banking systems. The first concept explained in his theory is a circular economic flow, which is akin to traditional, steady economic development. This is a system that is regularly kept in equilibrium. For economic development, the author points out that such a circular flow has to be disrupted by innovation, which often damages the steady equilibrium. Talented entrepreneurs who are agents for change and development often need investment which must be done through well-organized credit and banking systems. On the other hand, the Modernization Theory tries to explain the basis of societal changes and the transformation of traditional states to modern ones (Inglehart & Baker, 2000). The Theory puts core emphasis on industrialization which leads to economic development, increased education levels, and changes in gender roles, and social norms.

Entrepreneurship has a significant correlation with the prevalence of cybercrime (Kshetri, 2010; Srivastava et al., 2020). Entrepreneurs create various forms of tech and e-commerce companies that become desired targets for cyberattacks. With the

increase of innovation and development that is based on entrepreneurial activities and innovation, cybercriminals are lured to actively seek financial gains. In this sense, a clear connection can be seen between Schumpeter's Economic Development Theory and Routine Activity Theories. The positive correlation between economic development and increased cybercrime levels can also be explained by Modernization. Arthur (1991) states that "The modernization theory of crime... has assumed that increased criminality is an unavoidable consequence of socioeconomic and industrial development" (p. 1). Such an approach indicates that with the development and modernization of informational technologies, cybercrime levels also increase.

Another theory that enables us to discuss and speculate reasons and patterns of cybercrimes, is Relative Deprivation Theory. The theory is a sociological concept that emphasizes the importance of self-comparison in one's life (Smith et al., 2019; Webber, 2007). The core principles of the theory are rooted in the concept of comparison. Relative Deprivation Theory states that an individual perceives itself in contrast to others, of normative standards imposed by a commune. Despite the objective conditions of a person, he or she might still feel deprived due to not matching expectations or being around people who are perceived as better. The theory has found its usage in various fields including politics, sociology, health, and criminology. Empirical evidence proves that feelings of relative deprivation might lead to psychological and emotional issues. Relative deprivation can lead to a person feeling anger, frustration, and resentment which can manifest in various forms including through passive dissatisfaction or engagement in various forms of social protests, movements, and fights against the perceived injustice.

As relative deprivation leads to various forms of negative emotions, criminal acts might become a coping mechanism for deprived individuals (Kawachi et al., 1999; Mishra & Novakowski, 2016). Intense feelings of anger and frustration are driving factors for individuals to engage in criminal behavior. Under the influence of such emotions, people are more prone to risky, damaging acts. Moreover, a perceived unequal environment leads to the destruction of social communities, which leads to increased levels of crime. Also, relative deprivation happens in terms of perceived socioeconomic inequality; this leads individuals to engage in criminal acts to raise their self-value. A clear line can be drawn between Relative Deprivation and Strain Theories. The negative feelings caused by relative deprivation are similar to those explored in the Strain theory. Relative deprivation can be one of the causes of social strain.

An important theory in explaining the high crime rates that unify cultural, social, and institutional context is the Institutional Anomie Theory (IAT) (Bernburg, 2002; Chamlin & Cochran, 1995; Bjerregaard & Cochran, 2008). IAT is based on the classical Anomie Theory developed by Émile Durkheim and further elaborated by Robert K. Merton. The theory, in its foundations, is focused on instrumental crime in the industrial society of America. Some of the core concepts that Institutional Anomie Theory incorporates are the social position of non-economic institutions, anomie, monetary culture, and economic institutions. The Anomie is an idea borrowed from classical Anomie theory and it refers to the state of normlessness. The theory explains that cultural emphasis on monetary success in combination with weekend non-economic institutions leads to higher rates of instrumental crimes. For anomie not to emerge, along with

strong economic institutions in the state, non-economic institutions such as the family, education, and church must have a strong influence on society to regulate social norms. In a situation where economic institutions overshadow non-economic ones, an individual feels justified in pursuing any means to achieve financial goals. Moreover, the study on the applicability of Institutional Anomie Theory in the cases of cybercrime revealed important insights (Dearden et al., 2021). The research conducted on the 215 self-admitted cybercriminals exposed a curvilinear relationship between Institutional Anomie and cybercrimes which means that both high and low levels of anomie are associated with high cybercrime rates. However, findings showed that a high level of anomie is associated with crimes focused on financial gains such as fraud and scams, while a low anomie level relates to other forms of cyber offenses such as illegal downloads or online drug purchases.

Interactions between political rule and the economic system have been of interest to various economists and social philosophers throughout many centuries. The theories of political economy have been formulated and explored by economists like Adam Smith, Karl Marx, John Maynard Keynes, and others. The essence of the Marxian theory of political economy is the theory of historical materialism (Sweezy, 1943). The theory explains that social superstructures are created fundamentally based on the material conditions of society. Such an idea leads to the assumption that the development of social structures like government, legal and political systems, and ideological systems such as culture, religion, and philosophy is driven by factors like modes of production and the conflicts that arise within them (Albritton, 1993; Heilbroner, 1984; Sweezy, 1943; Rowlinson & Hassard, 2000).

The theory proceeds that the created superstructures can also influence material systems and stabilize the economic base. The theory of political economy addresses complex dynamics of production, distribution, and consumption of goods and services within a society, and how these dynamics are influenced by and influence political decisions, institutions, and structures. In its essence, Marx's work focuses on the inherent issues within the capitalist system. Some of the core ideas of Marxian political economy theory are the labor value and the accumulation of capital. Marx explains that commodity value is determined by the socially necessary time of labor for its creation. However, in the capitalist mode of production, profit is made through the extraction of surplus value from workers which is the difference between the value produced by labor and the wages paid to the laborers. Marx explains that capital accumulation is a process when capitalists reinvest surplus value to create more capital. These two tenets of the capitalist mode of production make the system unstable and prone to issues like underconsumption, overproduction, profit loss, imperialism, and class clash. The government serves primarily as an instrument of the ruling capitalist class, ensuring the conditions necessary for capital accumulation and suppressing challenges to the capitalist order. In his view, the class conflict between the bourgeoisie (capitalist) and proletariat (working class) would inevitably lead to the overthrow of the capitalist mode of production through the revolutionary movements.

The economic issues inherent to the capitalist mode of production also lead to social problems like systemic inequalities, and deprivation of accessible goods for the working class (Chambliss, 1975; Lynch et al., 1994). Lynch et al. (1994) explain that such an environment creates the basis

for the increased crime rates. In Marxian views, people are not inherently prone to committing crimes, but it happens due to the socio-economic environment created in the capitalist system. One of the contradictions that exist in such a system is related to the system's dependence on the mass consumption of goods by the proletariat despite capitalism's nature of keeping the working class's purchasing power low. These conditions encourage the proletariat to access desirable goods by illegal means. Moreover, in Marxist theories, the legal system is constructed to serve the capitalist elite to help them maintain dominance and disparity (Chambliss, 1975). This means that criminal law defines such acts as illegal not because they violate moral norms but because they threaten to destabilize a capitalist system. For instance, laws against theft or vagrancy disproportionately target the poor, while white-collar crimes committed by the bourgeoisie often go unpunished. Also, criminal acts have a functional purpose in capitalism by reducing unemployment; such acts not only create jobs for criminals but also for legal workers like policemen, judges, lawyers, and so on.

The constructed theoretical propositions are based on the Rational Choice, Routine Activity, and Marxian Theory of political economy. These theories explain cybercrime and crime rates from multiple levels of analyses including individual, environmental, and institutional. Based on the Marxian theory of political economy, high levels of socio-economic equality, and a more capitalistic economic structure should lead to increased cybercrime rates (TP1). On the other hand, Rational Choice and Routine Activity theories highlight the importance of other factors like levels of low level of cybersecurity, high rates of technological advancement, and high unemployment rates in determining the high degree of cybercrime (TP2).

Methodology

In the context of understanding economic factors that influence cybercrime rates in various countries, it is important to implement a well-suited research methodology that will comprehensively answer the imposed research question, preventing the nuanced nature of data from hindering the success of the work. The section will provide a blueprint of chosen research methodologies and the reasoning behind them. The research implements a quantitative method of data analysis due to its concrete nature and suitability with RQ and theoretical propositions. The primary method used for this research is cross-sectional regression analyses utilizing data from 94 countries.

Regression analysis is a statistical method used primarily in various fields of social sciences, but primarily in econometrics. The regression tries to find statistically significant effects of independent variables on dependent ones. Linear regression was used to analyze the effects of various economic factors on the cybercrime rate in sample 94 countries. One of the main advantages of using regression analyses is that it is one of the rare research methods that can lead to the assumption of causality and help predict influential variables. However, regression has its disadvantages one of which is the possibility to have violated assumptions. The main assumptions that must be tested before proceeding to the regression itself are heteroskedasticity, autocorrelation, multicollinearity, endogeneity, and normality of distribution.

The main tenant for the analyses is the first-ever World Cybercrime Index (WCI) by Bruce et al. (2024). Although, the WCI included all 197 UN countries, only 96 of them received the overall WCI score. The dependent variable for the regression analyses is based on the overall WCI score

which ranks and evaluates countries based on their contribution to global cybercrime. Countries with 3 or more missing factor variable values were removed, leaving only 94 states for analysis. Since WCI was first ever published in 2024 and there are no other year evaluations available, it is impossible to execute sophisticated panel data or time-series analyses. As stated by Bruce et al. (2024), the data for constructing WCI was collected in 2021. Therefore, independent variables will be based on the data from 2021. 6 independent variables are implemented to test their relationship with the cybercrime index. 5 variables including Unemployment Rate (UR), Global Innovation Index (GII), Cybersecurity Index (GCI), Economic Freedom Index (EFI), and Economic Inequality Index (EII) are primary factor variables focusing on testing theoretical propositions. In addition, one control variable, Gross Domestic Product per capita (GDPc), was implemented to account for other potential influencers. EFI and EII are implemented to test the claims of Marxian political economy theory on the importance of socio-economic factors and economic structure (capitalism) in determining a country's contribution to a global level of cybercrime. The other 3 variables, including UR, GII, and GCI, are focused on testing the Rational Choice and Routine Activity theories.

Empirical Findings

Before proceeding to the regression, it is crucial to test whether the data holds the assumptions necessary for analyses to go smoothly. Some of the most important assumptions for cross-sectional regression are the normality of distribution, no multicollinearity, and homoscedasticity. The Shapiro-Wilk test displays that all of the variables except for the Economic Inequal-

ity Index are not normally distributed (see Appendix, Figure 2). However, it is expected that abnormal distribution is present in the data for the social sciences. Another important assumption testing of no multicollinearity displayed that the Variance Inflation Factor is less than 4 for each variable. This means that the data is not multicollinear (see Appendix, table 5). Finally, the Brausch-Pagan test with a P-value higher than 0.05 (P-value = 0.6452, see Appen-

dix, table 4) fails to reject the null hypothesis of homoscedasticity and adheres to the assumption.

Descriptive statistics

Descriptive statistics summarize key characteristics of the dataset, highlighting insights into data distribution, central tendency, and variance.

Table 1

Descriptive statistics

	UR	GII	GCI	EII	GDPc	EFI	WCI Score
Valid	94	84	94	94	93	93	94
Missing	0	10	0	0	1	1	0
Median	5.371	34.35	80.56	0.57	10.359	62.5	0.465
Mean	7.024	35.601	67.954	0.563	91.775	62.583	3.01
Std. Deviation	4.816	12.776	31.193	0.088	225.015	11.415	8.288
Minimum	0.396	15	1.35	0.39	1.135	5.2	0.08
Maximum	28.77	65.5	100	0.75	977	82.4	58.39

As Table 1 displays, the variable Global Innovation Index has the most missing values. All other variables combined except for GII have 2 missing values combined. The median of the Global Cybersecurity Index highest of all; however, its mean value is lower than the median. GDP per capita displays the greatest disparity between mean and median values with 91,775 and 10,359 respectively. The variable Economic Freedom Index displays the smallest difference between mean and media.

Before proceeding to the regression analysis, it is important to extract the maximum possible details from the given dataset. One of the methods of analysis for understanding the relation between various variables is a correlation test. The correlation test allows us to find variables

that correspond to each other either positively or negatively.

Figure 1

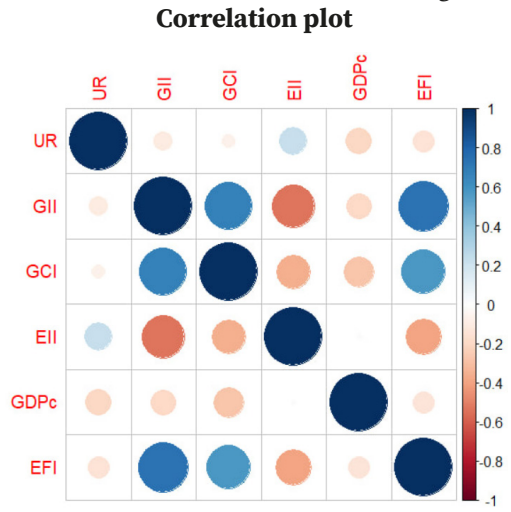


Table 2

Correlation matrix

	UR	GII	GCI	EII	GDPc	EFI
UR	1	-0.1091335	-0.0602019	0.2280698	-0.20087374	-0.1403777
GII	-0.1091335	1	0.6701865	-0.53865332	-0.19488524	0.7396576
GCI	-0.0602019	0.6701865	1	-0.35052724	-0.27615767	0.5710038
EII	0.2280698	-0.5386533	-0.3505272	1	0.01243542	-0.3904422
GDPc	-0.2008737	-0.1948852	-0.2761577	0.01243542	1	-0.1378184
EFI	-0.1403777	0.7396576	0.5710038	-0.39044221	-0.13781837	1

The correlation matrix displayed in Table 2 shows that very strong correlations between independent variables are not found. The highest correlation is between variables Economic Freedom Index and Global Innovation Index, indicating that states with higher economic freedom (more market-oriented economy) tend to have higher levels of innovation. Also, a moderate correlation can be found between the Global Cybersecurity Index and the Global Innovation Index, hinting that states with higher rates of innovation tend to have stronger cybersecurity. Moreover, a degree of correlation exists between economic freedom and cybersecurity strength. Such results show that economic freedom,

cybersecurity strength, and rate of innovation are somewhat correlated with each other.

Regression Findings

The present section presents regression analysis with the application of robust standard errors. F-test statistic with a value of 1.713 and p-value of 0.1292 (higher than 0.05) displays that the chosen independent variables (IVs) are not the best in explaining the outcome variables of cybercrime. This finding is supported by an adjusted R-square score of 0.04902 which indicates that the model explains only 4.9 % of the variation of the dependent variable.

Table 3

Regression output

Coefficients:	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	10.02787	11.61819	0.863	0.3908
UR	-0.16519	0.20389	-0.81	0.4203
GII	0.23134	0.13082	1.768	0.0809
GCI	0.07024	0.04851	1.448	0.1517
EII	11.78253	12.72956	0.926	0.3575
GDPc	-0.00136	0.00514	-0.265	0.792
EFI	-0.39756	0.15771	-2.521	0.0138
R-squared	0.1178			
Adjusted R-squared	0.04902			
F-statistic	1.713			0.1292

As Table 3 displays, there is only a single significant variable predicting the World Cybercrime Index score – the Economic Freedom Index. EFI has the appropriate p-value of 0.0138, with a negative estimate score which indicates that higher EFI results in lower cybercrime scores. Another variable that is close to statistical significance with a p-value of 0.0809 is the Global Innovation Index. The estimate of GII is positive, indicating that higher GII scores might result in higher scores in WCI.

Discussion

The results of regression analyses provide ground for understanding the factors influencing the country's contribution to global cybercrime. Firstly, the analysis was held to test the theoretical proposition established based on the literature on cybercrime and crime rates. The first theoretical proposition (TP1) based on Karl Marx's theory of international political economy highlighted two significant factors determining higher crime rates – economic inequality and economic freedom (economic structure). Based on the results of the regression output, the first theoretical proposition was rejected. Analysis shows that economic inequalities do not play a role in determining the cybercrime rate as variable EII was statistically insignificant. Moreover, while Marxian theory explains that a more market-based economic structure leads to higher crime rates, the regression results suggested the opposite – a higher degree of economic freedom leads to decreased levels of cybercrime. One of the claims of the second theoretical proposition (TP2), which is based on Rational Choice and Routine Activity theories, is that increasing innovation rates lead to higher cybercrime rates. This claim can be considered valid, though with a probability value lower than the standard threshold. However, the TP2

is partially rejected as claims on the influence of low cybersecurity levels and higher unemployment rates were not statistically significant.

One of the main reasons for rejecting suggestions proposed by Marxian theory on international political economy might be the different scope and external context of the theory. Although Marxian theories still have a large supporter base and can be relevant in explaining some global events, they are built based on the context of an international order of the 19th century. Apart from the context of the international system, the theory is mainly focused on explaining other types of crime rather than cybercrime. Despite having similar bases, cybercrime conceptually differs from other types of crimes and is a phenomenon developed with the development of technology. The scope and context in which international political economy theory was created might just be irrelevant to modern political, economic, technological, and social contexts.

Moreover, an explanation of the inverse relationship between the Economic Freedom Index and World Cybercrime Index identified by the regression model might be rooted in the results of the correlation test. The correlation matrix displayed that EFI, GII, and GCI have a positive correlation. This means that countries with more free market economies tend to have higher rates of innovation, technological advancement, and cybersecurity rates. Moreover, a more liberal approach to an economic system can be connected to a higher overall level of democracy, hence a better rule of law, and technological literacy. Good rule of law introduces a better legal framework for dealing with cybercrime, while technological literacy enables citizens to use the internet more carefully and acknowledge potential threats. All of the above-mentioned factors hinder levels

of cybercrime because based on the rational choice theory, when the potential risk exceeds financial gains, it becomes irrational for a person to commit a crime.

The potential reason behind the insignificance of the unemployment rate and cybersecurity level might lie in the complex, dynamic nature of cybercrime. It is unlike that such a multifaceted social phenomenon as cybercrime can be predicted by isolated factors like UR and GCI. The predictors specifying high levels of cybercrime might include a mix of various factors.

Limitations and Recommendations

Through the process of executing the research, various limitations arose. As the essence of the analysis is based on the first-ever World Cybercrime Index, it is expected to have a limited dataset. Also, as adjusted R-squared and F-test showed, the analysis does not explain the whole scope of WCI. This indicates that research should be missing some of the key variables in explaining the cybercrime rates. The research focuses mainly on the economic factors and introduces some social factors; however, the explanation of cybercrime rates might be rooted in different areas of study like politics or sociology. Theories taken as a basis of theoretical propositions do not provide enough explanation of cybercrime levels (which was proved by the analysis). Moreover, the complex nature of social phenomena like cybercrime limits the scope of quantitative research due to the inability to establish valid predictors in isolated tests. The incorporation of forensic science into cybersecurity strategies may address some of these gaps. By identifying patterns in digital evidence and providing deeper insights into offender tactics, forensic methodologies can complement traditional predictors to create a more comprehensive understanding of cybercrime.

The researchers wanting to deepen the findings of the present paper or offer a different approach for exploring cybercrime must be attentive to future issues of the World Cybercrime Index, as it presents a great tool for quantitative analysis of the phenomenon. Firstly, the time-series analysis is suggested to be executed in the future. Moreover, to consider the multifaceted nature of social occurrences like cybercrime, qualitative in-depth analysis is suggested. The findings of the present paper offer the theoretical basis for scholars and policymakers to focus on exploring the effects of economic systems, freedom, and innovation on cybercrime rates.

Conclusion

The present paper investigates the economic and social factors and their influence on cybercrime rates. The work presents relevant findings for scholars and policymakers by quantitatively testing the theoretical framework existing around the topic.

Literature explores some of the most relevant theories emphasizing the social and economic reasons behind cybercrime and patterns of crime occurrence. Some of the most relevant theories highlighting the interaction of cybercrime and applicable factors are the Marxian theory of political economy, rational choice theory, and routine activity theory. Marxian theory emphasizes the inherent issues of a capitalist system which lead to social inequalities and might result in increased crime rates. Rational Choice theory perceives people as rational actors and tries to explain patterns where cybercrime would be rational and profitable to pursue. Routine Activity theory identifies three pillars in the motivation behind criminal activity: motivated criminals, suitable targets, and absence of guardianship. Two theoretical propositions were formulated based on these three the-

ories. The first, based on Marxian views, stated that a more capitalistic structure and high economic inequality will lead to increased levels of cybercrime. The second, based on Rational Choice and Routine Activity theories, emphasized that low cybersecurity, high technological advancement, and high unemployment levels would lead to increased cybercrime.

To test the propositions, a regression analysis of 94 sample countries was executed. The dependent variable of analysis was based on the World Cybercrime Index. Predictor variables were based on the Unemployment Rate, Global Innovation Index, Global Cybersecurity Index, Eco-

nomic Inequality Index, Gross Domestic Product per capita, and Economic Freedom Index.

The test results displayed only one significant (EFI) and one borderline significant variable (GII). Key findings indicated an inverse relation between the Economic Freedom Index and the Cybercrime rate. Moreover, the Global Innovation Index is a positive predictor of Cybercrime with a probability of around 92 %. Some other interesting findings arose from the correlation matrix that displayed a positive correlation between EFI, GII, and GCI. Based on findings, TP1 was rejected and TP2 was partially rejected.

Appendix

Figure 2

Shapiro-Wilk test

Descriptive Statistics

	UR	GII	GCI	EII	GDPc	EFI	WCI Score
Shapiro-Wilk	0.861	0.956	0.853	0.977	0.433	0.894	0.377
P-value of Shapiro-Wilk	< .001	0.006	< .001	0.102	< .001	< .001	< .001

Table 4

Breusch-Pagan test

	BP	df	P-value
Breusch-Pagan test	4.2325	6	0.6452

Table 5

Variance Inflation Factor

	UR	GII	GCI	EII	GDPc	EFI
VIF	1.114279	3.231400	1.938558	1.477384	1.148550	2.282352

Table 6

Full dataset

Country	UR	GII	GCI	EII	GDPc	EFI	WCI Score
Russia	4.715	36.6	98.06	0.58	12,532	61.5	58.39
Ukraine	9.834	35.6	65.93	0.5	4,828	56.2	36.44
China	4.55	54.8	92.53	0.57	12,618	58.4	27.86
United States	5.349	61.3	100	0.63	70,219	74.8	25.01

Continued from Table 6

Country	UR	GII	GCI	EII	GDPc	EFI	WCI Score
Nigeria	5.393	20.01	84.76	0.55	2,066	58.7	21.28
Romania	5.59	35.6	75.78	0.5	14,947	68.8	14.83
North Korea	3.134		1.35	0.5		5.2	10.61
United Kingdom	4.826	59.8	99.54	0.46	46,870	78.4	9.01
Brazil	13.159	34.2	96.6	0.68	7,697	53.4	8.93
India	6.38	36.4	97.5	0.63	2,238	56.5	6.13
Iran	9.282	32.9	81.07	0.61	4,084	47.2	4.78
Belarus	3.9	32.6	50.57	0.39	7,490	61	3.87
Ghana	3.338	22.3	86.69	0.61	2,422	59.2	3.58
South Africa	28.77	32.7	78.46	0.75	7,074	59.7	2.58
Moldova	0.794	32.3	75.78	0.46	5,275	62.5	2.57
Israel	4.812	53.4	90.93	0.59	52,130	73.8	2.51
Poland	3.363	39.9	93.86	0.47	18,050	69.7	2.22
Germany	3.638	57.3	97.41	0.46	51,427	72.5	2.17
Netherlands	4.21	58.6	97.05	0.45	58,728	76.8	1.92
Latvia	7.513	40	97.28	0.48	20,930	72.3	1.68
Kazakhstan	5.556	28.6	93.15	0.47	10,374	71.1	1.67
Viet Nam	2.385	37	94.59	0.58	3,756	61.7	1.59
Estonia	6.178	49.9	99.48	0.5	27,944	78.2	1.59
United Arab Emirates	3.105	43	98.06	0.59	44,332	76.9	1.55
Canada	7.527	53.1	97.67	0.5	52,515	77.9	1.34
Malaysia	4.64	41.9	98.06	0.59	11,135	74.4	1.33
Philippines	3.398	35.3	77	0.6	3,461	64.1	1.24
Turkey	11.969	38.3	97.49	0.6	9,743	64	1.22
France	7.874	55	97.6	0.46	43,671	65.7	1.17
Indonesia	3.827	27.1	94.88	0.53	4,334	66.9	1.17
Bulgaria	5.267	42.4	67.38	0.55	12,219	70.4	1.07
Thailand	1.215	37.2	86.5	0.64	7,061	69.7	1.0
Mexico	4.019	34.5	81.68	0.75	10,359	65.5	0.98
Australia	5.116	48.3	97.47	0.48	60,697	82.4	0.95
Italy	9.497	45.7	96.13	0.53	36,449	64.9	0.8
South Korea	3.639	59.3	98.52	0.43	35,142	74	0.79
Cameroon	3.951	19.7	45.63	0.64	1,654	53.4	0.7
Colombia	13.898	31.7	63.72	0.72	6,183	68.1	0.7
Gambia	6.206		32.12	0.56	772	58.8	0.62
Czech Republic	2.803	49	74.37	0.41	26,823	73.8	0.59
Switzerland	5.097	65.5	86.97	0.42	93,446	81.9	0.55

Continued from Table 6

Country	UR	GII	GCI	EII	GDPc	EFI	WCI Score
Cyprus	7.513	46.7	88.82	0.45	32,746	71.4	0.52
Myanmar	4.34	18.4	36.41	0.62	1,232	55.2	0.51
Pakistan	6.338	24.4	64.88	0.55	1,506	51.7	0.51
Sierra Leone	3.516		25.31	0.57	505	51.7	0.5
Laos	1.997	20.2	20.34	0.57	2,536	53.9	0.49
Haiti	15.253		6.4	0.65	1,824	50.8	0.48
Morocco	10.539	29.3	82.41	0.6	3,768	63.3	0.45
Panama	10.453	28	34.11	0.65	15,491	66.2	0.45
Belize	10.157		10.29	0.65	6,061	57.5	0.44
Cambodia	0.396	22.8	19.12	0.68	1,625	57.3	0.42
Armenia	10.012	31.4	50.47	0.59	4,973	52.7	0.41
Lithuania	7.112	39.9	97.93	0.62	23,850	76.9	0.38
Chile	9.325	35.1	68.83	0.71	16,241	75.2	0.38
Ecuador	4.552	25.4	26.3	0.61	5,965	52.4	0.36
Ivory Coast	2.59	21	67.82	0.64	2,163	61.7	0.35
Afghanistan	11.934		5.2	0.52	356	53	0.35
Angola	15.799	15	12.99	0.69	1,927	54.2	0.35
Peru	5.097	31.2	55.67	0.69	6,635	67.7	0.35
Algeria	13.607	19.9	33.95	0.49	3,700	49.7	0.34
Lebanon	12.621	25.1	30.44	0.65	4,136	51.4	0.33
Benin	1.694	18	80.06	0.58	1,361	59.6	0.31
Kenya	5.693	27.5	81.7	0.6	2,070	54.9	0.31
Georgia	11.794	32.4	81.06	0.57	5,023	77.2	0.27
Spain	14.781	45.4	98.52	0.46	30,489	69.9	0.27
Senegal	3.368	23.3	35.85	0.58	1,634	58	0.25
Tunisia	16.505	30.7	86.23	0.53	3,807	56.6	0.22
Slovenia	4.747	44.1	74.93	0.42	29,331	68.3	0.22
Sweden	8.722	63.1	94.55	0.44	61,418	74.7	0.21
Cuba	1.373		58.76	0.58	9,139	28.1	0.2
Greece	14.657	36.3	93.98	0.46	20,311	60.9	0.2
Uganda	3.422	20	69.98	0.63	883	58.6	0.19
Belgium	6.264	49.2	96.25	0.41	51,850	70.1	0.19
Togo	2.285	19.3	33.19	0.61	977	57.5	0.18
Malta	3.403	47.1	83.65	0.47	34,881	70.2	0.18
Mauritius	7.719	35.2	96.89	0.57	9,069	56.1	0.17
Equatorial Guinea	9.194	16.7	1.46	0.63	7,406	49.2	0.17
Hungary	4.045	42.7	91.28	0.44	18,753	67.2	0.17
Serbia	10.061	35	89.8	0.48	9,233	67.2	0.15

Continued from Table 6

Country	UR	GII	GCI	EII	GDPc	EFI	WCI Score
Argentina	8.736	29.8	50.12	0.56	10,651	52.7	0.15
Jamaica	5.188	29.6	32.53	0.65	5,184	69	0.14
Bosnia and Herzegovina	14.897	29.6	29.44	0.48	7,230	62.9	0.14
Central African Republic	6.676		3.24	0.73	461	48.8	0.13
Botswana	23.106	22.9	53.06	0.7	7,239	67.6	0.13
Ethiopia	3.935	18.6	27.74	0.55	925	51.7	0.13
Zambia	5.195	19.8	68.88	0.72	1,135	50.4	0.13
Azerbaijan	6.04	28.4	89.31	0.56	5,408	70.1	0.13
Dominican Republic	7.702	25.1	75.05	0.62	8,477	62.1	0.13
Luxembourg	5.247	49	97.41	0.44	133,712	76	0.11
Japan	2.828	54.5	97.82	0.54	40,059	74.1	0.09
Mali	2.29	19.5	10.14	0.56	882	55.6	0.09
Syria	14.796		22.14	0.65	421		0.09
Guinea-Bissau	3.628		9.85	0.55	795	54.9	0.09
Egypt	7.441	25.1	95.48	0.57	3,887	55.7	0.08

**Економічні та соціальні чинники
кіберзлочинності**

Теодор Джорджобіані

Ця стаття має на меті сприяти розумінню такого доволі нового соціального явища, як кіберзлочинність. Сучасні глобальні реалії технологічного прогресу та значна залежність від цифрових інструментів фокусують увагу на загрозах кіберзлочинності. Для того щоб створити ефективні превентивні механізми, важливо дослідити чинники, що впливають на рівень кіберзлочинності. Для досягнення поставленої мети застосовано регресійний аналіз, побудований на нещодавно оприлюдненому вперше в історії Світовому індексі кіберзлочинності. Проаналізовано показники кіберзлочинності 94 країн на основі впливу 6 предикторних змінних. Аналіз показав, що ступінь економічної свободи має зворотний вплив на рівень кіберзлочинності, а рівень інновацій прямо збільшує цей рівень, хоча й із меншою ймовір-

ністю. Дослідникам, які цікавляться цією темою, рекомендуємо уважно стежити за майбутніми випусками Світового індексу кіберзлочинності, щоби мати змогу більш масштабно аналізувати часові ряди.

Ключові слова: економічні чинники; кіберзлочинність; регресійний аналіз; індекс економічної свободи.

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Declaration of Competing Interest

Author declare no conflict of interest.

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Modern Problems and Main Aspects of Criminal Law Fight Against Hooliganism

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The paper explores current issues and main aspects of such an unlawful phenomenon as hooliganism. The author examines its historical development and the problems it creates for modern society. The research aims to identify the factors that contribute to the spread of hooliganism from its inception to the present day. Both legislative and social aspects of hooliganism are considered. This paper explores the changes in the social, cultural and economic spheres that give rise to hooliganism and contribute to its existence in many countries. The research also assesses effectiveness of current legal systems in preventing hooliganism, pointing out important shortcomings and problems in the methods used by the authorities. Socio-economic changes, cultural influences and social perspectives are explored, and a detailed understanding of why hooliganism persists despite legal initiatives to suppress it is provided. This study attempts to bridge the gap between legal concepts and actual implementation by taking an interdisciplinary approach and providing policy suggestions that improve ability of the judicial system to stop hooliganism. Results emphasize the need for improved criminal justice system cooperation, targeted social action and adapted laws, especially for young people considered to be at risk. To achieve the set goal, the following scientific methods were used: analysis, synthesis, statistical analysis, generalization, etc.

Keywords: hooliganism; criminal justice; sociocultural dynamics; expert provision of hooliganism investigation; legal reform; youth at risk.

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Research Problem Formulation

Hooliganism, once considered a rare and isolated form of public wrongdoing, is a persistent and complex problem for modern civilizations. The author aims to explore historical origins and contemporary forms of hooliganism, looking at how it has changed over the years and what elements preserve its existence nowadays.

Article Purpose

An in-depth analysis of the provisions on hooliganism is proposed, including a study of both the legal and social aspects. Hooliganism is closely related to cultural processes and is a problem not only in terms of compliance with laws. The research examines past events that contributed to the growth of hooliganism and how they have been transformed in modern times through changes in the social, political and cultural fields¹.

Research is based on an assessment of how current law enforcement system is able to counteract hooliganism. Hooliganism remains a serious obstacle, despite a number of legislative initiatives and preventive measures, raising concerns about the suitability of existing legal structures and procedures for enforcement. The research examines how social, cultural, and financial elements contribute to bullying, recognizing that it is a problem that is firmly entrenched in society, not just a legal one. This research offers an original perspective that bridges the gap between theoretical understanding and practical implemen-

tation by combining legal considerations with sociocultural observations².

Objectives of the study are: 1) Study how hooliganism has evolved historically and the state of this phenomenon in our time as an illegal activity; 2) Assess how effectively the criminal justice system is suited to dealing with hooliganism; 3) Investigate the socio-cultural elements that contribute to the continued existence of hooliganism in modern society; 4) Make policy proposals to improve the judicial system and the strategy for preventing hooliganism.

Research questions are as follows: 1) What are the main historical reasons that contributed to the growth of hooliganism, and how have they changed in the modern world? 2) What obstacles need to be overcome in order for the current preventive tactics of criminal law to be successful in reducing hooliganism? 3) What role do monetary, cultural and social considerations play in the continued existence of hooliganism? 4) How can political reforms strengthen the ability to reinforce and prevent hooliganism?

Research paper differs in that it involves a deep approach to understanding hooliganism from both a historical and a modern point of view. The research provides a deep understanding of the facts that motivate hooliganism and the difficulties faced by the law enforcement community in combating it, combining legal considerations with socio-cultural views. This research attempts to present an integrated approach that will bridge the divide between theory and application, providing useful information for policymakers, law enforcement officers, and social service

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- 1 Kossakowski R. Where are the hooligans? Dimensions of football fandom in Poland. *International Review for the Sociology of Sport*. 2015. Art. 52(6):681–703. DOI: [10.1177/1012690215612458](https://doi.org/10.1177/1012690215612458) (date accessed: 08.09.2024).
 - 2 Harcourt B. E., & Ludwig J. Broken Windows: New Evidence from New York City and a Five-city Social Experiment. *The University of Chicago Law Review*. 2006. Vol. 73. Is. 1. Pp. 271–320. URL: <https://chicagounbound.uchicago.edu/uclrev/vol73/iss1/14/> (date accessed: 08.09.2024).

providers. This contrasts with previous researches that have often separated out legislative or cultural issues.

Research Methods

To achieve the set goal, the following scientific methods were used: analysis, synthesis, statistical analysis, generalization, etc.

Analysis of Essential Researches and Publications

Significant contribution to the development of special knowledge was made by such well-known scientists as A. Szczekala³, V. Bakhin, V. Kuzmichov, Ye. Lukianchykov, P. Nesterenko, M. Saltevskiy, O. Filippov, M. Shcherbakovskiy et al. Research on specific expertise use during investigation of hooliganism was carried out by M. Bushkevych, Yu. Vilenskiy, V. Zakharevskiy, A. Kuznietsov, Ye. Ovcharenko. However, their work did not pay enough attention to problematic situations during the investigation of hooliganism with the use of explosive devices, aerosols, etc. It would be appropriate to note that our study showed the difference in the dynamics of the application of special knowledge, which were indicated in the researches of mentioned authors. In our opinion, it is caused by social, political and economic changes in society in recent decades⁴.

In science, there are different versions of etymology of the *hooliganism* term. In particular, M. Naklovych, having studied

the literary sources of English authors, points to two versions of the etymological origin of this concept⁵. The first version, let us call it American, comes from the name of one of the American Indian tribes that roamed between Texas and California. With this American Indian tribe, European settlers in North America had to struggle for a particularly long time. Therefore, *hooligans* began to be understood as people who struggle with culture, have a tendency to mock culture and for the most part do not understand it⁶. French scientists note the aggressiveness, cruelty, and deep immorality inherent in hooligans, calling them *Apache* from the name of this American Indian tribe.

Hooliganism concept in US criminal law corresponds to the term: *disorderly conduct: hooliganism, breach of peace*. The authors of the authoritative US legal dictionary Black's Law Dictionary provide the following definitions of the above terms. *Disorderly conduct* means behavior aimed at disrupting public order, violating public morality or threatening public safety. *Breach of peace* is a criminal act that provokes a public disturbance or participates in a public disturbance, especially by making loud noise⁷.

The second version is of English origin. However, it has certain variations: 1) according to some scholars, the *hooliganism* word comes from the English word *hooligan*, which since 1890 has been used to refer exclusively to daring street brawlers rapists from Scientific Herald of Uzhhorod University, 2012, 143 eastern quarter of London;

3 Szczekala A. Chuligański charakter czynu. *Prokuratura i Prawo*. 2008. Nr. 6. S. 76–89. URL: <https://polona.pl/item-view/408eb57c-99ad-454f-93a0-4eb0bc2693a5?page=NaN> (date accessed: 08.09.2024).

4 Єфімов М. М. Використання спеціальних знань під час розслідування хуліганства. *Право і суспільство*. 2012. № 3. С. 229–233. URL: http://nbuv.gov.ua/UJRN/Pis_2012_3_51 (date accessed: 08.09.2024).

5 Наклович М. Л. Кримінально-правова боротьба з хуліганством. Львів, 1974. С. 38–43.

6 Налуцишин В. В. Кримінальна відповідальність за хуліганство (ст. 296 КК України): монографія. Харків, 2009. С. 18.

7 Garner B. A. Black's Law Dictionary. 11th ed. Thomson Reuters, 2019. P. 292, 183.

2) the word is derived from the name of the Irish family of criminals Hooligan, who lived in London in the late eighteenth century⁸; 3) the word is derived from the name of the Irishman Holly, who organized several gangs that terrorized others; 4) the *hooligan* word is derived from the name of the Holigen brothers, who lived in Scotland in the late eighteenth century. They were people of the underworld, characterized by barbarism and extreme violence. According to another version, the term was also associated with the name of the Saint Petersburg mayor Von Val, who in 1892 took harsh measures against organized groups of rapists, whom he called *hooligans* in his order⁹.

Elements of hooliganism can occur in other criminal law when they are accompanied by an act of violence or a threat during legitimate public events (Art. 143, 145, 146 of the Criminal Code of the Netherlands). At the same time, there is no special rule that would provide for criminal liability for hooliganism. In these cases, we are talking about hooligan actions inherent in one or another corpus delicti¹⁰.

However, if we turn to the Danish Criminal Code, then in section 15: *Crimes against public peace and order* there is a crime that, by its signs, may fall under the concept of *hooliganism*. For example, according to § 134a, any participants in street scandals or other serious disturbance of public

peace and order, if they act by agreement or jointly, are subject to simple detention or imprisonment for a term not exceeding six months¹¹. Consequently, it can be assumed that the act considered in the form of street scandals and violations of public peace, as well as public order is hooliganism.

In the Swedish Criminal Code, section 16, that combines crimes against public order, is of interest to Art. 16, which provides for liability against a person who makes noise in public places or publicly behaves in a way that causes public outrage. This person is sentenced to punishment for behavior that violates the social order¹².

If we turn to Criminal Code of Turkey, then, at first glance, section 5 entitled *Crimes against public order* (Art. 311–314) is of interest. At the same time, this section does not contain hooliganism. However, let us pay attention to crimes directed against public morality, covered by section 3 (Art. 567–577), where there are norms similar in some respects to hooliganism. For example, in Art. 571 states that a person who appears in a public place in a state of intoxication, which disturbs people or causes a scandal and if he is drunk (Art. 572) insults someone and disturbs people's rest, then in the first case is punishable by light imprisonment for a term of not less than 15 days and according to Art. 572: light imprisonment for a term of not less than two months¹³. At the same time, Art. 576

8 Berresford Ellis P. Irish Hooligan of Southwark / Irish Identity. URL: <http://www.irishidentity.com/extras/mad/stories/hooligan.htm> (date accessed: 08.09.2024).

9 Коржанський М. Й. Кваліфікація злочинів : навч. посіб. 2-ге вид. Київ, 2002. С. 5.

10 Wetboek van Strafrecht van Nederlandse. 03.03.1881. URL: <https://wetten.overheid.nl/BWBR0001854/2024-01-01> (date accessed: 08.09.2024).

11 The Denmark Criminal Code. Order No. 909 of September 27, 2005, as amended by Act Nos. 1389 and 1400 of December 21, 2005 / \$Legislationline. URL: https://legislationline.org/sites/default/files/documents/39/Denmark_Criminal_Code_am2005_en.pdf (date accessed: 08.09.2024).

12 Brottsbalk (1962:700) i Sverige. 1962-12-21. URL: [https://www.lotin.se/Fallor/Pdf/Brottsbalken_\(1962_700\).pdf](https://www.lotin.se/Fallor/Pdf/Brottsbalken_(1962_700).pdf) (date accessed: 08.09.2024).

13 Criminal Code of the Republic of Turkey (2004) (English). Law Nr. 5237. Passed On 26.09.2004. (Official Gazette No. 25611 date 12.10.2004) / \$Legislationline. URL: <https://legislationline.org/taxonomy/term/14182> (date accessed: 08.09.2024).

of the Turkish Criminal Code provides for perpetrator responsibility for indecent exposure of himself in full or in part in a public place in front of people, as well as insulting public morals by word or song or in any other way.

The issue of criminal liability for hooliganism is also vaguely resolved in the Criminal Code of Austria, when it comes to section 20, which includes criminal acts against social peace. For example, § 274 establishes liability for public disorder related to the violent actions of a group of persons. Based on the content of criminal law norm, we should hardly talk about hooliganism here, when it comes to deliberate participation in a gathering of a group of people, which is created in order to commit a serious murder, serious bodily injury or serious damage to property under its influence¹⁴. Certainly, the analyzed crime most likely affects public peace when a group of persons commits various violent crimes.

The issue of liability for violation of public peace related to violent actions of a group of persons (§ 125) in the Criminal Code of Federal Republic of Germany is resolved. According to this paragraph, responsibility is provided for violent actions against people, as well as destructive actions against things and threats of violent actions jointly by a group of people who threaten public safety¹⁵.

In Poland, on May 22, 1958, the first law was issued to combat hooliganism, which provided for increased criminal liability

of the guilty. This law was included in the subsequent Criminal Code of April 19, 1969¹⁶. The current definition of hooliganism in the Polish Criminal Code (in Section XIV: *Explanation of Legislative Expressions*, Art. 115) offenses are called *hooliganism* if they meet the criteria described in §21 of this article: A crime of a hooligan nature is an offense that consists in encroaching on freedom, honor or physical integrity, on public safety, on the activities of state institutions or local self-government bodies, on public order or in the intentional destruction, damage or rendering unfit for using someone else's property, if the culprit acts publicly and without a reason or with a deliberate trifle, thus demonstrating a clear disregard for law and order.

Offense qualification of an as *hooligan* one usually makes the imposed punishment mandatory or prevents its mitigation or suspension (Art. 57a, Art. 58, Art. 59, Art. 69). Convicts for hooliganism are usually not granted amnesty.

According to Art. 296 of the Criminal Code of Ukraine, it is a criminal offense to commit *hooliganism*, namely: a gross violation of public order on the grounds of obvious disrespect for society, accompanied by special audacity or exceptional cynicism¹⁷.

According to the content of the first part of Art. 296 of Criminal Code of Ukraine, a gross violation of public order for reasons of obvious disrespect for society should be recognized as such a violation accompanied by special audacity or exceptional

14 Gesamte Rechtsvorschrift für Strafgesetzbuch, Fassung vom 05.02.2020 / Ibid. URL: https://legislationline.org/sites/default/files/documents/32/Austria_CC_1974_am122019_de.pdf (date accessed: 08.09.2024).

15 Strafgesetzbuch (StGB) von Deutschland. Ausfertigungsdatum: 15.05.1871 / Ibid. URL: https://legislationline.org/sites/default/files/documents/77/Germany_CC%20am2019_de.pdf (date accessed: 08.09.2024).

16 The Criminal Code z dnia 6 czerwca 1997 r. (Dz.U. tłum. gb Nr 88, poz. 553). URL: [https://sherloc.unodc.org/cld/uploads/res/uncac/LegalLibrary/Poland/Laws/Criminal%20Code%20\(Poland\).pdf](https://sherloc.unodc.org/cld/uploads/res/uncac/LegalLibrary/Poland/Laws/Criminal%20Code%20(Poland).pdf) (date accessed: 08.09.2024).

17 Кримінальний кодекс України від 05.04.2001 р. № 2341-III (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 08.09.2024).

cynicism. This concept is developed by judicial practice and contains special signs of hooliganism that allow to distinguish it from minor hooliganism (Art. 173 of the Code of Ukraine on Administrative Offenses)¹⁸.

Thus, in particular, a criminal violation of public order can be recognized as committed with special audacity:

- 1) that indicates obvious disrespect for society and is accompanied, for example, by violence with infliction of bodily harm or abuse of a person, beating or stabbing a person, torture of a person;
- 2) acts for a long time and stubbornly does not stop;
- 3) is associated with destruction or damage of someone else's property, disruption of a mass event (concert, meeting, election, prom, etc.), violation of people's night rest, temporary suspension of the normal activities of an enterprise, institution, organization or public transport, etc. (paragraph 5 of the Resolution of the Plenum of the Supreme Court of Ukraine: *On Judicial Practice in Hooliganism Cases* № 10 dated on December 22, 2006¹⁹).

According to the Criminal Code of the Republic of Azerbaijan (approved by the Law of Republic of Azerbaijan № 787-IQ dated on December 30, 1999) (as amended on February 23, 2024)²⁰ Hooliganism (Art. 221): there are deliberate actions that grossly violate obvious disrespect for so-

ciety, accompanied by the use of violence against persons or the threat of its use, as well as the destruction or damage to other people's property. Qualifying signs: commission by a group of persons or repeatedly; associated with resistance to a representative of the authorities or another person who performs duties to protect public order or stops the violation of public order; with the use of weapons or objects used as weapons, if this was accompanied by the use of violence against the victim, or destruction or damage to other people's property.

The Code of Republic of Azerbaijan on Administrative Guilt in Chapter 22: *Administrative Guilt that Infringes on Public Order, Public Security and Public Morality* provides the following definition of petty hooliganism: "Petty hooliganism, that is, actions that violate public order, but are not accompanied by the use of violence against individuals, destruction or damage to other people's property" (Art. 296). Art. 296-1 singles out auto hooliganism, that is, the deliberate actions of the driver of a vehicle, which demonstratively violate public order and peace of the population, expressing obvious disrespect for society, accompanied by a prolonged violation of traffic rules in various ways²¹.

Dynamics of hooliganism cost the fate of thousands of people who bore the burden of voluntaristic judicial practice. Perhaps that is why in the vast majority of other countries there is no such crime. English "hooligan" has become an exclusively

18 Кодекс України про адміністративні правопорушення від 07.12.1984 р. № 8073-X (зі змін та допов.). URL: <https://zakon.rada.gov.ua/laws/show/80731-10#Text> (date accessed: 08.09.2024).

19 Про судову практику у справах про хуліганство : Постанова Пленуму Верхов. Суду України від 22.12.2006 р. № 10. URL: <https://zakon.rada.gov.ua/laws/show/va010700-06#Text> (date accessed: 08.09.2024).

20 Criminal Code of the Republic of Azerbaijan (This Code was approved by the Law No. 787-IQ of the Republic of Azerbaijan dated December 30, 1999). URL: <https://e-qanun.az/framework/46947> (date accessed: 08.09.2024).

21 Code of Administrative Offenses of the Republic of Azerbaijan (This Code was approved by Law No. 96-VQ of the Republic of Azerbaijan dated December 29, 2015). URL: <https://e-qanun.az/framework/46960> (date accessed: 08.09.2024).

Soviet and Russian concept. It is vague and eclectic.

Main Content Presentation

Forensic examination is an independent and most common form of use of special knowledge during the investigation of hooliganism, and the expert's conclusion is, in turn, the most important source of evidence.

The most common examinations in the investigation of hooliganism are fingerprint, forensic, forensic biological, trace evidence, ballistic examinations.

Forensic medical examination in cases of hooliganism related to beating, causing bodily harm is carried out to clarify issues that require knowledge in the field of forensic medicine. The objects of forensic research are not only the victim and the suspect, but also their clothing and other material evidence with traces of blood, muscle and other cells of the human body, secretions. This research determines the following list of circumstances: 1. What injuries does the victim have? 2. What are their nature, quantity, prescription and localization? 3. What are the properties of the object (weapon) that caused the damage? 4. Is it possible to cause damage with a specific object (weapon)? 5. What is the mechanism of damage formation (type of traumatic effect)? 6. What is the direction of the traumatic force from which the injury occurred in the victim? 7. What was the relationship between the victim and the attacker at the time of the injury?

According to research, this examination in investigation of hooliganism was used in more than 60 % of cases. Such a large number is explained by the fact that during the commission of hooliganism as a result of physical contact, the victim or offender may receive bodily injuries. This forensic examination has an important ev-

identary value in the investigation of this category of cases, since its results can expose the false suspect testimony.

The subject matter of this forensic examination is of great importance. In practice, in most cases (96 %), this examination is conducted only in relation to the victim. However, while committing this act, it is necessary to conduct an examination of both parties at once, because it is not clear what status they will have at the end of the investigation. And the moment of using a forensic medical examination may be missed.

It is advisable to prescribe a forensic biological examination of material evidence to establish the type of the test substance, group and typical signs of blood, hair, saliva, sperm, urine and other objects. This type of expertise is used in a fairly small number of cases. But with the development of science and technology, their number inadvertently increases, because in most cases there is physical contact of the bully with the subject of the crime or the victim. With the help of forensic biological examination, many controversial issues can be resolved during the investigation. Most likely, such a low level of their conduct is explained by the specifics of the detection, seizure and fixation of material evidence of this category.

Forensic trace evidence analysis is appointed if it is necessary to study the traces found at the scene, as well as to establish the whole in its parts, when, for example, a part of an object is found at the scene, and the person who committed the hooligan actions has found similar parts and there are reasons to believe that they previously constituted a single whole. Bullies usually do not worry about destroying fingerprints at the scene, so a fingerprint examination gives positive results.

Research on firearms is carried out in connection with the establishment of the

fact of attribution of objects to firearms, ammunition; the fact of serviceability (malfunction) of a particular copy of a firearm and the suitability of the weapon for the production of shots; the method of manufacturing the weapon or the fact of changing its condition; type, model, brand, caliber of the weapon; individual identity of weapon; identity of ammunition; belonging of parts of the weapon to its specific copy; elements of the mechanism of a criminal event in cases committed with the use of firearms and ammunition.

Forensic ballistic examination is appointed in the investigation of hooliganism, during which firearms were used. When investigating violent crimes, as K.D. Pol points out, research on firearms should always be given special attention²². After all, research on firearms, traces left after their use, contains data necessary for the reconstruction of the mechanism of a criminal act, information about the identity of the offender, etc.

This forensic examination in cases of hooliganism is carried out in cases where it becomes necessary to find out whether the object seized from the suspect is a weapon; whether the victim has been injured by this object. It is also necessary not to forget that when detecting a weapon and before the examination, it should be examined in detail in order to find traces that can themselves be the objects of research (fingerprints, blood, hair, etc.²³). After all, as noted above, traces of blood, hair can be the object of forensic biological examination of material evidence.

Importance of forensic ballistics follows from the disposition of Part 4 of Art. 296 of the Criminal Code of Ukraine. It is necessary in many cases, even those not related to bodily harm. For example, during

football matches, fans may use various explosive or incendiary devices (fireworks, "flares", etc.). Sometimes they do not have too dangerous consequences, but when this device explodes among the fan section, a large number of bodily injuries and other socially dangerous consequences result. Moreover, their use is mostly not motivated by bodily harm, but rather by hooliganism. That is why when law enforcement officers seize such items, it is imperative to order an examination.

The issue of examination of cold weapons is problematic. In cases of hooliganism, it often happens that a police officer, during an inspection, detention, etc., seizes an object from a suspect that can presumably be assessed as a bladed weapon. However, prior to the initiation of a criminal case, the examination of this item cannot be carried out, therefore, in most cases, *preliminary inspection* is carried out. In turn, after the initiation of a criminal case, the issuance of a resolution on the examination of this subject and its conduct, is of a formal nature. We put forward a proposal for possibility of expert examination of the above subjects before the initiation of a criminal case. In cases of hooliganism, these examinations are of great importance, because often there are cases of the use of brass knuckles, bats, knives, etc.

While proving the motive of national or racial hatred or enmity in the form of production of various examinations, the main emphasis should be placed on the production of forensic psychological or complex psychological and psychiatric examination. The task of the examination of this kind is to determine "cause of human behavior in a particular situation, lack of appropriate response or the response of an inadequate situation".

22 Pohl K. D. Handbuch der Naturwissenschaftlichen Kriminalistik. Heidelberg, 1981. S. 142.

23 Тертишник В.М. Настільна книга слідчого. Зразки правничих документів. Київ, 2024. 448 с.

Forensic mental state examination (MSE) is appointed to determine the mental state of the accused in the presence of data that raise doubts about his sanity. The mental state of a person, as pointed out by P. Turin, affects a whole range of criminal and procedural manifestations of the subject: the very fact of the crime, its nature, the circumstances of the commission. Judgment, as well as guilt and responsibility, is the central methodological category of law both in terms of its fundamental theoretical solution, and in terms of its practical value and applied significance for the observance of human rights and freedoms²⁴. Research on criminal cases initiated on the basis of Art. 296 of the Criminal Code of Ukraine found that this examination took place in 18 % of cases.

As mentioned above, 95 % of the accused committed hooligan acts while intoxicated, and many of them abused alcoholic beverages systematically for a long time. That is why, as noted by the Supreme Court of Ukraine, forensic drug examinations are conducted in criminal cases of the specified category²⁵. These examinations are mostly carried out when the crime was committed by a person under the influence of alcohol. But in order to appoint such an examination, it is not necessary that the person was detained in a state of alcohol intoxication and that he was examined for the presence of a state of alcohol or drug intoxication.

Handwriting Analysis is carried out to identify the identity of the hooligan based on his handwriting. The need to conduct it arises in those cases when hooliganism

manifested itself in the writing and distribution of obscene texts. Various obscene inscriptions, letters and telegrams with threats directed by the hooligan to the victim can be removed from the scene of the incident by research objects.

Forensic chemical examination is appointed if there is a need to investigate the composition of the substance used by hooligans to commit a crime, for example, powders, paints, acids. Such a case is problematic in terms of applying the two foregoing examinations. An obscene inscription was made on the wall of the house, fence or other place. The question arises about the possibility of conducting handwriting and forensic chemical examination.

In this case, there are no doubts about conducting a forensic chemical examination. During its conduct, such issues as establishing composition of substance with which the inscription was made, determining the group affiliation of the paint can (if it was found at the scene), establishing the group affiliation of the substance and the paint can (if it was removed from suspect) and others.

When assigning any examination in cases of hooliganism, the correct wording of the questions comes to the fore. As M. Shcherbakovskyi correctly notes, it requires high professional skills from the investigator, inquirer, and judge. Its insufficiency can be compensated in the appointment of forensic examination through the involvement of experts as knowledgeable persons to assist in the form of advice in the correct formulation of questions (determination of the

24 Тюрин П. Психология между буквой и духом закона (теория и практика юридической психологии). Рига, 2012. 252 с. ; Види судово-психологічних експертиз / ДУ «ІСП МОЗ України» : офіц. сайт. URL: <https://cmhmda.org.ua/sudovo-ekspertna-diyalnist-institutu-sudovoyi-psyhiatriyi/sudovo-psyhologichna-ekspertyza/vydy-sudovo-psyhologichnyh-ekspertyz/> (date accessed: 08.09.2024).

25 Постанова ВС щодо хуліганства із застосуванням зброї чи предмета для нанесення тілесних ушкоджень / Судова влада України : офіц. сайт. 13.09.2018. URL: <https://supreme.court.gov.ua/supreme/pres-centr/news/554532/> (date accessed: 08.09.2024).

subject of examination), the list of necessary objects²⁶. In other words, effective conduct of the examination depends on correctness of the questions.

Questions should be specific and clear, which do not allow double interpretation. In the methodical and reference literature on forensic examination, there are lists of questions that can be put to the decision of forensic examination²⁷. However, the study of expert and investigative practice shows that the existence of such guides does not in itself solve the problem of the correct formulation of questions. When choosing the necessary questions from such lists, the investigator does not always take into account what objects are at his disposal, does not always understand what task should be set before the expert in a particular situation.

Certainly, before finally formulating a list of questions to the expert, the investigator must first determine the task that he poses to the expert. After that, it is necessary to analyze what objects he has at his disposal, whether these objects are enough to solve the tasks, if possible, to fill the identified deficiency. Only after that, taking into account the type of expertise to be appointed, to formulate a question to the expert.

Certainly, one cannot ignore the objects of expert research. According to the conducted research, in hooliganism cases, they were: items that are material evidence – in 30 % of cases; tools that were means of committing a crime 19 %; traces removed during the inspection of the scene 9 %.

It is necessary to place the questions in a logical sequence, taking into account that the answers to the first questions can determine the answers to the following ones. In addition, the questions should not go beyond the competence of the specialty of a specific profile or a specific expert.

Thus, expert conclusion is the most common form of specific expertise application in hooliganism investigation and in some cases is of key importance for an objective and comprehensive investigation of crimes of this category.

Theoretical framework

According to Merton's Strain Theory, hooliganism may be a reaction to people's frustration – especially those from lower socioeconomic backgrounds – when they are failing to accomplish social objectives through legal methods. The concept highlights how estrangement can result in aberrant conduct and offers a basis for comprehending the societal and economic origins of hooliganism²⁸. Based on Becker's Labeling Theory, societal classifications that designate particular acts as abnormal are what cause deviation rather than any intrinsic trait in an action. In keeping with Becker's idea, once someone is called a "hooligan," they could internalize this identity and go on to engage in more deviant activity as if it were a self-fulfilling prophecy²⁹.

In his book, Garland examines how crime control tactics have changed in contemporary countries, emphasizing the growing use of penal as well as welfare-based

26 Щербаковський М. Г. Про недопустимість призначення судової експертизи для рішення правових питань. *Форум права*. 2010. № 4. С. 985. URL: http://nbuv.gov.ua/UJRN/FP_index.htm_2010_4_159 (date accessed: 08.09.2024).

27 Кулик Я. О. Проблеми призначення судової експертизи у кримінальному провадженні. *ЛогоΣ.Online*. 2020. № 16. EOI: 10.11232/2663-4139.16.68 (date accessed: 08.09.2024).

28 Merton R. K. Social Structure and Anomie. *American Sociological Review*. 1938. Vol. 3. No. 5. Pp. 672–682. URL: <https://www.jstor.org/stable/2084686> (date accessed: 08.09.2024).

29 Becker H. S. *Outsiders: Studies in the Sociology of Deviance*. New York : Free Press Glencoe, 1963. 224 p.

policies by authorities to combat crime, especially hooliganism. Garland's research emphasizes the value of a well-rounded strategy that combines police measures to quell hooligan activity with preventative programs aimed at fostering youth growth³⁰. As covered in the book of John Braithwaite's notion of Reintegrative Shaming proposes that governmental actions should prioritize humiliating those who commit crimes while simultaneously assisting in the reconciliation of criminals into the community. Braithwaite claims that by promoting civic engagement and lowering recurrence through recovery and support to society, this strategy can be successful in decreasing hooliganism³¹.

Methodology

Markov Chains and Predictive Modeling are used in this study to examine and stop hooliganism. Motivated by the research of academics such as Richard Berk and David Farrington, forecasting calculates the probability of hooligan occurrences through the use of numerous danger factors³². First, historical information on socioeconomic characteristics, criminal histories, and community involvement is gathered. Next, the likelihood of a hooligan incident is pre-

dicted using linear modelling; the predictive power of the model is evaluated using measures like accuracy and the Area Under the Curve (AUC). This method enhances safeguards by identifying high-risk regions³³.

Additionally, the research uses Markov Chains to describe the evolution of prospective hooligans into criminals, based on Andrey Markov's technique and concepts such as George Kelling's as well as Wilson's *Broken Windows Theory*³⁴. The Markov Chain concept calculates the likelihood that a person would move between different states, such as serial criminals and kids at danger. This research provides a fresh paradigm for analyzing and preventing hooliganism by fusing mathematical methods with social and legislative viewpoints. This will help legislators build determined, solid policies³⁵.

Legal Framework and Historical Context

Hooliganism became "popular" in the mid-1900s as a social problem. It was seen as a symptom of chaos and social deterioration³⁶. At that time, lawyers, scholars, and social workers began to pay more attention to the problem. In response, the communist judicial system adopted special legislation,

30 Garland D. *The Culture of Control: Crime and Social Order in Contemporary Society*. University of Chicago Press, 2001. 336 p.

31 Braithwaite J. *Crime, Shame and Reintegration*. Cambridge University Press, 1989. 234 p. DOI: [10.1017/CBO9780511804618](https://doi.org/10.1017/CBO9780511804618) (date accessed: 08.09.2024).

32 Maronna R. A. Richard Berk: Statistical learning from a regression perspective. *Statistical Papers*. 2011. Art. 52(4):981–982. DOI: [10.1007/s00362-010-0313-x](https://doi.org/10.1007/s00362-010-0313-x) (date accessed: 08.09.2024).

33 Zara G. "Farrington, David P.: The Integrated Cognitive Antisocial Potential Theory". In: Cullen F. T. & Wilcox P. (Eds.). *Encyclopedia of Criminological Theory*. Thousand Oaks, CA : Sage Publications, 2010. Pp. 313–322. URL: https://www.researchgate.net/publication/311208605_Zara_G_2010_Farrington_David_P.The_Integrated_Cognitive_Antisocial_Potential_Theory_In_F_T_Cullen_P_Wilcox_Eds_Encyclopedia_of_Criminological_Theory_pp_313-322_Thousand_Oaks_CA_Sage_Publication (date accessed: 08.09.2024).

34 Pearson G. *Hooligan: A History of Respectable Fears*. London : Macmillan Press, 1983. 283 p.

35 Tigani S., Ouzzif M., & Hasbi A. Markov chains and linear model-based hybrid prediction algorithm for cognitive agents. *International Journal of Intelligent Systems Design and Computing*. 2017. Art. 1(1/2):28. DOI: [10.1504/IJISDC.2017.082845](https://doi.org/10.1504/IJISDC.2017.082845) (date accessed: 08.09.2024).

36 Cohen A. K. *Delinquent Boys: The Culture of the Gang*. Glencoe ; IL : Free Press, 1955. 198 p.

such as the 1958 Fundamentals of Criminal Law of the USSR and the Union Republics, and the 1960 Criminal Code of the Ukrainian SSR, which broadly characterized hooliganism and applied severe penalties to discourage such activities³⁷. These legislative actions were part of a larger plan to maintain the social framework and strengthen the power of the state. The legal response to hooliganism has changed, especially in Western countries such as the United States and the United Kingdom. For example, hooliganism was addressed in the 1936 Public Order Act in the United Kingdom, which was originally designed to stop political radicalism³⁸.

The 2021 Euro Cup championship between Italy and England provided a striking example of the prevalence of hooliganism in real life and via the internet. Alongside the aggressive disputes outside Wembley Stadium, there was a well-organized internet operation that targeted players with racist taunts during the match³⁹. Officials responded by enacting laws that prohibited stadiums, made seizures, and closely monitored social networking sites. But the episode brought to light the increasing difficulties in combating hooliganism, which

now exists in both the online and offline realms and necessitates a more all-encompassing strategy from the judicial and criminal justice sectors⁴⁰.

Contemporary Issues in Hooliganism Prevention

Substantial study on the social elements influencing hooliganism was conducted concurrently with these legal reforms, with a special emphasis on the culture of adolescents, relationships within families, and juvenile criminal behavior. It was becoming more widely accepted in both the Soviet Union and the West that teenage criminality was a sign of more serious mature hooliganism⁴¹. While the West frequently placed greater emphasis on comprehending the larger cultural and social impacts on young conduct, the Soviet Union had a more organized strategy to dealing with juvenile criminals, stressing restoration and re-education through the legal system⁴².

In the current era, hooliganism has changed significantly, adapting to the intricacies of current society, cultural backgrounds, and technological breakthroughs. These days, it includes not only acts of physical assault but also disruptions in

37 Armstrong T. A., & Boutwell B. B. Low Resting Heart Rate and Rational Choice: Integrating Biological Correlates of Crime in Criminological Theories. *Journal of Criminal Justice*. 2012. Vol. 40. Is. 1. Pp. 31–39. DOI: [10.1016/j.jcrimjus.2011.11.001](https://doi.org/10.1016/j.jcrimjus.2011.11.001) (date accessed: 08.09.2024).

38 Ranstorp M. The Root Causes of Violent Extremism. The Basics. RAN Practitioners. 2024. 12 p. URL: https://home-affairs.ec.europa.eu/document/download/63770ad9-8c0b-44c4-a568-254bb22a8009_en?filename=ran_root_causes_of_violent_extremism_ranstorp_meines_july_2024.pdf&prefLang=de (date accessed: 08.09.2024).

39 Gelder K. *Subcultures: Cultural Histories and Social Practice*. London : Routledge, 2007. 188 p. URL: https://www.academia.edu/29530845/Subcultures_Cultural_Histories_and_Social_Practice_Routledge_2007_ (date accessed: 08.09.2024).

40 Ex Post Paper. Learning from adjacent fields: The relation between extremism and hooliganism. Study visit to Warsaw (PL). RAN Centre of Excellence, 2018. 12 p. URL: https://home-affairs.ec.europa.eu/document/download/cf539884-5f8f-4df3-a623-d1434959c622_en (date accessed: 08.09.2024).

41 Gross R. *Psychology: The Science of Mind and Behaviour*. 7th ed. London : Hodder Education, 2015. 1000 p.

42 Hawkins J. D. Science, Social Work, Prevention: Finding the Intersections. *Social Work Research*. 2006. Vol. 30. Is. 3. Pp. 137–152. DOI: [10.1093/swr/30.3.137](https://doi.org/10.1093/swr/30.3.137) (date accessed: 08.09.2024).

public spaces and the internet, where fresh varieties of hooliganism have surfaced. These comprise electronic coercion, coordinated attacks via the internet, and online bullying – collectively referred to as *digital hooliganism*. Such virtual acts can be just as damaging as conventional hooliganism, if not more so, because of the anonymity the internet affords, which gives people the confidence to behave obnoxious without worrying about facing repercussions right away⁴³.

This change has been made possible by the increasing accessibility of electronic means of communication, which enable people or groups to plan, mobilize, and carry out disruptive actions at a never-before-seen pace and scope. Protective measures are made more difficult by the fact that contemporary hooligans can organize internet initiatives, ruin incidents, or disseminate disinformation across borders around the world. Even if online hooliganism is on increase, classic forms – especially in sports – remain a serious threat⁴⁴.

Challenges and Future Directions

We can improve the transition chances by employing behavioral investigations, data on crimes, and professional opinions, according to a more plausible situation. Based on typical transitions seen in cultures experiencing medium to substantial amounts of social and economic anxiety, we are going to presume that likelihoods represent these shifts.

Let’s define the states as follows: S1 – Law-abiding Citizen; S2 – At-Risk Youth; S3 – First-time Offender; S4 – Repeat Of-

fender; S5 – Habitual Criminal. Let’s summarize the above in the form of a table.

Population distribution (per 1000 people)

	S1	S2	S3	S4	S5
S1	0.85	0.10	0.03	0.01	0.01
S2	0.20	0.50	0.20	0.05	0.05
S3	0.10	0.15	0.50	0.15	0.10
S4	0.05	0.05	0.20	0.50	0.20
S5	0.01	0.01	0.05	0.10	0.83

According to statistics, the approximate distribution on 1000 people will have following numbers: S1 (Law-abiding Citizen) – 800 people, S2 (At-Risk Youth) – 150 people, S3 (First-time Offender) – 30 people, S4 (Repeat Offender) – 15 people, S5 (Habitual Criminal) – 5 people.

Initial State Distribution = [800, 150, 30, 15, 5].

We want to conduct multiple iterations in order to track the community’s evolution throughout time. To obtain the pattern of distribution for the period of time that follows, the transition matrix must be multiplied by the present-day dispersion.

$$S1' = (0.85 \times 800) + (0.20 \times 150) + (0.10 \times 30) + (0.05 \times 15) + (0.01 \times 5) = 713.8$$
$$S2' = (0.10 \times 800) + (0.50 \times 150) + (0.15 \times 30) + (0.05 \times 15) + (0.01 \times 5) = 160.3$$
$$S3' = (0.03 \times 800) + (0.20 \times 150) + (0.60 \times 30) + (0.20 \times 15) + (0.03 \times 5) = 75.15$$
$$S4' = (0.01 \times 800) + (0.05 \times 150) + (0.10 \times 30) + (0.60 \times 15) + (0.10 \times 5) = 28$$
$$S5' = (0.01 \times 800) + (0.05 \times 150) + (0.05 \times 30) + (0.10 \times 15) + (0.85 \times 5) = 22.75$$

43 Jusko P., & Weihe H.-J. W. Football Hooliganism as a Socio-Political Phenomenon: Motivation, Manifestations, and Prevention Strategies. *Annales Universitatis Mariae Curie-Skłodowska. Sectio J, Paedagogia-Psychologia*. 2024. Vol. 37. Is. 1. Pp. 207-216. DOI: 10.17951/j.2024.37.1.207-216 (date accessed: 08.09.2024).

44 Tsoukala A. *Football Hooliganism in Europe: Security and Civil Liberties in the Balance*. Basingstoke, UK : Palgrave Macmillan, 2009. 179 p. DOI: 10.1057/9780230594661 (date accessed: 08.09.2024).

New State Distribution = [713.8, 160.3, 75.15, 28, 22.75]

Let's plot the changes in graph.

S1: Somewhat declines but still makes up the vast majority of the population.

S2: Varies, with some people moving up to S3 or back down to S1.

S3 and S4: As certain S1 and S2 people turn into perpetrators, they expand over the years.

S5: Slowly rises as a tiny fraction of S4 people advance to this level.

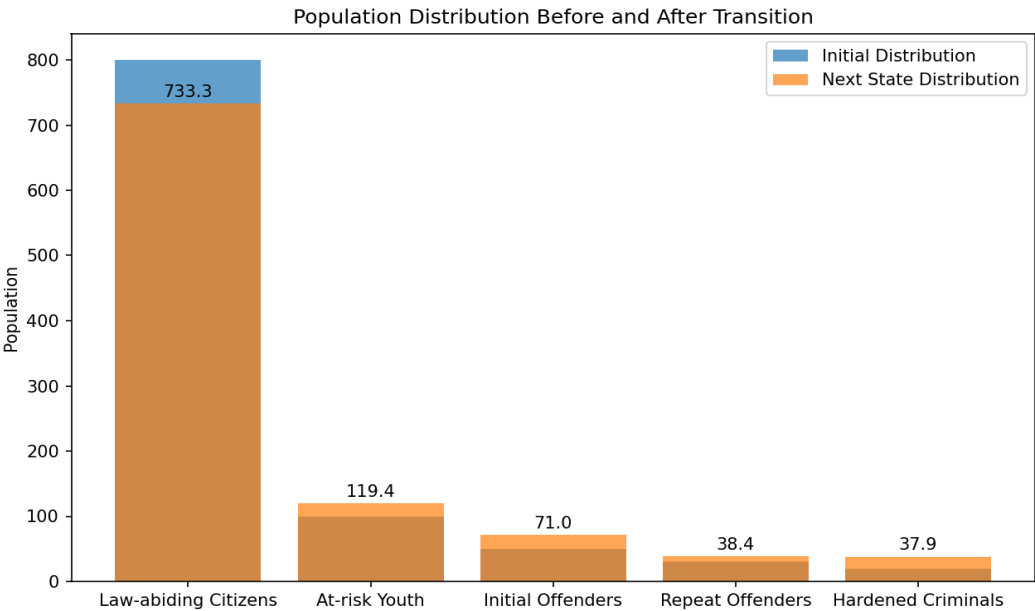


Fig. Population distribution before and after transition

Conclusions

Summing up, we note that in the investigation of cases of hooliganism, forensic medical examinations of victims and forensic psychiatric examinations of the accused are mainly prescribed. As for forensic biological examinations of evidence substances, chemical and forensic examinations, they are appointed very rarely. This situation is explained mainly by the underestimation of the role and importance of these examinations in the investigation of hooli-

gan acts and the lack of awareness of investigators about the achievements of expert practice.

The Markov Chain method used to the predictive model offers important new insights into the dynamics of hooliganism and how to prevent it. According to the estimates, the majority of the population continues to fall into the group of law-abiding citizens ($S1' = 713.8$), but a sizable portion also belongs to the young at-risk ($S2' = 160.3$) and first-time offender categories ($S3' = 75.15$). Nonetheless,

the existence of recurrent transgressors ($S4' = 28$) and seasoned lawbreakers ($S5' = 22.75$) underscores continuous difficulties in successfully containing the rise in criminal activity.

In order to keep young people who are at danger from turning into violent criminals, the strategy emphasizes the value of prompt assistance at the S2 stage. On the other hand, problems stem from uneven application of the law and the requirement for precise legal descriptions. More stringent controls are suggested by the model, which also alerts users to possible rises in the S4 and S5 classifications. To preserve public confidence, these policies must strike a balance between speech rights and security for the public. Officials are being urged to track web activity and strengthen international collaboration in response to the growing prevalence of internet networks used to coordinate hooliganism.

The current legal framework has to be updated with accurate descriptions to ensure uniform implementation of the law in every relevant jurisdiction. Coordinating efforts across government, community groups, and the judiciary are essential to a cohesive preventative plan. Collaboration facilitates the exchange of assets and enhances the efficacy of preventive measures. To tackle the fundamental causes of hazardous behavior and stop it from escalating into greater offenses, funding youth-focused preventive efforts is crucial. Courses can have a bigger effect if they are tailored to the requirements of the local population. AI and predicting technology should be used by law enforcement as well to identify and stop organized hooliganism, especially online. These technology developments enable early danger identification and quick responses, successfully combating and preventing hooliganism by striking a balance between public safety and freedom of speech.

Сучасні проблеми й основні аспекти кримінально-правової протидії хуліганству

Самір Ільяс огли Гадіров

Досліджено сучасні проблеми й основні аспекти такого протиправного явища, як хуліганство, і протидії йому. Проведено аналіз історичного розвитку хуліганства та проблем, яких воно завдає сучасному суспільству. Виявлено чинники, які спричиняють поширення хуліганства від моменту його виникнення до сьогодні. Розглянуто законодавчі й соціальні аспекти хуліганства. Окреслено зміни в соціальній, економічній і культурній сферах, через які хуліганство доволі поширено в багатьох країнах. Піддано оцінюванню ефективність чинних правових систем у запобіганні хуліганству, зазначено важливі недоліки та проблеми застосовуваних владою методів. Досліджено соціально-економічні зміни, культурні впливи й соціальні перспективи, а також наведено докладне пояснення того, чому хуліганство продовжує існувати, незважаючи на правові ініціативи, спрямовані на запобігання йому. Метою цієї наукової праці є усунути бар'єри між правовими концепціями та фактичною їх реалізацією за допомогою застосування міждисциплінарного підходу, а також надати пропозиції для підвищення здатності судової системи протидіяти хуліганству. Наголошено на необхідності посилити співпрацю в системі кримінального правосуддя, запровадити цілеспрямовані соціальні заходи й адаптувати закони з метою профілактики хуліганства, особливо серед молоді, яка перебуває у групі ризику. Для досягнення поставленої мети застосовано такі наукові методи: аналіз, синтез, статистичний аналіз, узагальнення та ін.

Ключові слова: хуліганство; кримінальне судочинство; соціокультурна динаміка; експертне забезпечення роз-

слідвання хуліганства; правова реформа; молодь групи ризику.

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Declaration

of Competing Interest

Author declare no conflict of interest.

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Improvised Incendiary Device: Concept Definition

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The paper discusses the lack of definition for the “improvised incendiary device” concept in current foreign and domestic methodologies and reference literature used by specialists to conduct forensic fire and technical examinations. The purpose is to define of the “improvised incendiary device” concept for its subsequent use within the framework of forensic fire and technical examinations. The method of system structural analysis has been employed to fulfill this goal. The lack of methods and methodologies for the study of improvised incendiary device preclude the attempts of forensic experts in forensic fire and technical examination to determine a specific source of ignition that has resulted in the ignition of a certain material (substance) or has sufficient energy to ignite a corresponding combustible medium at the seat of a fire. In turn, the fact that a specific ignition source cannot be identified leads to a probable rather than a categorical expert conclusion as to the true cause of a fire, and sometimes to the impossibility of determining the cause of a fire at all. According to three explanatory dictionaries compiled at various times and by different compilers, as well as three manuals (methodologies) for conducting forensic fire and technical examinations and ДСТУ 2272:2006, the author provides an in-depth analysis for interpreting terms related to the formation of the “improvised incendiary device” concept. The definition for this concept has been provided. This will further promote the development of relevant methods and methodologies for researching overall structure of improvised incendiary devices, their design elements, and the principle

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of operation in the context of carrying out forensic fire and technical examinations.

Keywords: fire; fire research; forensic fire and technical examination; ignition source; improvised incendiary device; arson; fire investigation.

Research Problem Formulation

The relevance of performing research on improvised incendiary device is due to the increased number of facts of their use for the purpose of intentional destruction and damage to the property of citizens by committing illegal actions: arsons.

Statistically, arson has accounted for from $\approx 1.8\%$ to more than 3% of the total number of fires in our country over the last few years (see table).

Arson as a cause of fires in Ukraine (2019–2023) ¹

Year	Total number of fires	Number of arsons	Number of arsons in the total number of fires, %
2019	95 915	2964	3,09023615
2020	101 279	3746	3,69869371
2021	79 457	2656	3,34268850
2022	80 652	1419	1,75941080
2023	67 934	2112	3,10889981

The analysis of current methodologies and reference literature, which should be utilized by specialists during forensic fire and technical examinations, has shown that the *improvised incendiary device* concept is not defined in these sources. Avail-

ability of the *improvised incendiary device* concept in the legal regulations governing forensic expert activities and officially registered methodologies will give a boost to the development of research methods discussing the overall structure of improvised incendiary devices, elements of their design, and the principle of operation, which is an urgent need for timely and high-quality conduct of forensic fire and technical examinations and provision of well-grounded categorial expert conclusions.

Article Purpose

To propose a definition for the *improvised incendiary device* concept in order to develop research methods associated with its overall structure, design elements, and principle of operation within the framework of forensic fire and technical examinations.

To accomplish this goal, it is necessary to:

- analyze the definition for the constituent components of the *improvised incendiary device* concept ² in conformity with explanatory dictionaries of the Ukrainian language compiled at various times by different

1 Статистика пожеж / Інститут державного управління та наукових досліджень з цивільного захисту : офіц. сайт. URL: <https://idundcz.dsns.gov.ua/uk/statistika-pozhezh> (date accessed: 13.06.2024).

2 Since this study stems from the analysis of Ukrainian language terms, and in English the same concepts change meaning depending on the context (two or three terms may even have the same meaning), we are unable to fully convey the meaning intended by the author in the translation – Ed.

compilers ³, manuals (methodologies) for performing forensic fire and technical examinations ⁴ and ДСТУ 2272:2006⁵;

- differentiate between found interpretations;
- delineate differences between industrial and improvised manufacturing of incendiary device;
- define the *improvised incendiary device* concept in the framework of forensic fire and technical examinations.

Research Methods

To reach this goal, the method of system structural analysis has been employed.

Analysis of Essential Researches and Publications

The section of the *Fire Research* Reference Methodological Manual (hereinafter referred to as the *Manual-1999*), which includes the procedure for conducting research into the occurrence of combustion

due to arson, states only that technical, electrical or chemical means of arson ⁶ can be identified during the inspection of the fire scene. This section also covers devices capable of igniting their own design or other combustible substances (materials). What is more, devices capable of triggering an ignition device have been described.

At the same time, definitions of ignition devices and improvised incendiary device are not provided in the 1999 Manual ⁷.

The *Fire Investigations and Forensic Examinations* Reference and Methodological Manual (hereinafter referred to as the *Manual-2007*) outlines questions divided into two groups which must be addressed by forensic experts in the course of forensic fire and technical examination. They discuss diagnostics of the causes of fires with arson signs according to: 1) specific peculiarities of developing ignition sources means (*"Which means of arson belongs to the development factor of ignition source in this case?"*, *"Could the aid [device, instrument, etc.] seized from the scene be utilized as a means of arson?"*) and 2) means of ar-

3 Академічний тлумачний словник української мови. В 11 т. / за ред. І. К. Білодіда. Київ, 1970—1980. URL: <https://sum.in.ua> (date accessed: 25.06.2024) ; Короткий тлумачний словник української мови / уклад.: Д. Г. Гринчишин, Л. Л. Гумецька, В. Л. Карпова та ін. ; відп. ред. Л. Л. Гумецька. Київ, 1978. 296 с. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovnyk_ukrainskoi_movy.pdf?PHPSESSID=1oe6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024) ; Тлумачний словник української мови / за ред. В. С. Калашника. 2-ге вид., випр. і допов. Харків, 2005. 992 с. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

4 Степаненко С. Г., Білкун Д. Г., Яник Я. М., Тимошук Ю. Т. Дослідження пожеж : довідк.-метод. посіб. Київ, 1999. 224 с. ; Безвесільний В. Д., Дьяченко О. Ф. Розслідування та судові експертизи пожеж : довідк.-метод. посіб. Харків, 2007. 360 с. ; Шмерего О. Б., Лисенко О. В., Кучинський В. В., Полешко Л. І., Форіс Ю. Б., Цвик Л. В., Гаврилюк О. М., Фонрабе В. В., Стельмашов І. В., Сабадаш В. В., Супрун В. С., Шебалков І. Л., Гусейнов Р. Н., Беліков А. С. Методика з теоретичних та практичних основ проведення судових пожежно-технічних експертиз. КНДІСЕ ; ХНДІСЕ ; ДніпроНДІСЕ, 2019. 88 с.

5 ДСТУ 2272:2006 Пожежна безпека. Терміни та визначення основних понять [Чинний від 01.07.2007]. Київ, 2007. 32 с. URL: https://antifire.ua/dbn/19-DSTU_2272_2006.pdf (date accessed: 25.06.2024).

6 Степаненко С. Г., Білкун Д. Г., Яник Я. М., Тимошук Ю. Т. Зазнач. твір.

7 Там само.

son used (“Could not the objects found at the scene of a fire and submitted for forensic examination constitute an aid, a device, or an instrument for starting a fire?”, “Is not this device an ignition device? What is the principle of its operation?”)⁸.

Simultaneously, the dictionary of some common and special terms from Appendix 2 to the Manual–2007 contains only the *means* concept (“a tool, an aid, a device by which action is performed”) and a note that the offenders can use, for example, an ignition source, such as a heated coil of an electric stove, etc., to commit arson⁹.

However, the Manual–2007 as well as *Manual–1999* lack definitions of the terms *ignition devices* and *improvised incendiary device*.

The current Methodology on the theoretical and practical bases for conducting forensic fire and technical examinations¹⁰ (hereinafter referred to as the *Methodology*) establishes the procedure for conducting investigations into the circumstances surrounding the cause of a fire, according to which the investigation into the circumstances surrounding the cause of a fire includes successive stages by a forensic expert, which are outlined in the reference manuals, of which the above-mentioned Manual–1999 is the only one currently in force.

Therefore, the Methodology for researching causes of fires refers to the

procedure provided in the Manual–1999, where, as indicated above, there are no definitions of the terms *ignition devices* and *improvised incendiary devices*. What is more, clause 3.2 of this Methodology envisages an algorithm for researching the causes of fires that have nothing to do with electrical equipment. It is similar to the algorithm established in clause 3.1 but presupposes the use of other methods. However, this clause does not include the procedure for conducting research on ignition devices, devices, means, aids, etc., whereas the objects of research in forensic fire and technical examinations are precisely devices for igniting substances and materials¹¹.

Meanwhile, clause 1.1 of the Methodology lists the main terms of forensic fire and technical examination, although the definition of such terms as *ignition devices* and *improvised incendiary device* is not contained in it¹². They are also not included in ДСТУ 2272:2006¹³, which contains terms and definitions of the main fire safety concepts. Probably it is specifically because of this that there is no procedure for conducting studies of ignition devices, devices, means, and aids, etc., in the domestic regulatory-legal and expert-methodological framework. Incidentally, foreign sources of information on the results of research into fires and arson do not have any interpretation of these terms¹⁴.

8 Безвесільний В. Д., Дьяченко О. Ф. Зазнач. твір.

9 Там само.

10 Шмерего О. Б., Лисенко О. В., Кучинський В. В. та ін. Зазнач. твір.

11 Там само.

12 Шмерего О. Б., Лисенко О. В., Кучинський В. В. та ін. Зазнач. твір.

13 ДСТУ 2272:2006 Пожежна безпека. Терміни та визначення основних понять [Чинний від 01.07.2007]. Київ, 2007. 32 с. URL: https://antifire.ua/dbn/19-DSTU_2272_2006.pdf (date accessed: 25.06.2024).

14 Eroglu Y. Text Mining Approach for Trend Tracking in Scientific Research: A Case Study on Forest Fire. *Fire*. 2023. 6(1):33. DOI: [10.3390/fire6010033](https://doi.org/10.3390/fire6010033) (date accessed: 25.06.2024) ; Gales J., McNamee R. Fire research for timber structures. *Fire and Materials*. 2023. Vol. 47. Is. 4. Pp. 413–414. DOI: [10.1002/fam.3140](https://doi.org/10.1002/fam.3140) (date accessed: 25.06.2024) ; Perry J. Innovative Fire Fighting

The absence of a definition for *improvised incendiary devices* in methodologies and reference literature used during forensic fire and technical examinations hinders the development of methods for studying their overall structure, design elements, and principle of operation. This, in turn, impedes the identification of a specific ignition source (in the case of the use of an improvised incendiary device that resulted in the ignition of a certain material [substance] or had enough energy to ignite the corresponding combustible medium) at the seat of fire. If it is impossible to find out the specific source of ignition, then the expert conclusion about the causes of a fire will have a probable, not a categorical form. Furthermore, in such cases it is sometimes impossible to determine the cause of the fire.

Even after employing the exclusion method outlined in the Manual–1999¹⁵, given the impossibility of thoroughly and comprehensively investigating all possible versions of the cause of a fire and the impossibility of logically refuting the facts of two or more versions of such a cause, assuming that the remnants of the improvised incendiary device are found, the lack of an approved algorithm for their investigation leads only to assumptions about the source of ignition that led to the ignition of the material or substance at the seat of a fire, which hinders the determination of the cause of a fire.

As stated previously, this Paper's Purpose is to formulate a definition of *improvised incendiary devices* for the purpose of further developing methods for studying their overall structure, design elements, and principle of operation within the

Strategy / Advances in Forest Fire Research. Ed. D. X. Viegas, L. M. Ribeiro. Universidade de Coimbra, 2022. Pp. 1675–1681. DOI: [10.14195/978-989-26-2298-9_257](https://doi.org/10.14195/978-989-26-2298-9_257) (date accessed: 22.06.2024) ; Yang Y., Du H., Yao G. A Scientometric Research on Applications and Advances of Fire Safety Evacuation in Buildings. *Fire*. 2023. 6(3):83. DOI: [10.3390/fire6030083](https://doi.org/10.3390/fire6030083) (date accessed: 25.06.2024) ; Lim O. K. Bibliometric Analysis of Research Topics on Fire Safety. *Fire Science and Engineering*. 2023. Vol. 37. Is. 1. Pp. 129–137. DOI: [10.7731/KIFSE.6a32f1fd](https://doi.org/10.7731/KIFSE.6a32f1fd) (date accessed: 25.06.2024) ; Christ S., Schwarz N., Sliuzas R. Measuring fire risk perception of residents before and after a fire / Advances in Forest ... Pp. 682–688. DOI: [10.14195/978-989-26-2298-9_104](https://doi.org/10.14195/978-989-26-2298-9_104) (date accessed: 25.06.2024) ; Scribner C. F. A Is for Arson: A History of Vandalism in American Education. Ithaca, NY : Cornell University Press, 2023. 240 p. DOI: [10.1515/9781501770739](https://doi.org/10.1515/9781501770739) (date accessed: 25.06.2024) ; Arson, n.¹. Arson, n.² / Oxford English Dictionary. 3rd ed. Oxford University Press, 2024. URL: <https://www.oed.com/search/dictionary/?scope=Entries&q=arson> (date accessed: 25.06.2024) ; Woods R. Wildfire Arson Prevention Guide. 1st ed. CRC Press, 2023. 128 p. DOI: [10.4324/9781003353843](https://doi.org/10.4324/9781003353843) (date accessed: 25.06.2024) ; Kwon H., Kim S., Seo J. The Typology of Korean Arson and Predictive Factor for Serial Arson. *Journal of The Korean Data Analysis Society*. 2020. Vol. 22. Is. 1. Pp. 387–401. DOI: [10.37727/jkdas.2020.22.1.387](https://doi.org/10.37727/jkdas.2020.22.1.387) (date accessed: 25.06.2024) ; Noon R. K. Introduction to Forensic Engineering. 1st ed. CRC Press, 1992. 220 p. ; Horsley F. K. New Perspectives on Arson and Firesetting: The Human-Fire Relationship. Taylor & Francis Group, 2021. 132 p. DOI: [10.4324/9780367808648](https://doi.org/10.4324/9780367808648) (date accessed: 25.06.2024) ; Stanley J. R. Preventing rural arson / Rural Crime Prevention. Theory, Tactics and Techniques ; Ed. by A. Harkness. 1st ed. London, 2020. Pp. 299–312. DOI: [10.4324/9780429460135-33](https://doi.org/10.4324/9780429460135-33) (date accessed: 25.06.2024) ; Tao X. Research on Innovative Model of Fire Management in Universities — Take Fire Safety Education as an Example. *Frontiers in Educational Research*. 2021. Vol. 4. Is. 12. Pp. 40–43. DOI: [10.25236/FER.2021.041208](https://doi.org/10.25236/FER.2021.041208) (date accessed: 25.06.2024) ; Fenoff R., Fish J. T., Miller L. S., Wallace E. W. Arson and Explosives / R. Fenoff et al. Crime Scene Investigation. 4th ed. NY, 2022. Pp. 209–235. DOI: [10.4324/9780429261657-9](https://doi.org/10.4324/9780429261657-9) (date accessed: 25.06.2024).

15 Степаненко С. Г., Білқун Д. Г., Яник Я. М., Тимошук Ю. Т. Зазнач. твір.

framework of forensic fire and technical examinations.

Main Content Presentation

To define the *improvised incendiary device* concept, let us clarify the interpretation of each of the words in accordance with three explanatory dictionaries of the Ukrainian language from different years and edited by various authors.

Thus, firstly, let's define the *improvised* concept.

As stated in the *Concise Explanatory Dictionary of the Ukrainian Language* (1978; hereinafter referred to as the CED), **improvised** means “*made by hand, made by handcraft at home*”¹⁶. The adjective *handcraft* is not contained in this dictionary, but there is an interpretation of the noun *handcraft*-er: “1. A small commodity producer who works for the market; craftsman. 2. fig. “A person who works in a disorganized way in isolation from others”¹⁷. Academic Explanatory Dictionary of the Ukrainian Language (1970–1980; hereinafter referred to as the AED UL) contains the definition of the *handcraft* word: “1. *handcraft industry, handcrafters’ occupation*. <...> 2. fig. *Unorganized, primitive work*”¹⁸.

At the same time, industrial production involves the regulated assembly of objects (devices, instruments, mechanisms, etc.), which is due to certain requirements

of the relevant technical specifications for their manufacture (installation).

It is worth pointing out that handcrafters and handicraft, considering the above quotes, refer to the production of certain goods by craftsmen for the purpose of selling, exchanging, etc. In the aspect we are studying, there is no sale, and the manufactured incendiary device (instrument, mechanism, etc.) is used for a specific purpose: to cause a fire.

Therefore, in the context of conducting forensic fire and technical examinations, it is expedient to use the *improvised* word when defining the *improvised incendiary device* concept, and not *handcrafted*.

Secondly, let's define the *incendiary* (ignition) concept.

Based on the preceding, the Manual–2007 diagnostics on the causes of fires with signs of arson based on the means of ignition used stipulates the question “Is this an ignition device and how does it work?” as well as the word *ignition*¹⁹.

The interpretation of this concept can be found only in one of the Ukrainian language dictionaries analyzed by us: **ignition** – “which is used for **igniting** (in the first meaning)”²⁰. In turn, *igniting* is “1. An action intended to ignite”²¹, and **ignite** is defined as “1. To cause burning or to make a fire” <...> 2. fig. To entice someone with an idea, one's own example, etc., to spark enthusiasm, yearning for something. <...> 3. fig.

16 Саморобний / Короткий тлумачний С. 243. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovyk_ukrainskoi_movy.pdf?PHPSESSID=10e6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

17 Кустар / Короткий тлумачний С. 125.

18 Кустарництво / Академічний тлумачний Т. 4: І–М; ред. тому: А. А. Бурячок, П. П. Доценко, П. Й. Горецький. 1973. С. 417. URL: <https://sum.in.ua/s/kustarnyctvo> (date accessed: 25.06.2024).

19 Безвесільний В. Д., Дьяченко О. Ф. Знач. твір.

20 Запалювальний / Академічний тлумачний Т. 3: 3; ред. тому: Г. М. Гнатюк, Т. К. Черторизька. 1972. С. 241. URL: <https://sum.in.ua/s/zapaljuvaljnyj> (date accessed: 25.06.2024).

21 Запалювання / Там само. URL: <https://sum.in.ua/s/zapaljuvannja> (date accessed: 25.06.2024).

To provoke any strong emotion. <...> 4. <...>
4. fig. To cause something to glitz and shine
<...> 6. med. To cause inflammation of an
organ or part of the body”²². At the same
time, **incendiary** is “1. Sth used for igniting.
2. fig. Sb who is passionate about something,
ardent, passionate, hot. 3. med. Associated
with inflammation: disease process <...>”²³,
“avid, impulsive, crusty”²⁴ and “1. The same
as ignition”²⁵, and **incendiary** — “Has some-
thing to do with ignition”²⁶.

Therefore, only one of the analyzed
dictionaries contains the *ignition* concept:
Academic Explanatory Dictionary of the
Ukrainian Language²⁷.

It should be emphasized that in ac-
cordance with ДСТУ 2272:2006, *ignition* is
the initiation of combustion²⁸. Combustion,
in turn, is an exothermic process
involving the redox transformation of
substances and/or materials and is char-
acterized by the presence of volatile prod-
ucts and/or light radiation. The note to
the definition of combustion also states
that signs of combustion include heat,
light, ultraviolet radiation, the presence
of smoke, deterioration of gaseous me-

dium composition, and an increase in its
temperature²⁹.

Thus, *ignition* is a process that takes
place after a certain action, and *incendiary*:
something serving as a source of igni-
tion and is associated with fire. That is
why the *incendiary* term in the context of
forensic fire and technical examinations
is proposed to be applied to devices (in-
struments, mechanisms, etc.) that initiate
combustion, which subsequently leads to
fire. Therefore, we suggest using the ap-
propriate adjective *incendiary* rather than
ignition when defining an *improvised incen-
diary device*.

Thirdly, it is required to define the *de-
vice* concept.

In the Manual-2007, in the provi-
ded diagnostics regarding the causes of
fires with signs of arson by applied arson
means, there is the question “Is not this *de-
vice* an *ignition device* and what is the *princi-
ple of its operation*?” that contains the word
*device*³⁰.

As defined by one dictionary, a **device**
is “an apparatus, a mechanism”³¹. Another
dictionary states that it is “a tool, equip-

22 Запалювати / Академічний тлумачний Т. 3 URL: <https://sum.in.ua/s/zapaljuvaty>
(date accessed: 25.06.2024).

23 Запальний / Короткий тлумачний С. 83. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovnyk_ukrainskoi_movy.pdf?PHPSESSID=10e6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

24 Запальний / Тлумачний словник С. 920. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

25 Запальний / Академічний тлумачний Т. 3 С. 242. URL: <https://sum.in.ua/s/zapaljnnyj>
(date accessed: 25.06.2024).

26 Запальний / Там само. URL: <https://sum.in.ua/s/zapaljnnyj> (date accessed: 25.06.2024).

27 Запалювальний / Там само. С. 241. URL: <https://sum.in.ua/s/zapaljuvaljnnyj> (date accessed: 25.06.2024).

28 ДСТУ 2272:2006. С. 3. URL: https://antifire.ua/dbn/19-DSTU_2272_2006.pdf (date accessed: 25.06.2024).

29 Там само. С. 2.

30 Безвесільний В. Д., Дьяченко О. Ф. Зазнач. твір.

31 Пристрій / Тлумачний словник С. 966. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

ment, which helps to do some work and simplifies/facilitates production process”³².

Thus, the *device* definition presupposes the following concepts: *aid*, *equipment*, *instrument*, *mechanism*, which are designed for a specific purpose.

Since one concept contains several others, let us illustrate this in Diagram 1.

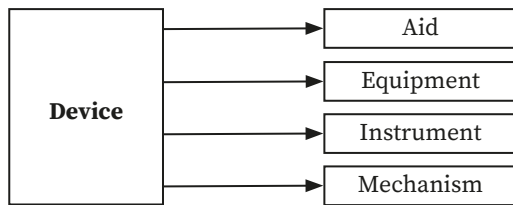


Diagram 1. Constituent components of the *device* concept

Next, we will analyze separately all the concepts contained in the *device* definition.

Among the three analyzed dictionaries, the definition of the *device* concept is available in the ATC UM and the 2005 Dictionary (hereinafter referred to as the Dictionary–2005) and is defined as follows: “1. Action in the sense of adapting, adjusting. <...> 2. A device, an instrument which helps to carry out or facilitate certain work. <...> A natural formation in plants and animals serving for self-preservation, protection,

etc.”³³ and “adaptation, apparatus”³⁴. The definition of the terms *to adapt* (*to adjust*) can be found in all three dictionaries: “1. To make something suitable for a specific purpose, under certain conditions. <...> 2. colloq. To attach, to place something somewhere”³⁵, “to prepare for a specific use”³⁶, “to adapt”³⁷.

Constituent components of the *adapt* (*adjust*) concept are illustrated in Diagram 2.

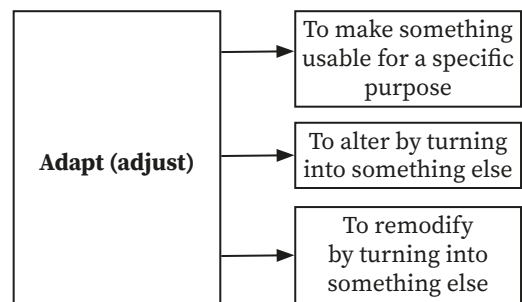


Diagram 2. Constituent components of the *adapt* (*adjust*) concept

Thus, *to adapt* (*adjust*) is a process occurring after a certain action. As a result, this concept is incorrectly used.

Let us define the meaning of the *equipment* term³⁸.

Of the three dictionaries, only the AED UL contains the *equipment* concept (ukr. обладнання). It is: “1. A set of mechanisms,

32 Пристрій / Академічний тлумачний Т. 8 : Природа — Ряхтливий ; ред. тому: В. О. Винник, В. В. Жайворонок, Л. О. Родніна, Т. К. Черторизька. 1977. С. 45. URL: <https://sum.in.ua/s/prystrij> (date accessed: 25.06.2024).

33 Пристосування / Там само. С. 43. URL: <https://sum.in.ua/s/prystosuvannja> (дата звернення: 25.06.2024).

34 Пристосування / Тлумачний словник С. 966. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

35 Пристосовувати, пристосувати / Академічний тлумачний Т. 8 С. 42. URL: <https://sum.in.ua/s/prystosovuvaty> (date accessed: 25.06.2024).

36 Пристосовувати / Короткий тлумачний С. 216. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovyk_ukrainskoi_movy.pdf?PHPSESSID=10e6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

37 Пристосовувати / Тлумачний словник С. 966. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (дата звернення: 25.06.2024).

38 In English, the Ukrainian terms *обладнання* and *устаткування* are both translated as *equipment*, although their meanings differ in Ukrainian.— Ed.

instruments, devices, etc. required for something: kit. <...>. 2. Furniture that furnishes a room; furnishings. <...> Interior decoration of a room, premises” and “Action related to furnishing/equipping”³⁹. Constituent components of the *equipment* concept are illustrated in Diagram 3.

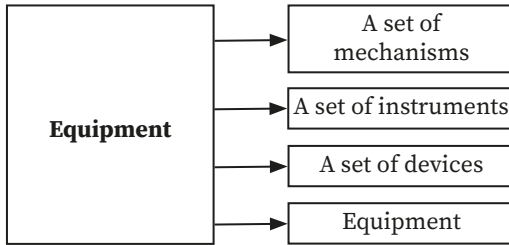


Diagram 3. Con.stituent components of the *equipment* concept

Now we will consider further interpret all the words that make up the *equipment* definition. Let's define the meaning of the *mechanism* term.

As stated in dictionaries, a ***mechanism*** is: “1. A device that transmits or converts motion. <...> The same as a machine. 2. fig. The internal structure, system of something. <...> 3. A set of states and processes that make up a certain physical, chemical, etc. phenomenon”⁴⁰, “1. A device that starts a machine or apparatus. 2. fig. The internal structure, system of something”⁴¹ and, finally, “1. A device that transmits or transforms the motion of bodies. <...> 2. Internal structure, system of

something. [synonym —] organization. <...> 3. The sequence of the course, causes, consequences, inner essence of a certain phenomenon”⁴². Constituent components of the *mechanism* concept are presented in Diagram 4.

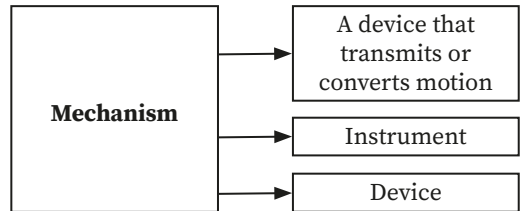


Diagram 4. Constituent components of the *mechanism* concept

Consequently, the *mechanism* concept is explained using the terms *device* and *instrument*. At the same time, a mechanism transmits or converts motion to start machines or apparatus. In our context, the action must cause a fire. It is therefore inappropriate to use the *mechanism* term in this case.

Now let's find out the meaning of the *instrument* term.

According to the dictionaries, an ***instrument*** is: “1. A special device designed for a specific purpose. 2. A tool that is used when performing a certain action. [Synonym] *instrumentation*”⁴³, “1. Equipment, a device for controlling machines, plants, for regulating technological processes, calculations, etc. 2. A special device for a machine tool, machine, etc., which performs independently”⁴⁴

39 Обладнання / Академічний тлумачний Т. 5 : Н—О ; ред. тому: Л. А. Юрчук, В. О. Винник. 1974. С. 517, 518. URL: <https://sum.in.ua/s/oblalnannja> (date accessed: 25.06.2024).

40 Механізм / Академічний тлумачний Т. 4 С. 695. URL: <https://sum.in.ua/s/MEKhA-NIZM> (date accessed: 25.06.2024).

41 Механізм / Короткий тлумачний С. 141. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovnyk_ukrainskoi_movy.pdf?PHPSESSID=10e6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

42 Механізм / Тлумачний словник С. 516—517. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

43 Прилад / Там само. С. 654—655. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

44 Прилад / Короткий тлумачний С. 214. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovnyk_ukrainskoi_movy.pdf?PHPSESSID=10e6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

and “1. A special device designated for a specific purpose (measuring, controlling, monitoring something, etc.). <...> Mechanical device, device. <...> 2. A tool, an object that is utilized when carrying out a particular action. <...>

An item that is part of some equipment, equipment. <...> 3. coll. A set of corresponding tools, items necessary to perform a certain work”⁴⁵. Constituent components of the *device* concept are illustrated in Diagram 5.

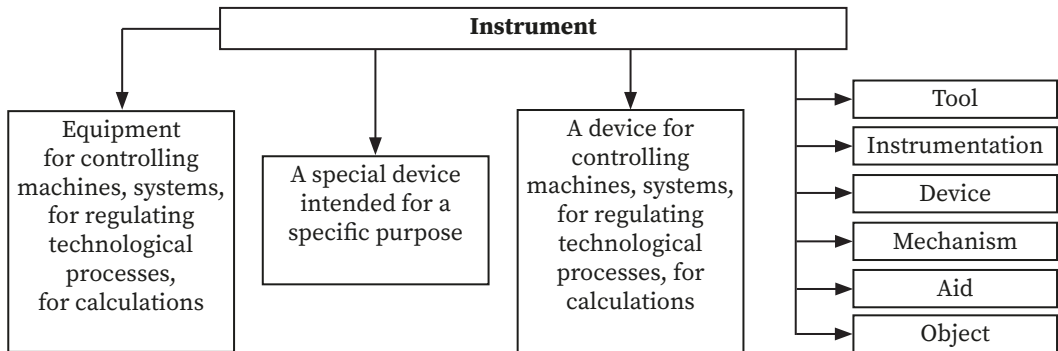


Diagram 5. Constituent components of the *device* concept

As to equipment and devices for calculations and control of machines and plants, there is no doubt: they are associated with regulation of certain technological processes. Therefore, these concepts cannot be used either, since the outcome should be a fire.

Next, let's clarify the *tool* concept.

As defined by explanatory dictionaries, a **tool**⁴⁶ (ukr. *інструмент*) is: “1. <...> A hand tool for performing any work. 2. <...> coll. A collection of tools for work. 3. <...> Audio device”⁴⁷, “Tools (e.g., a device for processing materials, measurements, conducting surgical operations, reproducing musical sounds, etc.). 2. <...> A set of such tools. <...>

3. fig. A means, a way to accomplish something”⁴⁸ and “1. <...> Tools for work. <...> 2. <...> coll. A set of such tools. <...> 3. <...> Same as *Musical instrument*”⁴⁹. Constituent components of the *tool* concept are presented in Diagram 6.

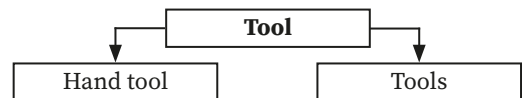


Diagram 6. Constituent components of the *tool* concept

Accordingly, a tool is a hand tool for performing a certain work. Now let's further clarify the *tools* concept (ukr. *знаряддя*).

45 Прилад / Академічний тлумачний Т. 7 : Поїхати — Приробляти ; ред. тому: О. П. Петровська, М. М. Пилинський, Л. О. Родніна, Н. І. Швидка. 1976. С. 653. URL: <https://sum.in.ua/s/PRYLAD> (date accessed: 25.06.2024).

46 In English, the Ukrainian terms *інструмент* and *знаряддя* are both translated as *equipment*, although their meanings differ in Ukrainian.— Ed.

47 Інструмент / Короткий тлумачний С. 99. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovyk_ukrainskoi_movy.pdf?PHPSESSID=10e6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

48 Інструмент / Тлумачний словник С. 405. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

49 Інструмент / Академічний тлумачний Т. 4 С. 34. URL: <https://sum.in.ua/s/instrument> (date accessed: 25.06.2024).

In 1dictionaries, *tools* are interpreted as follows: “1. *Aids, instruments, mechanisms, etc., which help to perform a certain action.* <...> **Production tools:** *aids, instruments, mechanisms, etc., used in production.* <...> 2. *fig. Sth that serves as a means of doing something*”⁵⁰, “1. *Technical aids helping to perform some work.* <...> 2. *fig. A means to reach a goal*”⁵¹ and “1. *A technical aid facilitating the execution of a certain action.* [Synonyms] *Household item, tackle, supplies, tool (a set of items for a specific job).* [Set expressions] *Production tools: aids, devices, mechanisms, etc., utilized in production.* 2. *fig. A means to fulfil a certain goal*”⁵². Constituent components of the *tools* concept are illustrated in Diagram 7.

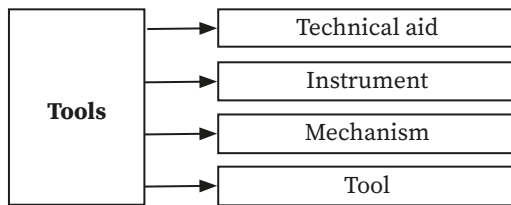


Diagram 7. Constituent components of the *tools* concept

Thus, *tools* are devices, instruments, mechanisms, etc., which help to perform a certain work, as well as a *tool*.

It is clear from the meaning of the *tools* term that it involves the performance of a certain action using a technical aid, in-

strument, mechanism, tool (for example: if the lock of the front door is broken with the help of a tool and money is stolen from the house, then this tool is an instrument of crime). In our case, it is necessary to use something that initiates combustion and will further lead to a fire.

According to explanatory dictionaries, **work** is: “1. *A certain range of occupation, activity.* [Synonyms] *business, job, task.* <...> 2. *Labor, occupation, job at an enterprise or an institution as a means of subsistence, a source of income.* <...> 3. *Output.* <...> 4. *Defined as a method, manner, style of performing, making something.* <...> 5. *phys. Quantitative characteristic of transforming any type of energy into other types of energy*”⁵³, “1. *A certain range of activities, responsibilities; job, labor* <...> 2. *Work output*”⁵⁴ and “1. *An Action in the sense of doing* <...>. <...> 2. *Someone’s performance of any activities/action, someone’s labor.* 3. <...> *Defined as doing, making, processing something.* <...> 4. *The range of activities, duties someone is involved in; business, task.* <...> 5. *Labor, occupation, job at an enterprise or an institution as a means of subsistence, a source of income.* <...> 6. *Sth that is subject to execution, implementation.* <...> 7. *Defined a method, manner, style of performing, making something.* <...> 8. *The product of someone’s labor; a product, a piece.* <...> 9. *phys. Quantitative characteristic of trans-*

50 Знaряддa / Aкaдeмiчний тлумачний Т. 3 С. 642. URL: <https://sum.in.ua/s/ZNARJaD-DJa> (date accessed: 25.06.2024).

51 Знaряддa / Короткий тлумачний С. 93. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovnyk_ukrainskoi_movy.pdf?PHPSESSID=10e6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

52 Знaряддa / Тлумачний словник С. 386. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

53 Робота / Там само. С. 696. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

54 Робота / Короткий тлумачний С. 233. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovnyk_ukrainskoi_movy.pdf?PHPSESSID=10e6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

forming any type of energy into other types of energy”⁵⁵.

It is worth noting that the work of initiating combustion, which would cause a fire in the future, does not exist.

Therefore, the *tool* concept (ukr. *знаряддя*) as well as the *tool* concept (ukr. *інструмент*) cannot be applied in this case, so let's define the interpretation of the *instrument* word

Among the dictionaries we have analyzed, only the AED UL includes a definition of the *instrumentation* term: “1. Collectively for an *instrument/a device* <...>. <...> 2. An item that is part of any equipment, gear. <...> A necessary item when performing a certain action”⁵⁶, and the *fit* concept is defined by the AED UL and the CED (absent only in Dictionary–2005) as follows: “1. The same as *adapting* <...>. <...> 2. The same as *adjusting*. <...> 3. The same as *making suitable*”⁵⁷ and “to adjust in size, adapt, make appropriate for a specific purpose, attach”⁵⁸.

Despite the content, instrumentation is both a device and an instrument, both equipment and a mechanism, etc., but it can only become a component of something that can initiate combustion, which in turn may lead to a fire.

Therefore, the *instrumentation* concept cannot be applied in this case either.

Let's define the meaning of the *object* concept.

The compilers of explanatory dictionaries interpret an *object* as: “1. A specific tangible item perceived by the senses as a separate element of reality. 2. A particular item used for something. <...> 3. The range of knowledge shaping a separate discipline of teaching (subject). <...> 4. The focus of someone's attention or activity”⁵⁹, “A specific physical phenomenon perceived by senses. <...> 2. A logical concept that makes up the content of a thought or idea (subject). 3. The object of cognition, creativity, practice; the goal of someone's cognitive, creative, etc. activity <...> 4. The scope of knowledge constituting a separate academic discipline (subject)”⁶⁰ and “1. Sth tangible perceived by senses. <...> 2. A logical concept that constitutes the content of thought, cognition, etc. <...> 3. The purpose of someone's cognitive, creative, and similar activities <...> Object of senses, experiences, etc.; a person who arouses another person's interest, attraction, or feelings of love, etc. <...> 4. The range of knowledge that constitutes a separate teaching discipline. <...>”⁶¹. Constituent components of the *object* concept are presented in Diagram 8.

55 Робота / Академічний тлумачний Т. 8 С. 587. URL: <https://sum.in.ua/s/robota> (date accessed: 25.06.2024).

56 Приладдя / Академічний тлумачний Т. 7 С. 653. URL: <https://sum.in.ua/s/pryladdja> (date accessed: 25.06.2024).

57 Приладжувати, приладити / Академічний тлумачний Т. 7 С. 654. URL: <https://sum.in.ua/s/Pryladzhuvaty> (date accessed: 25.06.2024).

58 Приладжувати, приладити / Короткий тлумачний С. 214. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovyk_ukrainskoi_movy.pdf?PHPSESSID=1oe6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

59 Предмет / Короткий тлумачний С. 210. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovyk_ukrainskoi_movy.pdf?PHPSESSID=1oe6h4aoc7e9sl8cd7jonpcr65 (date accessed: 25.06.2024).

60 Предмет / Тлумачний словник С. 649. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

61 Предмет / Академічний тлумачний Т. 7 С. 527. URL: <https://sum.in.ua/s/predmet> (date accessed: 25.06.2024).

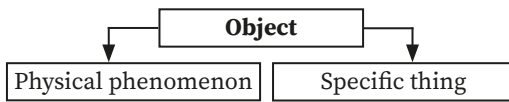


Diagram 8. Constituent components of the *object* concept

Accordingly, an object is any physical phenomenon perceived by senses, or a specific thing.

As defined by explanatory dictionaries, a **thing** (in one of its senses) is: “1. Predominately an object of household use, labor, etc. <...> Any object in general. <...> 2. A phenomenon of reality, a manifestation or result of some action, activity; a case, fact, an event. <...> Someone’s attitude towards something. <...> 3. A piece of literature, a piece of art, a scientific book. <...> 4. Work, business, etc. that someone is doing or should be doing; business. <...> 5. philos. The objective world (objects, phenomena) that exists outside of human consciousness and affects it ⁶², “Any physical object. <...> Property, belongings” ⁶³ and “1. Any physical object. <...> 2. Property, belongings. <...> 3. Phenomenon of reality, manifestation or result of some action; case, event; need for something”. <...> 4. A piece of literature, a piece of art, or a scientific book. 5. Work, business someone does. <...> 6. only plural, philos. The objective world (objects, phenomena) that exists outside of human consciousness” ⁶⁴.

The content of the *thing* concept implies a tangible physical object: specifically, the object of labor activity. Thus, under certain conditions, a thing and an object

can only become a component of something that can initiate combustion, leading to a fire. We can therefore conclude that the concepts of *object* and *thing* are not applicable in this case.

Let’s return to the interpretation of the *equipment* (ukr. *устаткування*) concept.

The AED UL defines the *equipment* concept as follows: “1. An action aimed at equipping; equipment. <...> 2. A set of mechanisms, instruments, devices, etc. necessary for something; equipment. <...> 3. Furniture, things that furnish a room” ⁶⁵. Constituent components of the *equipment* concept are illustrated in Diagram 9.

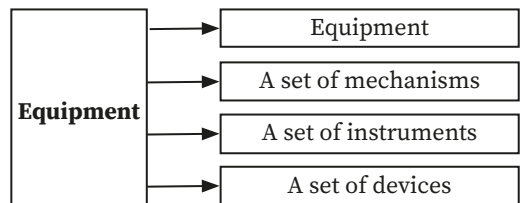


Diagram 9. Constituent components of the *equipment* concept 9.

The *equipment* concept is defined as a set of mechanisms, instruments and devices, and for our purposes, anything that can initiate combustion and cause a fire must constitute a whole, so we cannot use these concepts. Dictionaries explain the *equipment* concept by using the *equipment* concept (ukr. *обладнання*) and vice versa, so these definitions cannot be used either.

Let’s summarize the analysis of the interpretations for the above concepts: the *device*

⁶² Річ 1 / Академічний тлумачний Т. 8 С. 576. URL: <https://sum.in.ua/s/rich> (date accessed: 25.06.2024).

⁶³ Річ 2 / Короткий тлумачний С. 232. URL: https://shron1.chtyvo.org.ua/Humetska_LL/Korotkyi_tlumachnyi_slovnnyk_ukrainskoi_movy.pdf?PHPSESSID=1oe6h4aoc7e9sl8cd7jonp cr65 (date accessed: 25.06.2024).

⁶⁴ Річ 1 / Тлумачний словник С. 694. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

⁶⁵ Устаткування (встаткування) / Академічний тлумачний Т. 10 : Т—Ф ; ред. тому: А. А. Бурячок, Г. М. Гнатюк. 1979. С. 499. URL: <https://sum.in.ua/s/USTATKUVANNJa> (date accessed: 25.06.2024).

definition contains the *instrument* concept, which in turn explains the *special device* concept. Constituent components of the *device* concept are illustrated in Diagram 10.

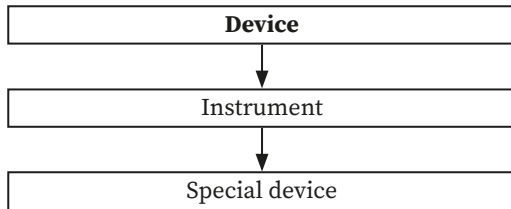


Diagram 10. Constituent components of the *device* concept

In light of the foregoing, an instrument is a special device designed for a specific purpose, that is, the *instrument* concept constitutes the *device* concept and identifies it as a *special device*.

Thus, in this case, the *device* term cannot be used. Instead, the *instrument* term is appropriate, as evidenced by the fact that a lighter, for example, is recognized as an instrument by the compilers of explanatory dictionaries: “**Lighter**, i.e., a small pocket instrument used for starting a fire”⁶⁶. Please note that the cited dictionary entry refers to a lighter as an instrument, not a device. As in the case under consideration, the end result of using a lighter is the production of fire, and according to ДСТУ 2272:2006, “**fire** is a dynamic, three-dimensional composition of hot substances in the process of

combustion”⁶⁷. Fire from a lighter ignites substances and materials for their specific use, and in the context we are studying, fire leads to the outbreak of a fire.

In compliance with ДСТУ, a **fire** is “an unregulated process of destroying or damaging property by fire, during which factors dangerous to living beings and the environment arise”⁶⁸.

In turn, **fire hazards** are “manifestations of a fire that cause or may lead to burns, poisoning by volatile products of combustion or pyrolysis, injury or death of people and/or to material, social, environmental damage”⁶⁹. The note lists the following fire hazards: “Elevated temperature, smoke, deterioration of the gas environment”⁷⁰.

ДСТУ 2272:2006 defines **volatile combustion products** as “a collection of gaseous substances, as well as aerosols, which are formed in the hearth and spread beyond it. Note. Volatile combustion products are formed as a result of complete or incomplete combustion, pyrolysis, evaporation, sublimation”⁷¹, and **hearth** as “a collection of combustible substances and (or) products of combustion and (or) structural elements that limit the space where combustion takes place”⁷², and **combustible substance** as a substance (material) capable of “participating in burning as a reducing agent”⁷³, and **pyrolysis** as “an irreversible process of thermal decomposition of a substance or material”⁷⁴.

66 Запальничка / Академічний тлумачний ... Т. 3 ... С. 243. URL: <https://sum.in.ua/s/ZAPAL-jNYChKA> (date accessed: 25.06.2024) ; Тлумачний словник ... С. 351. URL: <https://archive.org/details/tlumachny2005/page/n987/mode/2up> (date accessed: 25.06.2024).

67 ДСТУ 2272:2006. С. 2. URL: https://antifire.ua/dbn/19-DSTU_2272_2006.pdf (date accessed: 25.06.2024).

68 Там само. С. 6.

69 Там само. С. 7.

70 Там само.

71 ДСТУ 2272:2006. С. 4. URL: https://antifire.ua/dbn/19-DSTU_2272_2006.pdf (date accessed: 25.06.2024).

72 Там само. С. 5.

73 Там само.

74 Там само. С. 2.

Given the above, we propose to supplement the methods, methodologies, ДСТУ and reference literature on the issues of conducting forensic fire and technical examinations with the **improvised incendiary device** term. *“Improvised incendiary device is a device in which at least one of the design elements is made in an improvised way or its non-industrial unregulated assembly is used, i.e., the structure of the device finally prepared for ignition of combustible substance or combustible medium is not determined by the relevant technical requirements for its manufacture, installation, use, etc.”.*

Conclusions

In view of the analysis findings, it has been demonstrated that there is no concept of an *improvised incendiary device* in the current methodologies and reference literature for conducting forensic fire and technical examinations. Problems resulting from the absence of this term and, accordingly, the lack of procedures and methodologies for conducting research on improvised incendiary devices or their remnants, discovered and seized at the fire site or near human activity facilities, have been outlined. Approaches to solving the problems associated with investigating the causes of a fire caused by an improvised incendiary device have been proposed. It has been shown that today the development of methods to study the overall structure, design elements, and operating principle of improvised incendiary devices is relevant to the successful performance of forensic fire and technical examinations. To the existing methodologies and reference literature used by forensic experts when conducting forensic fire and technical examinations, the paper proposes to add a new term: **“An improvised incendiary device is a device in which**

at least one of the design elements is improvised or its non-industrial, unregulated assembly is used, i.e. the design of the device, when finally prepared to ignite a combustible substance or medium, is not determined by relevant technical specifications for its manufacture, installation, use, etc.”.

Саморобний запальний прилад: визначення поняття

Михайло Кузьменко

Зауважено відсутність визначення поняття «саморобний запальний прилад» у чинних іноземних і вітчизняних методиках та довідковій літературі, якими фахівці послуговуються для проведення судових пожежно-технічних експертиз. Мета — сформулювати визначення поняття «саморобний запальний прилад» для його подальшого вживання в межах проведення судових пожежно-технічних експертиз. Для досягнення поставленої мети застосовано метод системно-структурного аналізу. Відсутність методик і методів дослідження саморобних запальних приладів унеможливає спроби експертів у галузі судових пожежно-технічних досліджень визначити конкретне джерело запалювання, яке спричинило займання певного матеріалу (речовини) або має достатньо енергії для запалювання відповідного горючого середовища в осередку пожежі. Своєю чергою той факт, що конкретне джерело запалювання визначити неможливо, призводить до складання ймовірного, а не категоричного висновку експерта щодо з'ясування справжньої причини виникнення пожежі, а інколи й до того, що встановити причину пожежі взагалі неможливо. За трьома тлумачними словниками, складеними в різний час і різними укладачами, трьома посібниками (методиками) проведення судових пожежно-техніч-

них експертиз і ДСТУ 2272:2006 ретельно проаналізовано тлумачення термінів, дотичних до формування поняття «саморобний запальний прилад». Сформульовано визначення цього поняття, що надалі сприятиме розробленню відповідних методик і методів дослідження загальної будови саморобних запальних приладів, елементів їхньої конструкції та принципу дії в межах проведення судових пожежно-технічних експертиз.

Ключові слова: пожежа; дослідження пожеж; пожежно-технічна експертиза; джерело запалювання; саморобний запальний прилад; підпал; розслідування пожеж.

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Declaration of Competing Interest

Author declare no conflict of interest.

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NSC FSI participates in the International Scientific and Practical Conference in Moldova

On October 4, 2024, the National Center for Forensic Examinations under the Ministry of Justice of the Republic of Moldova, in partnership with institutions from Armenia, Poland, Romania, Moldova, and Ukraine, hosted the International Scientific and Practical Conference “The Role of Forensic Expertise in Criminalistics and the Judicial Process”. The event was held in a hybrid format.



Opening remarks were delivered by **Stanislav Copetchi**, State Secretary of the Ministry of Justice of the Republic of Moldova; **Olga Cataraga**, Director of the National Center for Forensic Examinations of the Ministry of Justice of the Republic of Moldova; **Gheorghe Popa**, President of the Association of Forensic Examiners; **Serhii Tiulieniev**, Director of the National Scientific Center “Hon. Prof. M. S. Bokarius Forensic Science” of the Ministry of Justice of Ukraine (hereinafter “NSC FSI”); **Yurii Chechil**, Director of the Ukrainian Research Institute of Special Equipment and Forensic Examinations of the Security Service of Ukraine; and **Dmytro Kishko**, Director of the Odesa Research Institute of Forensic Examinations, among others.



The following representatives of the NSC ISE participated in this event: First Deputy Director **Hanna Spitsyna**, Deputy Director for Science **Ella Simakova-Yefremian**, Deputy Director

for Forensic Examinations **Volodymyr Minenko**, and Academic Secretary **Larysa Derecha**. The participants addressed issues concerning state security and justice in various nations, the significance of spectral analysis in forensic practice, the linguistic analysis of cyber communication within criminalistics, and other pertinent topics related to forensic practice.

During the panel discussion, Academic **Larysa Derecha** delivered a report titled “Formation of New Types of Forensic Examinations”, co-drafted with **Tetiana Bykova**, Scientific Research Center for Forensic Examinations laboratory’s chief in information technology and intellectual property.

The conference served as a platform for presenting new methodologies and technologies in forensic examination, fostering collaboration for joint scientific research and projects in this domain. The expertise exchange among international professionals aids in identifying optimal solutions for conducting examinations under resource constraints and emerging challenges.

*This information was provided
by Ph. D. in Biology, Senior Researcher,
Academic Secretary of the NSC FSI
Larysa Derecha*

The NSC FSI's staff participates in the International Practical Forum LIAS Industry



On October 10, 2024, NSC FSI' employees of the Forensic Engineering, Transport, and Road Research Laboratory, namely **Valerii Olkhov**, **Oleksandr Posashkov**, and **Mykyta Lebid**, participated in the International Practical Forum LIAS Industry, organized by LLC "KhimLABORREAKTIV" in Brovary.

The event focused on the restoration and development of Ukraine's infrastructure, where manufacturers showcased advanced solutions and equipment designed to ensure a high-quality standard throughout all stages of road construction, as well as for the assessment of civil and industrial construction facilities.

Leading industry professionals shared their experiences and knowledge, explored the latest technologies and methodologies, including non-destructive quality control of concrete structures using equipment from the Swiss company *PROCEQ*, the advantages of the Superpave testing system, *FWD* equipment for assessing the bearing capacity of airfield and road surfaces, and innovative construction equipment from Khimlaborreaktiv LLC.

We extend our gratitude to the organizers of the International Practical Forum LIAS Industry for facilitating valuable opportunities for professional experience exchange, discussion of pertinent issues, and the establishment of partnership relations.

*This information was provided
by the NSC FSI's researcher
Valerii Olkhov*

International Scientific and Practical Conference “Current Issues in Forensic Science and Criminalistics” in Commemorating the Renowned Scholar Vladyslav Fedorenko (“Fedorenko Readings”)

On October 15, 2024, a large-scale event took place in a videoconference format, bringing together scientists and forensic examiners. The International Scientific and Practical Conference “Current Issues in Forensic Science and Criminalistics”, commemorating distinguished scholar Vladyslav Fedorenko (“Fedorenko Readings”), was hosted and conducted by the NSC FSI at the initiative of the Ministry of Justice of Ukraine.

Andrii Haichenko, Deputy Minister of Justice of Ukraine for Executive Service, addressed the conference participants and expressed his deep sorrow over the untimely passing of Vladyslav Fedorenko. A prolific author of nearly 500 scholarly and educational papers, a laureate of the Yaroslav the Wise Prize and the National Academy of Legal Sciences of Ukraine, and a distinguished professor, Fedorenko’s contributions to the field of forensic science are immeasurable. Haichenko emphasized that Fedorenko’s loss is a profound one for the entire justice system and expressed hope that the bright memories of Vladyslav Leonidovych will forever remain in the hearts of all those who had the privilege of knowing him.

Volodymyr Minenko, NSC FSI’s Deputy Director for Forensic Examinations conveyed greetings from Director Serhii Tiulieniev and the entire staff. Minenko emphasized the significance of holding the conference on the very day of Vladyslav Fedorenko’s birth.

Greetings were also extended by **Natalia Tkachenko**, Director of the Forensic Ensuring of Justice Department at the Ministry of Justice of Ukraine, as well as directors and deputies from other forensic institutions. International partners, including **Aram Hanapetian**, Deputy Director for Forensic Examinations at the National Bureau of Examinations of the National Academy of Sciences of the Republic of Armenia, and **Olga Cataraga**,





Director of the National Center for Forensic Examinations at the Ministry of Justice of the Republic of Moldova, also participated.

Over 170 scientists and practitioners from Ukraine and other countries (Moldova, Armenia, Israel, Montenegro, Hungary, and others) participated in the conference. Their papers addressed pressing issues in forensic science, techniques and methods of examination during criminal investigations (particularly in wartime), the application of artificial intelligence in criminalistics, and other relevant topics. Members exchanged experiences and identified avenues for the further development of forensic science and criminalistics.

Viktor Shevchuk, Department Chief of Criminalistics at the Yaroslav Mudryi National Law University, presented his paper titled “Conceptual Foundations of the Formation of Military Forensics as a Strategic Direction for the Development of Modern Criminalistics”. He highlighted the need for modern scientific research to consider trends in scientific development and the reform of domestic legislation in accordance with international standards, to adapt digital technologies to wartime conditions, and outlined promising directions for the formation and development of military forensics in the context of providing

forensic acquitance for pre-trial investigations of war crimes and crimes related to war.

Iryna Demuzenko and **Hanna Khristoslavenko** from the Sumy branch of the NSC FSI addressed the challenges of conducting examinations of objects located in potential combat zones in their paper. They emphasized the necessity of providing forensic examiners with unrestricted access to the investigation objects and appropriate working conditions when forensic examinations must be conducted at the scene or at the location of the object of study.

Serhii Doroshenko, a forensic examiner from the Kyiv Forensic Research Center of the Ministry of Internal Affairs of Ukraine, in his paper “The Usage of Photography and Video Recording in Pre-trial Proceedings”, highlighted the importance of visual documentation for the detection and investigation of crimes. He outlined the advantages and disadvantages of modern recording evidentiary information.

The management and staff of the NSC FSI express their gratitude to all participants for their active involvement in the International Scientific and Practical Conference “Current Issues in Forensic Expertise and Criminology”, commemorating the renowned scholar Vladyslav Fedorenko (“Fedorenko Readings”).

*This information
was provided
by the NSC FSI’s researcher
Viktoriia Grokhovska*

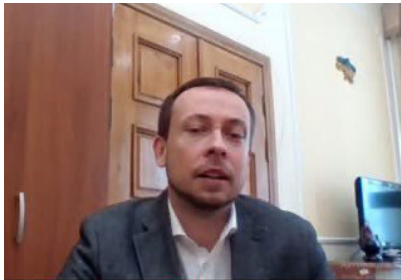


NSC FSI' employees participate in the International Scientific and Practical Conference in Forensic Explosives Examinations

On October 17, 2024, the Kyiv Scientific Research Institute of Forensic Examinations (KNSIFE) of the Ministry of Justice of Ukraine hosted an online International Scientific and Practical Conference entitled 'Problematic Issues and Features of Conducting Forensic Explosive Examinations, Examinations of Rocket and Artillery Weapons, Inspections of Their Use Sites, and Identification in Conditions of Armed Aggression'.

Opening remarks were delivered by **Oleksandr Ruvyn**, Director of the KNSIFE; **Andrii Haichenko**, Deputy Minister of Justice for Executive Service; **Nataliia Tkachenko**, Director of the Department for Forensic Ensuring of Justice at the Ministry of Justice of Ukraine; and, on behalf of the NSC FSI **Volodymyr Minenko**, Deputy Director for Forensic Examinations. The chiefs of forensic institutions under the Ministry of Justice, the Ministry of Internal Affairs, and the Security Service of Ukraine also addressed the participants.

Representing the NSC FSI, **Vitalii Nikitiuk**, **Oleksandr Kolo-miitsev**, and **Oleksandr Herman** from the Crime Laboratory, in collaboration with scientists from the Kharkiv Forensic Research Center of the Ministry of Internal Affairs of Ukraine, presented a research paper titled "Experimental Studies of Ready-Made Cylindrical Projectile Elements". This research aimed to expand the capabilities of non-penetration ballistics investigations of ready-made projectile elements and fragments of explosive devices and ammunition, determining the specific features of their movement



in the air. This data can be used to calculate the size of the affected area and safe distances.

Conference participants also presented papers on topics such as conducting examinations of sites where rocket and artillery weapons were used, applying digital radiography in forensic explosive examinations, and creating a unified inter-agency electronic database of the remnants of rocket weapons seized from shelling incidents in Ukraine, among other current issues.

Attendees exchanged theoretical and practical outcomes of the research paper and development in the field of forensic explosives and rocket / artillery weapons examination, outlining directions for their implementation in forensic practice.

*This information was provided
by the NSC FSI's leading researcher,
candidate of technical sciences
Oleksandr Kolomiitsev*

The International Scientific and Practical Conference “Digitalization of Forensic Science under Martial Law”

The International Scientific and Practical Conference “Digitalization of Forensic Science under Martial Law” took place online on November 8, 2024, hosted by the National Scientific Center “Hon. Prof. M. S. Bokarius Forensic Science Institute” of the Ministry of Justice of Ukraine (NSC FSI).



Volodymyr Minenko, the NSC FSI’s Acting Director and Deputy Director for Forensic Examinations, opened the conference with a welcoming address, emphasizing that digitalization is not only a trend but also a necessity of our time. He highlighted its potential to enhance efficiency and transparency in all fields of public activity, including forensic science, and presented the conference proceedings.



Greetings were extended by **Nataliia Tkachenko**, Director of the Department for Forensic Ensuring of Justice at the Ministry of Justice of Ukraine, forensic institutions chiefs under the Ministry of Justice, directors of forensic research centers of the Ministry of Internal Affairs and the Security Service of Ukraine, as well as international partners of the NSC FSI, including Olga Cataraga, Director of the National Center for Forensic Examinations at the Ministry of Justice of the Republic of Moldova, and forensic examiner, Professor **Pavlos Kipouras** (Italy).

More than 180 participants from Ukraine and various countries worldwide (Moldova, Azerbaijan, Israel, Italy, Turkey, etc.) joined the conference. In their scientific papers, participants discussed the challenges of implementing modern digital technologies in forensic activities to ensure the effective functioning and security of forensic processes, which is especially important under martial law and provides crucial tools for maintaining law and order in the state.

Valerii Shepitko, Department Chief of Criminalistics at Yaroslav Mudryi National Law University, Doctor of Law, Professor, Academician of the National Academy of Legal Sciences of Ukraine, and Honored Contributor to Science and Technology of Ukraine, in his papers “Implementation of European Standards and Digital Technologies in Forensic Practice in Ukraine”, examined trends in forensic activities in Ukraine and drew attention to the use of information and analytical support, databases, electronic registers, and automated workstations in forensic practice. He also outlined the specifics of investigating digital information during the investigation of war crimes.

Oleksandr Yevsiukov, Candidate of Pedagogical Sciences, Associate Professor, and Leading Researcher at the NSC FSI, drew attention to contemporary challenges in the training of forensic psychologists, considering the social digitalization.

Ivan Yatsenko, Doctor of Veterinary Sciences, Professor, and Leading Researcher at the NSC FSI, and **Roman Kazantsev**, a graduate student at the State Biotechnological University, examined the application of information technologies in forensic veterinary science. They evaluated the capabilities and advantages of developed forensic information systems (computer software) for improving the efficiency and accuracy of forensic veterinary examinations.

The conclusions drawn from the discussions held during the event will serve as a solid foundation for the emergence of new ideas and bold decisions that will help professionals, not only in Ukraine but also worldwide, to perform their work carefully, conscientiously, qualitatively, and timely, using the latest achievements of science and technology.

*This information was provided
by the NSC FSI's researcher
Nataliia Zhila*



NSC FSI's employees participate in the International Scientific and Practical Conference “Criminalistics and Forensic Medicine in the Face of Modern Challenges and Global Threats”



On November 12, 2024, employees of the National Scientific Center “Hon. Prof. M. S. Bokarius Forensic Science Institute” of the Ministry of Justice of Ukraine (NSC IFE) participated in the International Scientific and Practical Conference “Criminalistics and Forensic Medicine in the Face of Modern Challenges

and Global Threats”. This conference was organized to commemorate the 220th anniversary of Yaroslav Mudryi National Law University (hereinafter referred to as Yaroslav Mudryi National Law University) and dedicated to the 125th anniversary of the birth of Professor M.M. Bokarius and the 85th anniversary of the Department of Criminalistics. The event, conducted in a hybrid format (in-person and via videoconference), was moderated by **Viktor Shevchuk**, Department Chief of Criminalistics at Yaroslav Mudryi National Law University, Doctor of Law, Professor, leading researcher at the Academician Stashis Scientific Research Institute for the Study of Crime Problems.

The conference brought together a diverse group of attendees, including academics from universities, leaders and researchers from forensic institutions, law enforcement professionals, judges, and legal professionals from both Ukraine and other countries.

Anatolii Hetman, Rector of Yaroslav Mudryi National Law University, a distinguished scholar and academician, opened the proceedings.

Serhii Bokarius, representing the esteemed Bokarius family in the United States, extended warm greetings to all participants.

Hanna Spitsyna, First Deputy Director of the NSC IFE, a highly respected professor, addressed the audience. She highlighted the importance of honoring the memory of Professor Mykola



Mykolaiovych Bokarius by organizing this significant event and celebrated the momentous occasion of the Criminalistics Department's 85th anniversary. On behalf of **Serhii Tiulieniev**, Director of the NSC IFE, Ms. Spitsyna congratulated everyone on the successful conference and presented an Honorary Diploma

of the NSC IFE to the dedicated staff of the Criminalistics Department.

Ella Simakova-Yefremian, Deputy Director for Science at the NSC IFE, a renowned professor and esteemed scientist, delivered a presentation titled "Mykola Mykolaiovych Bokarius: A Worthy Successor to the Cause of M. S. Bokarius". This presentation was a collaborative effort with **Anatolii Tyapkin**, Sector Chief in Laboratory for Theoretical Research, International, Editorial and Publishing, and Scientific and Methodological Activities at the NSC FSI.



Iryna Petrova, a distinguished professor and leading researcher at the NSC FSI, along with **Larysa Derecha**, a senior researcher and academic secretary, presented a paper on 'M.M. Bokarius' Contribution to the Development of Forensic Science and Criminalistics.'

Viktoriia Alekseichuk, an associate professor and deputy chief at the Kyiv Branch of the NSC IFE, presented on the critical issue of “Qualification of a Forensic Examiner”, focusing on the alignment of forensic and educational specializations within the evolving educational landscape.

Oleh Naranovich and **Ruslan Kolobniev**, senior researchers at the NSC IFE’s Laboratory of Forensic Information and Analytical Support, Certification and Quality Assurance presented their findings on “The Impact of Laboratory Accreditation of Forensic Institutions on the Reliability of Forensic Findings”.

Following a lively discussion and a summary of the key takeaways, conference participants had the opportunity to visit the newly opened office-museum dedicated to Professor Mykola Mykolaiovych Bokarius.



*The information was provided
by the NSC FSI’s researcher
Anatolii Tiapkin*

“Agricultural Tools Re-crafted to Polearms” Wins the National Competition!

The publication “Agricultural Tools Re-crafted to Polearms” has been declared the winner of the All-Ukrainian (National) Competition of Scientific and Educational Publications on Agricultural History ‘Siyach’.

The results of the All-Ukrainian (National) Competition of Scientific and Educational Publications on Agricultural History ‘Siyach’ were announced on November 21, 2024. The competition, initiated on May 15, 2024, was organized by the Scientific Research Institute of Peasantry and Agrarian History at Bohdan Khmelnytskyi Cherkasy National University with the support of the Ministry of Education and Science of Ukraine. The goal of the competition was to identify, recognize, and promote the best scientific and educational publications on the agricultural history of Ukraine in the following nominations: monograph, textbook/manual/course of lectures/methodological materials, and collection of documents and materials.

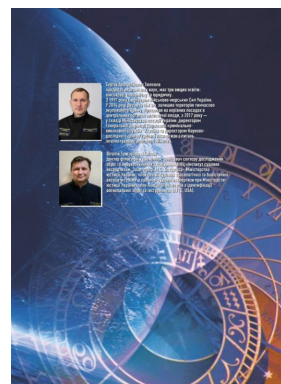


According to the competition results, the monograph “Agricultural Tools Re-crafted to Polearms”, authored by **Serhii Tiulieniev**, Director of the NSC FSI, and **Vitalii Nikitiuk**, Sector Chief in the Crime Laboratory, won first place in the ‘Monograph’ category.

The monograph delves into the history of the origin and development of various types of polearms originated from agricultural tools. This historical aspect is particularly relevant in the context of Russia’s armed aggression against our state, as peaceful Ukrainian peasants, when faced with enemy attacks, armed themselves with agricultural tools to defend their homeland. While the weapons may have changed, the indomitable spirit and thirst for freedom of the Ukrainian people remain unchanged.

Congratulations to the authors, **Serhii Tiulieniev** and **Vitalii Nikitiuk**, as well as to the NSC FSI Editorial and Publishing Sector’s employees, on their victory!

*The information was provided
by the NSC FSI’s researcher Tetiana Kipusheva*



NSC FSI's Employees Participate in the Eighth Scientific and Practical Conference of the All-Ukrainian Association of Polygraph Examiners

On November 29–30, 2024, the NSC FSI's employees, namely **Oleksandr Yevsiukov** and **Tetiana Kharina**, participated in the Eighth Scientific and Practical Conference of the All-Ukrainian Association of Polygraph Experts.

The event members discussed the specifics of conducting forensic psychological examinations using computer polygraphs.

Oleksandr Yevsiukov, Candidate of Pedagogical Sciences, Associate Professor, and Leading Researcher at the NSC FSI, delivered a paper on the specifics of the organizational stage of conducting interviews using a computer polygraph in forensic institutions of the Ministry of Justice of Ukraine.

Conference members focused on non-standard cases of polygraph usage, the peculiarities of conducting pre-test and inter-test interviews during polygraph examinations, factors that can influence the examination outcomes, the application of the concealed information test method, and other relevant issues.

Such events have a positive impact on the professional training of forensic examiners.



*This information was provided
by the NSC FSI's Senior Forensic Examiner
Tetiana Kharina*

Requirements for Research Papers

Requirements for content

According to the Edition subject matter, content regarding coverage of criminalistic current issues, relevant issues of performing various types of forensic examinations and specific expertise application in legal proceedings is published on the pages of the Scientific Edition.

Based on research, presentational, evaluative and communicative functions of the Scientific Edition, **research papers** (where an author outlines main work outcomes); **research and methodological papers** (where an author analyses methods, processes, tools helping to achieve certain scientific results); **research and theoretical papers** (texts where an author presents results of theoretical ways for problem solution); **research and practical** (articles where an author describes his personal practical experience and performed scientific experiments), **review research papers** (dedicated to evaluation, conclusions, overview, analysis of earlier published information). The Editorial Board is also interested in **debatable articles, research ideas or short reports**: results of an experiment, personal experience, etc. Scientific style of the content presentation (accuracy, logic, conciseness, clarity, connectivity, integrity, completeness) and its high scientific level.

Article structural elements should include:

- Article Title;
- Abstract and Keywords. Abstract (summary) text should be not less than 1,800 characters (separately in article language and English). Abstract should include the following: outline of research problem, *purpose*, main research results, conclusions, keywords (7–10 words, should match the content of the article and display the publication topic). Titles of annotation structural parts other except the purpose should not be indicated;
- Formulation of research problem, its connection with scientific and practical interests (it is necessary to reveal essence and state of the scientific problem, theoretical and practical significance of a research, connection with scientific and

practical tasks, substantiation of the research relevance);

- Article purpose (it is necessary to formulate the publication main thesis differing from previously considered research on the chosen topic in accordance with outlined problem and analysis of current researches);
- Research methods applied (are presented individually if they contain novelty and are notable, given the article subject matter);
- Analysis of essential researches and publications on the selected article topic, outlining the problematic field of the research that article is devoted; with obligatory reference to authors and their scientific papers;
- Main content presentation with obtained results (to reveal important theoretical positions and research results, analyze scientific facts, ideas, thoughts, regularities, concepts, as well as trends of further topic development, emphasizing personal contribution of the research author(s));
- Conclusions (main research results in a clear, consistent, logically presented form in compliance with set goal);
- References (the list of used sources transliterated according to the Roman alphabet, for example, on the site of Vernadsky National Library of Ukraine: <http://nbuv.gov.ua/node/929>);
- Abstract in English, indicating the author(s) surname, article title and keywords.

Requirements for scope

Total scope of a scientific article (information about the author, article title, abstract, keywords, article text, bibliographic references, extended resume) should be not less than 36,000 characters.

Requirements for design

Article is submitted for publication in Ukrainian or English.

Text of the article should be printed using the Microsoft Word processor; A4 paper size; page orientation. Text should not contain hyphens and macros.

Article information should be presented according to the following sequence.

Information about the publication author (co-authors) The author's full name, academic degree, academic rank, place of employment, locality, country, Researcher ID, ORCID ID, official email address). One publication permits no more than three co-authors. If the article is prepared by a group of authors, it is important to stress participation of each according to the methodology: CRediT (Contributor Roles Taxonomy, for more details: <https://credit.niso.org/>).

Article title should be without acronyms and abbreviations.

If a research is executed within the framework of international projects (grants), then it should be mentioned.

Analyzing main researches on the article problematics, it is obligatory to consider the status of the issue in foreign and domestic sources (not less than 20 publications, at the same time the majority should be represented by international indexed editions). References to the author(s) personal scientific papers are allowed only if they do not exceed 10 % of all references.

The article text should adhere to requirements for content, general rules of citation and references to used sources. Each quotation should be accompanied by a reference to the source which bibliographic description should be completed depending on its type (primary or secondary source) according to the National Standard of Ukraine ДСТУ 8302: 2015: *Information and documentation. Bibliographic reference. General terms and conditions of compilation*.

In bibliographic references, it is necessary to use footnotes or endnotes involving separate reference to each source. While numbering references, authors should use continuous numbering (in Arabic numerals) throughout the article text.

Illustrations (tables, diagrams, graphics, schemes, formulas) can be submitted in the text article. Illustrations should be delivered in separate files. They should be provided in a format enabling to format (for translation

purposes). Formulas should be performed using the Math Type formula editor not using Cyrillic characters.

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