

Science in Wartime

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The next issue of the *Theory and Practice of Forensic Science and Criminalistics* collection of scientific papers № 26 was prepared by Editorial Board in the difficult conditions of Russian aggression against Ukraine. This is special issue! Even when scientists and forensic experts, like all Ukrainians, found themselves in difficult conditions of martial law and the city of Kharkiv, where we are located, suffers from aerial bombardment, artillery shelling and missile strikes from the first day of the war to this day, the Editorial Board accepted and processed author's papers as from Ukraine as from foreign countries. We consider such activity of our partners a powerful message of support and confirmation that developmental sciences are not able to prevent any cataclysms and wars!

We are grateful to the whole world for their assistance in the field of forensic science activity to the institutions of Ukraine and for effective actions to condemn military aggression against the Ukrainian people. Thus, the largest and most influential organization of forensic expert institutions in Europe *ENFSI* excluded Russian institutions from its composition. This fact is a very significant and frank statement of the attitude of a civilized society to the imperial ambitions of Russian uncleanness that dreams of depriving Ukraine and its entire people of Freedom and Independence. No less significant and important for us is the desire of each of the authors of this issue, despite the

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difficult circumstances, to solve issues of forensic science and criminalistics.

Since February 24, the entire Ukrainian nation (in particular, employees of the co-founding institutions of the collection of scientific papers: *Theory and Practice of Forensic Science and Criminalistics*, namely: National Scientific Center «Hon. Prof. M. S. Bokarius Forensic Science Institute» and Yaroslav Mudryi National Law University) feels all the negative consequences of Russian aggression every day. Currently, almost 4,000 houses have been damaged in the city of Kharkiv, where the collection editorial board has been and will continue to be located, most of which are high-rise buildings, industrial and administrative buildings, and other infrastructure. The civilian population is dying every day children, women, elderly people, because the shelling has been going on continuously since the first day of the war. From the very beginning, the Kharkiv military calendar has been dominated by hot days with dozens of explosions. But when the shelling sometimes subsides a bit, Kharkiv residents calm down a bit and hope for the end of the active phase of hostilities. However, over time, the shelling resumed, becoming more frequent, sometimes not giving residents peace of mind for several nights in a row. Our glorious city lives and works in such hell...

However, the hero city of Kharkiv, like other cities and towns, settlements and hamlets located in the zone of active hostilities, adequately holds the defense!

National Scientific Center «Hon. Prof. M. S. Bokarius Forensic Science Institute» has branches in the cities of Mariupol, Kramatorsk and Sievierodonetsk that enemy almost razed to the ground. It also went to the Sumy region, where another branch of our institution is located. Some

of our employees have lost their homes as a result of the bombings, and some still live in areas of the city where the enemy is insidiously inflicting artillery and missile strikes. In such difficult circumstances, the first thing, of course, is to save people. It was to save them and their families that the Center leadership directed organizational measures for evacuation at the beginning of the war. For the moment, many of our employees have been evacuated to safer places, some abroad. However, many people work: as at the main office in Kharkiv as remotely (mostly researchers), conduct forensic examinations, participate in site inspections, continue researches and prepare theoretical and research papers for publication in scientific editions.

Due to the difficult conditions of the war, along with the need to save lives, there was a need to provide unique equipment and rarities, which are known to the library and museum funds of the Center. So the most valuable equipment was moved to other regions of the country and the third monument of Mykola Bokarius who is forensic scientist in Europe - was protected with sandbags. Our staff also delivers humanitarian aid to those who need it, defends our Freedom and Independence in the Armed Forces and in territorial defense bodies, participates in charitable events in other words, makes every possible and impossible effort to win.

Due to the challenges of wartime, there was a need to investigate war crimes committed by the aggressor country, so the issue of the appropriate level of forensic science support to justice in wartime became acute that is directly related to improving efficiency of both the scene inspection and subsequent forensic examinations. related to the identification

of the bodies of the dead (forensic DNA analysis) with research on objects seized in demined areas, areas affected by shelling and bombing, solving problematic issues regarding the calculation of material damage and damages caused to legal entities and individuals as a result large-scale damage and destruction of movable and immovable property, non-property damage, as well as expert studies on the consequences of the use of chemical weapons by invaders, specified in the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, etc.

New challenges and challenges have necessitated the application of the latest methods and approaches in the effective fight against war crimes, in particular, the need for rapid development of a productive system of forensic science support to justice at the stages of pre-trial investigation and further trial. Achieving this goal primarily involves the appropriate material and technical component and safe working conditions of forensic expert during inspection of the scene and while forensic and scientific research.

After all, realities of war require forensic experts and scholars to be even more efficient, even more cohesive in solving forensic tasks and providing forensic science support to justice. Professional periodical Collection of Scientific Papers: *Theory and Practice of Forensic Science and Criminalistics* is one of the cornerstones of such efficiency and cohesion.

The collection editorial board carefully processed all the articles submitted for publication, making every effort to publish a quality product, strictly adhering to international principles and standards. Traditionally, our

collection is indexed by Google Scholar, international reference databases ERIH PLUS, Academic Search Engine «RefSeek», Academic Scientific Journals Indexing, Central and Eastern European Online Library (CEEOL), African Quality Centre for Journals, AgEcon, WorldCat, CORE, Index Copernicus International Journal list, Polska Bibliografia Naukowa, ResearchBib, Bielefeld Academic Search Engine (BASE), CiteFactor (which provides indexing of leading international journals and works and provides authors with information on the international impact factor of journals, scientific materials and current scientific events), on the site of the registrar of digital identifiers DOI. Full-text online versions of the publication are posted on the Internet on the platforms of Vernadsky National Library of Ukraine (VNLU), libraries of forensic institutions of the Ministry of Justice of Ukraine, higher education institutions of the Ministry of Internal Affairs of Ukraine and others. It is worth recalling that collection research papers: *Theory and Practice of Forensic Science and Criminalistics* is published in bilingual issues in Ukrainian and English (distributed among foreign scholars and forensic science institutions, namely: Center partners).

The traditional is also the thematic orientation of the publication - coverage of modern theoretical and applied issues of forensic science, conducting various types of forensic examinations, applying specific expertise in legal proceedings, issues of legal education, training of forensic experts and higher qualification research staff.

The scientific paper collection structure contains two sections: research papers and case notes. The research section opens with the *Models of the System of Forensic Institutions in Ukraine (Advantages and*

Risks), article by **Natalia Tkachenko**, PhD in Law, Honored Lawyer of Ukraine, and **Viktoriya Alexeychuk**, PhD in Law, Docent drawing attention to the model laid down in the draft of the new Law of Ukraine: *On Forensic Science Activity*. The authors believe that such a model should be very balanced not only in terms of advantages but in terms of the severity of possible negative consequences and risks that may threaten the proper functioning of the forensic industry in general. Important for the process of reforming the system of forensic science institutions is strict compliance with procedural law (giving the parties the opportunity to collect and submit evidence to the court, setting and adhering to procedural deadlines, etc.), as well as appointing a body to form a unified state policy in this area. Researchers consider it expedient to introduce a mixed model of the system of forensic science institutions in Ukraine.

Research paper by **Gabrielė Juodkaitė-Granskienė**, Doctor of Law, Docent, from Lithuania and **Mikhail Frolov** PhD in Law violates the current topics of legislation on forensic expert activities, presenting a comparative review of draft laws submitted to the Verkhovna Rada of Ukraine and registered during the 6th session of the IX convocation, and analyzing the main terminological and material and legal features of the regulation of forensic expert activity, the status of its participants and content. Special attention should be paid to the articles presented by scientists substantiated proposals for the settlement of forensic expert legal relations.

The fundamental work by **Ivan Yatsenko**, Doctor of Veterinary Medicine, Professor is devoted to the stages of forensic research and their application in the forensic veterinary examination of animal corpses. The stage of such an

forensic research reflects not only the procedure for the expert's cognition of properties of forensic veterinary examination objects, but also makes it possible to trace the process of examination and evaluate results obtained while research on expert's conclusion. Each stage of forensic research of animal corpses performs certain functions and ensures solution of intermediate tasks.

The authors of the following article: *Research on short manuscripts made by the elderly and old age people*, **Diana Gaydamakina**, Leading Forensic Expert of NSC «Hon. Prof. M. S. Bokarius FSI» and **Rasa Tamoshiunaite** her colleague from Lithuania, consider theoretical prerequisites for handwriting research on short handwritten records made by elderly and old age people; summarize a significant amount of experimental array and expert practice on the features of research on these handwriting objects; group detected handwriting signs characteristic of the elderly and senile; the algorithm of sequential actions of the expert to solve this issue is revealed in detail.

The *Case Notes* section is opened with research paper by **Serhii Naumenko**, PhD in Law, **Volodimir Bragnik**, Department Head of Sumy Branch of the Center and **Ion Sandu** forensic expert from the Republic of Moldova who raise in their article the issues of research by forensic expert of wheeled vehicles with LPG equipment. The authors cite the sequence of actions of the expert in the case of a technical inspection of the wheeled vehicle under research, note the need to take into account availability of gas LPG equipment while determining the market value of the vehicle, as well as the cost of repair and material damage caused to the car owner.

The post by **Yuri Pozdnyakov** and **Igor Bratishko** concerns the methodological principles of conducting forensic economic examinations of reports on economic measurements performed by methods of independent evaluation of the value of assets. The authors investigated the problematic issues of substantiation of the methodology for quantifying the degree of uncertainty of the evaluation results on the basis of a probabilistic and metrological approach based on the use of an interval form of assessment result presentation and compared the requirements of national and international standards for such an assessment.

In the *Authenticate Images Based on their Semantic Segmentation in Deep Learning Neural Networks with their pre-processing with Use of Filtering Methods* research paper by **Sergiy Chornyy**, PhD in Technology, Docent, **Olha Brendel**, Department Head and **Davit Gratiashvili** Chief Forensic Expert from Georgia analyzed effectiveness of neural network classifier structures (in particular, convolutive deep learning neural networks) to assess authenticity of images using methods of

digital analysis of images, digital painting and artificial intelligence.

The following article *Principles of Forensic Economics as a theoretical basis for its conducting* by **Volodymyr Ivankov**, PhD in Economics proposes ways to improve forensic economic examination: namely, supplementing it with new stages of conducting (organizational, functional and effective) that will allow to form a theoretical platform for further regulatory regulation of examination procedures for the objects of such forensic examination, namely: accounting and reporting.

The editorial board expresses its sincere gratitude to all the authors who provided content for publication, as well as to the professionals who took part in its edition and invites scholars and practitioners to prepare articles for future issues.

Fruitful interaction of the editorial board and authors is the key to further work on new issues of the *Theory and Practice of Forensic Science and Criminalistics* collection of scientific papers and a guarantee of continuous scientific development even in war conditions.