

Theory and Practice of Forensic Science and Criminalistics: War Challenges

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Now you have opportunity to get acquainted with the 27th issue of the Theory and Practice of Forensic Science and Criminalistics research paper collection. This is the second issue that Editorial Board issues during Russian war against Ukraine. Co-founders of the research paper collection are National Scientific Center «Hon. Prof. M. S. Bokarius Forensic Science Institute» and Yaroslav Mudryi National Law University for 22 years have adhered to scientific publication periodicity and even war is not able to interfere with this noble cause.

Centuries of trials embedded in the pages of world history, did not deprive Ukrainian people of their inflexibility, strength of spirit and ripples, on the contrary, they overwhelmed the nation. Despite numerous misfortunes that Ukrainian statehood suffered on the way of its establishment, Ukrainians overcame all obstacles and with even greater inspiration and double power restored the state in all directions: socio-political, legislative and legal, industrial and economic, cultural and educational and scientific ones. Science always plays a leading role in progress of any country, prominent scientists of each State are known and respected around the world and Ukrainian scientists are no exception to this rule.

In wartime, domestic science is focused on the main thing: innovative and technological development for sake of victory

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and restoration of Ukraine. Therefore, Ukrainian scientific community accepts challenges of wartime with dignity: it promptly responds to urgent requests and solves urgent problems even during the war with Russian invaders. Currently, Ukraine and Ukrainians are defending not only their independence or the choice of a European, civilized path; currently there is a large-scale war for the very existence of our State, for the right of its citizens to national identity. In any sovereign, democratic, social and legal state, for formation of a conscious civil society and ensuring the legal development of the country, important level is occupied by a developed legal science that main purpose is to conduct research on State-legal issues and develop proposals for improving legal regulation of social relations. In wartime, legislation changes, new urgent issues arise that require immediate resolution regarding administrative procedures and temporary relocation of persons, work of businesses and local self-government bodies, rights and obligations of various categories of citizens.

Editorial Board members of the collection, despite any obstacles and currently also the challenges of wartime, steadfastly adhere to world standards and requirements for scientific journals. In particular, number of bibliographic and reference databases where our edition is indexed increases from issue to issue that has a positive effect on content dissemination published in collection to world scientific environment.

Currently, the Theory and Practice of Forensic Science and Criminalistics collection is indexed in 21 online abstract and citation databases: Academic Research Index (ResearchBib), Academic Scientific Journals Indexing, Academic Search Engine «RefSeek», Bielefeld Academic

Search Engine (BASE), Central and Eastern European Online Library (CEEOL), CiteFactor, CORE, Crossref, Directory of Open Access Scholarly Resources (ROAD), Directory of Research Journals Indexing (DRJI), ERIH PLUS, Eurasian Scientific Journal Index (ESJI), Google Scholar, Index Copernicus International, International Scientific Indexing (ISI), Polska Bibliografia Naukowa, WorldCat and the Register of Scientific Publications of Ukraine. Full-text online versions of the collection are available on Internet on the platforms of the V. I. Vernadskyi National Library of Ukraine, libraries of forensic science institutions of Ministry of Justice of Ukraine, higher education institutions of Ministry of Internal Affairs of Ukraine, etc. The collection is indexed on the DOI® System.

The pages of the Theory and Practice of Forensic Science and Criminalistics research paper collection contain summaries of theoretical and practical best practices on current issues of forensic science and criminalistics. The thematic publication orientation covers modern forensic and legal issues of forensic science; urgent issues of criminal procedure and criminalistics; organization peculiarities of forensic science support in Ukraine; scientific intelligence in the field of forensic research, technology, methods and methods of forensic examinations; current applied developments regarding the conduct of certain types of forensic examinations; overview information about the practice of foreign legal proceedings and forensic expertology, etc.

The articles in this issue deserve special attention, where authors solve legal issues of criminal procedure, criminalistics and forensic science appeared at the time due to the war in Ukraine. Researches on judicial practice, legal reforms, issue

of ensuring fundamental human rights and freedoms in wartime, compliance with norms of international law, all this is studied by scientists in a new light and in new realities.

The article opening traditional section with research content, authored by **Oksana Kaplina**, Doctor of Law, Professor and Doctor of Laws, **Svitlana Sharenko**, Doctor of Law, Docent is devoted to criminal procedural aspect of compensation issues of for damage caused to a citizen as a result of armed aggression. This article discusses compensation issues of for damage caused to Ukraine by Russian armed aggression that are relevant not only for law enforcement practice in particular but for the State in general. Launched on February 24, 2022 by Russia against Ukraine, it is unprecedented in scale (compared to Second World War and the rest of the wars of the 20th–21st centuries), cruel in essence, unjust in purpose, a full-scale war that aggressors tried to hide from the whole world under the name of "special military operation", has already caused and every day continues to cause massive destruction and damage to housing and other property of citizens of Ukraine, who justly seek to compensate for the damage caused. The article provides data from the Office of the UN High Commissioner for Human Rights, the Kyiv Institute of Economics and the Prosecutor General's Office that testify to the scale of this tragedy for Ukraine. Within the framework of initiated criminal proceedings, damages are compensated by filing a civil lawsuit. However, specifics of grounds of claimed lawsuit presuppose occurrence of certain risks for the victim, issues of law enforcement and exercise of powers by investigator and prosecutor. In particular, difficulties can lie in impossibility of conducting

an inspection of the scene negatively affecting determination of caused damage. Determining caused damage as a result of destruction or destruction of a person's home or other possessions is problematic one, as this requires a significant number of forensic examinations, and the scale of destruction postpones obtaining the results of such forensic examinations for an indefinite period. As a result of the conducted research, scientists formulated proposals regarding compensation procedure for caused damage, as well as proposed appropriate changes and additions to current criminal procedural legislation.

The next article in research paper section is an article by **Mykhaylo Shepitko**, Doctor of Law, Senior Researcher, in which the author examines a topic relevant for the present time in Ukraine, current state of investigation of war and other crimes caused by Russian aggression against our state. The scientist draws attention to national, foreign and international nature of investigation of such crimes indicating their scale and complexity. The research purpose is determined by beginning of Russia aggressive, unprovoked, large-scale war against Ukraine and the need to bring to justice the persons responsible for its initiation.

Particular attention is paid to the urgent need for Ukraine to ratify and implement the Rome Statute of the International Criminal Court in order to avoid complications with assessment of socially dangerous actions in accordance with the Criminal Code of Ukraine and requirements of International Criminal Court and in order to create a legal basis for bringing the aggressor to criminal responsibility. In this context, domestic criminal procedural legislation needs changes that will facilitate implementation

of investigative and legal actions in martial law conditions, as well as introduction of electronic justice (in particular, the use of video communication and provision of information while transmitting and collection of evidence data).

The article by **Larysa Derecha**, PhD in Biology, Senior Researcher, **Oleksandr Borzov** and **Florin Rusitoriu** Forensic Expert of National Institute of Forensic Expertise (NIFE) (Romania) is devoted to actual issue of developing a methodology for forensic biology to determine taxonomic affiliation of animal hair using modern research methods providing new opportunities for such forensic examinations. Application of proposed methods contributes to identification of additional objective criteria in the case of a comparative research of material evidence of animal hair helping to solve a larger number of issues raised while appointment of a forensic biological examination. The authors substantiated possibility of establishing taxonomic affiliation of animal hair using instrumental and microscopic methods, in particular, a scanning electron microscope, allowing forensic biologists to study surfaces of objects of animal origin with both significant linear dimensions and microparticles in a wide range of magnifications (from 10× up to more than 200,000×), providing a resolution of up to 10–9 m. Obtaining a general image of the surface and selecting appropriate areas for detailing (at the maximum possible magnifications) does not require significant readjustment of the device. Significant depth of field provides detailed images of various surfaces with developed relief (cracks; traces of mechanical damage; morphological signs of periodically reproduced surface structures). The proposed method of

researching animal hair will significantly expand possibilities of forensic examination of mentioned objects: it will reduce the time and increase accuracy of conducting such research, as well as make possible to supplement illustrative content (for example, microphotographs of hair cuticles of commonly encountered animal species).

Content by **Oleksandr Kolomiitsev** PhD in Technology, Leading Researcher, **Viktor Sapielkin**, PhD in Medicine, PhD and **Pavel Giverts**, ballistics professional (Ballistics Laboratory of the Israel Police) and **Oleksandr Herman** Senior Researcher is devoted to a very relevant topic during the war, research on striking properties of caliber bullets .22 Long Rifle, as well as fragments of such bullets after ricocheting from various types of surfaces. Experimental researches made possible to identify specifics and conditions under which fragmentation of monolithic small-bore bullet occurs, as well as to determine flight speed of bullets and their fragments after impact-contact interaction with obstacles of various types. Special attention is paid to research on nature of interaction of bullets and their fragments after ricocheting with a viscoelastic medium imitating biological human body tissues. It has been established that energy concept of damage to a biological target and the criteria for its evaluation while research striking properties of bullets after ricochet have limited application, since it is not always possible to accurately determine the initial conditions of hitting both the bullets themselves and their individual fragments. Obtained results of experimental researches and natural tests made it possible to form an alternative criterion for assessing the severity of bodily injuries that a person suffered as a result of being hit by small-caliber lead

bullets after ricocheting. It is the length of the wound channel caused by a bullet or its fragments as a result of their impact on the human body after ricocheting. A calculation method for calculating wound channel length of is proposed, that can be used in forensic expert practice to determine potential harm to human life and health.

The section of the collection with case notes examines current issues of modern science: it begins with an article by **Olena Aleksandrenko**, PhD in Law, Docent, devoted to importance and possibilities of applying forensic analysis to investigation of crimes. Positive examples from investigative practice have proven effectiveness and availability of mentioned method. At the same time, the author cites shortcomings and peculiarities of using the method of forensic analysis in investigation. This research paper emphasizes the need for a comprehensive solution to the issue of methodical support for the use of forensic analysis by all interested state bodies with involvement of necessary scientific potential for conducting relevant research and preparing practical recommendations in order to ensure proper conditions for effective detection and investigation of crimes.

The research paper by **Alla Klimchuk**, Senior Researcher, **Olha Bui**, PhD in Chemistry, Leading Forensic Expert, **Olga Pashkova**, Leading Forensic Expert, in cooperation with **José Manuel Colodrás**, forensic expert of the National Police of Spain is dedicated to research on grape and fruit and berry wines and detection of their falsification. The authors note that at the research beginning on unknown liquids, it is first of all necessary to determine nature of the object research that is possible only if its specifics are

identified. For this purpose, researchers compiled a list of organic acids present in grape and fruit-berry wines and ways of determining such acids; indicated signs of adulteration of wines by adding dyes and proposed methods for detecting possible adulteration. Since one of requirements for forensic science is mandatory confirmation of analysis results by at least two reliable methods, the article examines options for research on some synthetic dyes using the method of thin-layer chromatography and IR spectroscopy.

In the following article, **Nataliya Panchenko**, **Irina Hordiienko** and **Olga Grek** discussed the issue of forensic economics on fuel accounting in Armed Forces of Ukraine that is extremely important and relevant in current conditions. From the first day of invasion, Russian invaders purposefully destroyed Ukrainian industrial (in particular, oil refining) and social infrastructure. Not only ordinary citizens felt shortage of fuel in Ukraine. In fact, our State has to build a new infrastructure for supply of oil products through western borders from scratch. Therefore, effective resolution of the use issues of fuel by military units of Armed Forces of Ukraine in circumstances of Russian aggression can directly affect combat capability of our State.

In the article, author noted peculiarities of accounting and movement of military property that are characteristic of the rules for receiving, accounting, issuing and writing off material assets in Armed Forces of Ukraine and provided a fairly detailed list of legal regulations that forensic economists should be guided by in their professional activities while accounting for military property.

In his article, **Artem Koshkarov**, Senior Researcher, Graduate Student examines issues related to determination

of a technical malfunction of a vehicle braking system while road accident analysis. Specifics of preparation and appointment of road accident analysis of technical condition of vehicles aimed at clarifying the technical condition of the brake system of vehicles, preparation of initial data and research objects are outlined. Theoretical provisions and practical recommendations on specific expertise while research on technical condition of the brake system of vehicles and detection of malfunctions have been formulated; causal relationship between the driver's actions and the documented malfunctions of the vehicle's brake system, etc. is determined.

The authors of another research paper, **Olha Brendel, Kostiantyn Nikulin** (both – Ukraine) and **Elvira Aslanovi** PhD in Philology (Georgia) investigated possibilities of video and audio analysis for evidence formation in case of investigation of crimes related to human trafficking. In conditions of the war that is raging on territory of Ukraine as a result of Russian aggression, socially dangerous and global problem of human trafficking and aggravation of various types of people exploitation has gained considerable relevance. The co-authors considered common mistakes while obtaining evidence by investigation subjects that lead to the loss of a significant part of such evidence at the stage of the trial. The main attention is focused on specifics and modern possibilities of video and audio analysis while investigation of such crimes; it is considered in detail what information from investigated records and for what purpose investigative bodies use in cases related to human trafficking. The authors carefully analyzed the tasks solved by video and audio analysis and their role in law enforcement activities for further use in court proceedings. On the basis of

researched content, attention was focused on the results of forensic examinations that make possible to solve relevant issues regarding qualification of the facts and circumstances of committed crimes in the field of human trafficking and human exploitation, as well as on strengthening evidence base in the case. They proposed a number of requirements that should be followed for the proper preparation of materials for further video and audio analysis.

The content by **Arsen Baghdasaryan**, scientist from Armenia is devoted to research on fingerprints and palms using the Projectina Docustat DS-210 and Regula 4305 special devices. The author singled out and described specifics of technological research on fingerprints and palms, carefully analyzed the methodical approach that enables forensic research without damaging integrity of the paper medium on which the prints are left. The article presents conducted research results focusing on effectiveness of using the Projectina Docustat DS-210 and Regula 4305 devices in forensic practice.

Editorial Board of the Theory and Practice of Forensic Science and Criminalistics research paper collection is grateful to authors of the content sent for publication who adhere to appropriate level of formal and ethical requirements for submitting scientific articles for publication. The mentioned norms are determined by standards of the quality of research paper and the rules of their presentation, generally accepted in the world scientific community, in particular, publishing principles of the Publishing Ethics Resource Kit (PERK), Elsevier recommendations, Committee on Publication Ethics (COPE), Ethical Code the Ukrainian scientist, as well as work experience of foreign and

Ukrainian professional communities, scientific organizations, editorial boards and publishing houses. We appreciate the contribution of each scientist to development of the Theory and Practice of Forensic Science and Criminalistics research paper collection by providing

legal support for forensic activity, we jointly build and strengthen foundation of supremacy of law of modern and future Ukraine.

We invite everyone to cooperate!
Together we will win!
Glory to Ukraine!

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