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EDITORIAL INTRODUCTION

The ninth issue of the *Journal of Security and Criminal Sciencies* presents four interesting articles in different disciplines: security studies, forensics, special physical education, corporate crime. This issue introduces a broad area of security studies which, as time passes by, grows in importance.

As the most interesting article, we single out the work of Romanchev Roman Vladimirovich, a Russian author who, in his article entitled "Proxy intelligence and the classification of intelligence actors using the United States as a model", addresses proxy intelligence and describes it as follows: "Proxy intelligence means the provision of intelligence services provided by non-state intelligence actors in the interest of the state client (as a rule, state intelligence actors or the state's top leadership both directly and through agents of influence). Proxy intelligence activities are conducted both by commercial companies and by non-profit organizations (funds, NGOs – NPOs)."

The author explains a number of terms specific to intelligence activities and says that "a intelligence service (IS) should be understood as a provision of highly intellectual service, information, to the client (eliminating uncertainty when making management decisions) or disinformation (with the aim of exerting a positive influence on areas of interest), be it potential and real adversaries, competitors or rivals." He then lists intelligence services and classifies U.S. intelligence actors, both state and non-state, and commercial actors in the second part of the article. However, the most interesting section is the Contribution of intelligence actors to political decision making in the United States, which deals with the USAID and NED organizations as "representatives of U. S. soft power abroad".

"A thought factory" is a new term and much needed to express new forms of intelligence activities and their application in imposing political solutions. Romachev subtly explains it and concludes his article as follows: "In the United States, non-state intelligence actors have become full-fledged participants in the political decision-making process, both in foreign and domestic U.S. policy."

The article entitled "The Importance of Forensic Entomology in Criminal Investigations" by Srđan Segić and Gordan Maun reveals to readers a completely unknown world of larvae and necrophilic insects. As the authors state, "the paper demostrates the importance of forensic entomology in criminal investigations and points to post-mortem interval esstimation, procedures at the death scene, which are important for entomological research." At the same time, they explain that the "focus of the article is on entomotoxicology, that is, how entomotoxicology can help determine the presence of toxins in the body at the time of death when this is not possible by means of traditional methods."

The importance of forensic entomology in forensic investigations is particularly emphasized in order to justify the classification of necrophilic insects. The most interesting section of the article is "Forensic entomological inves-

tigation at the death scene" which discusses the collection of entomological evidence, which "begins a few steps from the body." The article concludes that "insects and their developmental stages can provide answers to questions that are important both for individual criminal cases and very complex cases such as terrorism and war crimes." The behavior of insects and their metabolism can provide investigators with answers they are looking for, and thus forensic entomologists are employed in cases in which bodies the cause of death of the person whose body is found are found is unclear, which the basic message of the article.

The article "The reliability of newly designed specific tests for assessing professional firefighters' physical fitness" by Nemanja Samardžić, Milivoj Dopsaj and Dragan Klisarić, Faculty of Sports and Physical Education, University of Belgrade, is a "study whose aim was to determine the reliability of newly designed tests for assessing professional firefighters physical fitness." A total of 15 healthy firefighters participated in the study and the finding of the study indicates that, based on the results obtained, "the examined tests can be applied in the practice of professional firefighters for the purposes of testing physical fitness related to the job." At the same time, according to the authors, "regular conduct of these tests envisagd in monthly work plans and programs should contribute to a more efficient work of firefighters, including annual physical ability testing."

The article entitled "The offense of avodance of withholding tax in the criminal legislation of Serbia" by Miljkan Karličić analyzes the offense of avodance of withholding tax "from the aspect of provisions in the criminal legislation and practical application." Karličić explains in detain tax crimes that are subject to the regulation of basic and secondary criminal legislation and points out that most countries prescribe tax crimes in their basic criminal laws, while "in some reputable national legislation of European countries, tax crimes are the subject of special criminal legislation." The legislation of the Republic of Serbia has a mixed approach to this issue – it provides for two criminal offenses in the basic criminal code, and four in the tax code, explains the author. Finally, the author presents statistics related to the "offense of avodance of withholding tax."

In his review of the book *Global Security and the Changing World* by Boris Tučić, Srđan Perišić explains the significance of this book in the area of international relations and security.

Editor-In-Chief

Predrag Ćeranić

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PROXY INTELLIGENCE AND THE CLASSIFICATION OF INTELLIGENCE ACTORS USING THE UNITED STATES AS A MODEL

Review Article

DOI: 10.5937/zurbezkrim2301009V	COBISS.RS-ID 139119361	UDK 351.746.2:327.84(73)

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Abstract: This paper provides a definition of proxy intelligence and a classification of intelligence actors using the United States as a model. The activity of the main U.S intelligence actors is briefly discussed. An intelligence service is defined as a service provided by both state and non-state intelligence actors. Document analysis, content analysis and comparative method were used. Based on the study conducted, it was concluded that the U.S. actively uses non-state intelligence actors, particularly private intelligence companies, in its political activities. Their role, contribution and significance in making foreign policy decisions are defined. "An intelligence service" is systematized as a specific service that intelligence agencies provide to their clients. Based on the conclusions reached, practical recommendations are proposed to the Russian authorities to build communication and business relations with Russian private intelligence companies. Based on the finding obtained in this study, a course in the Political Science, Information and Hybrid Warfare master's degree program at Moscow State University was designed.

Keywords: Outsourcing intelligence, corporate intelligence, dark intelligence, hybrid intelligence, proxy intelligence.

INTRODUCTION

Over the last ten years, conflictology has been enriched by a series of technologies for waging previously atypical wars: hybrid wars (trade, sanctions or information wars), proxy wars, non-traditional wars. For centuries it has been impossible to wage war without intelligence, whose importance has already been addressed in numerous scholarly articles and scholarly literature. However, atypical wars require an atypical approach to conducting intelligence activities, because the success of any conflict not only depends on "atypical" military measures, but also on right military and political decisions reached by the lead-

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ers of warring parties. Of course, traditional state intelligence apparatus bears a substantial burden during confrontation, which requires them to attract and activate additional resources capable of conducting the same kind of non-traditional intelligence activity under the conditions of non-traditional wars, in other words, proxy intelligence.

PROXY INTELLIGENCE

Proxy intelligence means the provision of intelligence services by non-state intelligence actors in the interest of the state client (as a rule, a state intelligence actor or the state's top leadership both directly and through agents of influence). Proxy intelligence activities are conducted both by commercial companies and non-profit organizations (NGOs –NPOs). At the same time, the term proxy intelligence is often used in Western scholarly literature (Keenan, 2017). The term can be interpreted as "puppet intelligence activity" or "intelligence activity through intermediaries". British social anthropologist Jeremy H. Keenan refers to North African intelligence agencies (specifically, the Algerian DRS) precisely as "puppets" in relation to the British MI-6. In terms of intelligence activities, the term "manipulative intelligence" is more appropriate, whereby an actor is used in an operation without even realizing it. At the same time, if we can talk about "proxy intelligence" as a type of outsourcing, then we cannot talk about using the actor "manipulatively" (without his knowledge and insight into the goal of activity), because, by receiving a contract from the state, the private subcontractor familiarizes with the goals and objectives of cooperation.

An *intelligence service* (IS) should be understood as a provision of highly intellectual service, information, to the client (eliminating uncertainty when making management decisions) or disinformation (with the aim of exerting a positive influence on areas of interest), be it potential and real adversaries, competitors or rivals. Providers of intelligence services may be both state intelligence actors (SIAs) and non-state intelligence actors (NSIAs). Private sector intelligence has been defined as a process of collecting, analyzing and sharing operational strategic and tactical information about possible hostile entities and dangerous world events, which may pose a direct physical or reputational risk to the company's operations or assets (Torres-Baches, 2017). An intelligence service is a service that can be provided by an intelligence service provider (ISP) both independently, that is, without using supporting technological instruments, relying only on their competences, knowledge and experience, or by means of specialized intelligence solutions.

An *intelligence solution* (IS) means an area of activity aimed at instrumental, technical, technological, financial monitoring of and support for the provision of intelligence services.

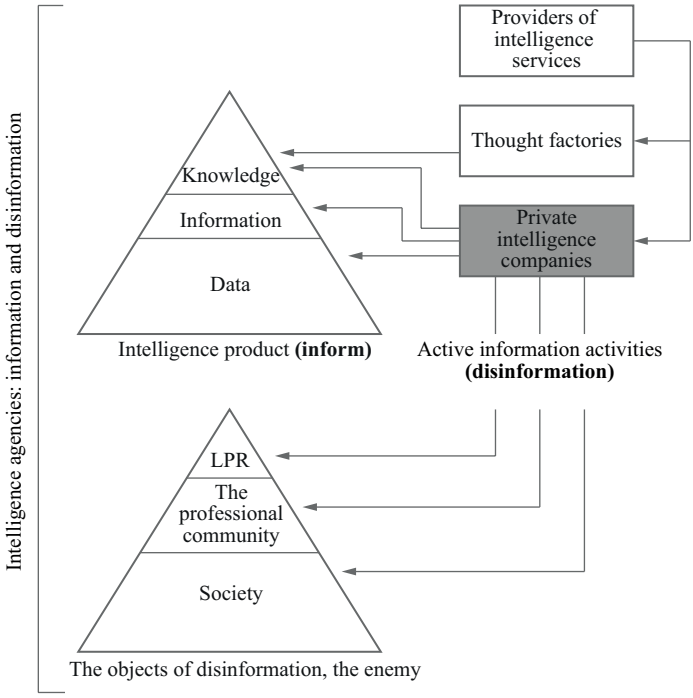

Figure 1. Intelligence services

All intelligence services can be briefly characterized as informing the violator and disinforming the adversary. At the same time, information is understood as a presentation of data, as well as information and based on it, the synthesis of new knowledge, analytical conclusions, foresight (forecast). Disinformation campaign against the enemy is also carried out across three levels:

1. Disinformation of society;
2. Disinformation of the professional community, opinion leaders;
3. Disinformation of decision-makers.

Obviously, in modern conflicts, US state intelligence actors do not have the same freedom of action as their commercial subcontractors do. This is largely due to a number of reasons:

1. Strict legislative control over the intelligence community and the "transparency" of their actions;
2. Limited funding;
3. Existence of diplomatic and reputational consequences if intelligence activities are uncovered on the territory of the enemy;

4. The need for significant competencies (expertise and specialization) that are growing rapidly with which state actors, unlike private ones, cannot keep pace.

All this led to the emergence of private sector intelligence industry back in the 19th century, which is extremely financially powerful today unlike the same sectors in other countries.

Intelligence services (in terms of information) were classified by the US intelligence community in the middle of the 20th century according to methods for obtaining information and sources of information:

1. OSINT – Open source intelligence.
2. HUMINT – Human intelligence.
3. SIGINT (ELINT, COMINT, MASINT) – Signals intelligence (Electronic intelligence, Communications Intelligence, Measurement and Signature intelligence).
4. IMGINT - Imagery intelligence.
5. GEOINT - Geospatial intelligence.
6. FININT - Financial intelligence.
7. TECHINT - Technical intelligence.
8. CYBINT (DNINT) – Cyber intelligence (Digital network intelligence).

THE CLASSIFICATION OF US INTELLIGENCE ACTORS

Presently, no classification of intelligence actors has been made in the scientific community, both by political scientists and historians of intelligence services. However, open sources are full of labels used by journalists, such as "private intelligence structures", "spies for hire", "private subcontractors employed by intelligence agencies", or "outsourcing intelligence" (New York Post, 2008). Journalists associate all companies that have ever worked with special services under government contract, which only confuses researchers interested in this field. For example, in his doctoral dissertation "Intelligence in the U.S. state mechanism (a legal and historical aspect)", Dndukov also points out that the topic has not been sufficiently addressed by scientists. "Until the mid-1990s, serious scientific (including legal) research aimed at the study of U.S. intelligence was carried out within specialized scientific and school organizations. A lot of available works addressing U.S. intelligence, which were published both in the Soviet and post-Soviet periods, were not scientific and can be considered works of a journalistic nature..." (Dundukov, 2015).

Nevertheless, in 1972, the CIA published two categories of subcontractors in the Report of the Working Group on Contracts with American Commercial Companies (Freedom of Information Act Electronic Reading Room, 1972):

1. Administrative, contractual, purchasing:

– Subcontracting services;
– Financial and budgetary services;
– Legal consultation and services;
– Logistic services;
– Medical consultation and services;
– Personnel screening;
– Personnel recruitment;
– Purchase of goods and services;
– Public and press relations;
– Scientific research;
– Training.

2. Intelligence and operational:

– Analysis;
– Collection;
– Operations;
– Support;
– Intelligence.

However, half a century has passed since then and the world has substantially changed: development, technology and geopolitical situation have considerably influenced outsourcing intelligence industry, leading to the rapid development of private sector intelligence, which has been divided into commercial and non-commercial actors, providers of instruments and solutions necessary for the provision of intelligence services and suppliers of intelligence services themselves, into public players and mimics. The classification of intelligence actors is presented in Figure 2.

State intelligence actors – state intelligence bodies that report directly to the head of state, in the case of the USA – the CIA (Central Intelligence Agency), the NSA (National Security Agency) or report to the head of state through the head of an agency, for example, the DIA (Defense Intelligence Agency).

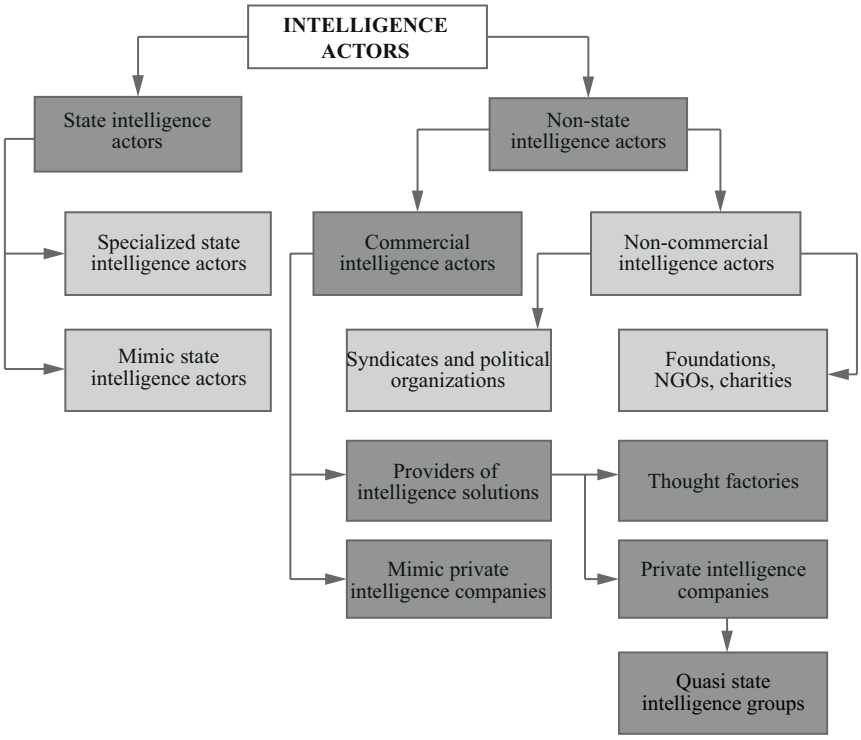

Figure 2. Classification of intelligence actors

THE CLASSIFICATION OF U.S. STATE INTELLIGENCE ACTORS

State intelligence actors – intelligence actors entirely under the control of state institutions.

Specialized state intelligence actors (SSIA) – Agencies (institutions), whose aims and goals are to gather and analyze intelligence data. Their activity is regulated by state laws, normative documents, regulations, decisions, as in the case of the CIA – the CIA Act of 1949. Specialized state intelligence actors in the United States are referred to as the U.S. Intelligence Community, which is composed of 17 intelligence agencies.

Mimic state intelligence actors – state organizations whose activity is focused on other tasks and functions, such as the promotion of democracy and transparency, the development of political competition in third countries, whose activities are somehow focused on the execution of intelligence tasks, such as the recruitment and "grooming" of agents of influence; the conduct of information operations; the collection and analysis of information on the structure of the

political system in the region, and so on. The U.S. Agency for International Development can be classified as such an organization (Romačev, 2022a). All mimic actors are subordinate to the head of state through agencies that supervise them, for example, the USAID through the U.S. State Department. Mimic state intelligence actors can be regulated both by the President's order (as in the case of USAID) and normative documents, orders, decisions, and so on.

Classification of U.S. Non-State Intelligence Actors:

Non-state intelligence actors include private organizations, both commercial and non-commercial, whose founder are not government authorities and whose activity is directly or indirectly related to the conduct of intelligence operations aimed at collecting, analyzing, and disseminating information or creating instruments to carry out these functions.

Komleva defines private intelligence agencies (PIA) as structures whose activity began with industrial espionage and the fight against it, which does not correspond to reality, because the concept of industrial espionage falls under criminal activities, which discredits both the reputation of the company and its entire existence. This is the reason why the cult of "competitive intelligence" as an activity based on ethics and legality began, in the mid-1980s, to form in the business circles in the United States (Komleva, 2013).

Commercial intelligence actors are business entities which provide the following services:

- Gathering and analyzing information, which is available through open communication channels;
- Gathering information from people using different methods ;
- Synthesizing knowledge about risks, dangers and opportunities
- Scientific and technical intelligence;
- Developing information gathering and analysis systems, information dissemination systems, analytical systems using artificial intelligence, cyber-intelligence systems, forecasting systems, and so on;
- Implementing active information activities
- Training in information-gathering and analysis technologies, content dissemination technologies, open-channel manipulation technologies, cyber operations technologies, and so on.

The activity of commercial intelligence actors falls exclusively within the province of law, that is, the application of illegal methods and technologies to obtain information, such as wiretapping telephone calls, hacking e-mails, torture or blackmail, is unacceptable, except for those in line with the SSIA and planned actions when participating in covert operations in third countries.

It should be emphasized that private intelligence actors do not conduct operative and investigative activities in any country, including the United States.

Classification of commercial intelligence actors:

Providers of intelligence services (PIC) are companies that specialize exclusively in IC. On the other hand, PICs can be divided into *thought factories* (idea factories, think tank) – companies specialized in the synthesis of knowledge about risks, dangers, and opportunities both in the area of business, geopolitical, and national security interests, such as:

- RAND Corporation;
- Team B.

Private intelligence companies are organizations that specialize in the full spectrum of intelligence services, ranging from the extraction and processing of data and information to knowledge synthesis, analytical conclusions, foresight (forecasting), which are capable to conduct active information activities. These companies can accumulate (contain) adjacent (intermediate) competences, such as those of intelligence solution providers, the development of instruments, technologies, and software/hardware solutions. The following companies are representatives of such actors:

- CACI International Inc.;
- Kroll Inc.;
- Pinkerton National Detective Agency;
- Secure Solutions International, Inc.
- Smith Brandon International, Inc.;
- Strategic Forecasting Inc;
- Strategic Insight Group (SIG).

Quasi state intelligence groups can be distinguished in this class – they are private intelligence companies, set up on the secret initiative by special state intelligence actors; however, they are *de jure* not related them. As a rule, the existence of such organizations is strictly confidential and they become known several decades later, either through declassified documents or exposure, leak or a big scandal. Typical representatives of such actors are:

- The Pond;
- The Gehlen Organization;
- Task Force 157.

Intelligence solution providers – developers of application solutions for information gathering and analysis, knowledge synthesis, forecasting, and so on. Typical representatives of such actors are:

- Palantir Technologies Inc.;
- Itek Corporation;
- Booz Allen Hamilton Inc.

Mimic private intelligence companies – private commercial companies, whose activity is focused on providing other services or producing products, which are not directly related to the intelligence service. As a rule, these intelligence services represent a secondary source of income for such organizations. For example, private military companies which provide military consulting services, escorting military guards, guarding industrial facilities in crisis zones, such as:

- Xe Services LLC;
- Military Professional Resources Inc.;
- Sullivan & Cromwell LLP;
- American Business Consulting Inc.;
- Massachusetts Institute of Technology;
- Yale University;
- Stanford University
- Cambridge Analytica Ltd.

Non-commercial (non-profit) intelligence actors – non-governmental (non-state) non-commercial foundations or organizations, such as:

- National Endowment for Democracy;
- Vernon Fund.

The contribution of intelligence actors to political decision-making in the United States

THE USAID ACTIVITY AS A MIMIC INTELLIGENCE ACTOR

This organization is a representative of U.S. soft power abroad and acts strictly in accordance with US foreign policy interests (Ромачев, 2022a). Since the mid-1990s, the Agency's priority region for projects has been the post-Soviet space and countries such as Ukraine, Moldova, Azerbaijan, Armenia, Georgia, and Kazakhstan. At the same time, Georgia and Ukraine received the most substantial grant funding – between 90 and 160 million dollars per year – to implement democratic reforms and election campaigns from 1996 to 2006. The main focus of the USAID has been the development of programs pertaining to the formation of parties and non-governmental organizations, including in the Russian Federation and the former Republics of the Soviet Union. U.S. economic aid is another instrument for exerting influence on the Commonwealth of Independent States (CIS) and post-Soviet states. In the early 2000s, more than 100,000 citizens from 12 CIS countries participated in the U.S. government training programs for leaders of NGOs, SMIs and government officials. The West has mainly been focused on Belarus, Georgia and Ukraine to completely separate their economy and politics from Russia and the CIS. The importance that the United States attaches to each post-Soviet state varies contin-

uously. As a result, the Ukrainian crisis, the sudden deterioration of relations with Russia, coupled with an exacerbation of the situation in the Middle East, forced Washington in 2014 to shift its focus toward the CIS countries, mainly toward Ukraine, Georgia, and Moldova.

The NED activity as a non-commercial intelligence actor

The NED provides grants for research on the development of democracy and human rights in foreign countries. Every year, the National Endowment for Democracy provides financial assistance to hundreds of non-governmental organizations around the world, whose activity is related to the development of democratic institutions. The mount of the grant depends on the size and scope of the project, but it usually amounts to 50 thousand dollars for 12 months (Олегович et al., 2022). The NED finances only non-governmental organizations, which may include civic organizations, associations, "independent" media outlets and other similar organizations.

The geography of the NED grantees encompasses practically the entire world, which is directly related to the U.S. foreign policy interests (and consequently the U.S. special services) at this or that historical moment.

Activity of the Pond as a private intelligence company (quasi state intelligence groups)

The Pond has been involved all areas of foreign intelligence: cryptography, foreign intelligence, covert operations. The characteristic of the Pond agency is its wide network of observers – people with different educational background and social status. They did not take any actions to obtain classified information and thus did not attract attention to themselves. However, if the "observer" unexpectedly obtained classified information, they would pass it on to the Pond. A large number of their observers did not receive money from Grombach, the head of the organization, but worked for the Pond for ideological reasons, while some of them even used their own funds (Ромачев, 2022b).

The activity of Itek Corporation as a provider of intelligence solutions

Richard Leghorn, the founder of the Itek Corp. and a former US Air Force aerial reconnaissance expert, was the first to propose flying reconnaissance missions over enemy territory in peacetime. Leghorn is the ideologue of the Open Skies project. The Open Skies project allowed signing countries to fly over any other, which, according to Leghorn, reduced international tensions and allowed countries to verify their adversaries' actions (Ромачев, 2022b).

Team B's activity as an intelligence service provider (Thought Factory)

On May 6, 1976, George H.W. Bush, the Director of the CIA, created an analytical thought factory – Team B. Team B consisted of a team of outside experts, who were invited to evaluate the Soviet strategic systems, while Team A consisted of intelligence analysts within the CIA, who were carrying out their own assessment at the same time. The need for a competitive assessment prompted the creation of such a team.

Team B was led by Harvard professor Richard Pipes, which was made up of famous "hawks" such as Paul G. Nietzsche, William Van Cleve, and Paul Wolfowitz. Unsurprisingly, Team B concluded that the intelligence experts underestimated the threat because they had heavily relied on the verified data instead of extrapolating Soviet intentions based on ideology. In essence, Team B was to generate hysteria about the external threat, that is, the Soviet Union and thus encourage the President and the Congress to engage in an arms race.

The activity of American Business Consulting Inc. as a mimic private intelligence company

In 1947, the company started publishing the newsletter *Counterattack*, whose mission was to detect and expose communists. The ABC also performed for-profit activities – it conducted background checks on specific persons and companies to determine if they are linked to communists or their supporters.

CONCLUSION

In the United States, non-state intelligence actors have become full-fledged participants in the political decision-making process, both in U.S. foreign and domestic policy. In his article, Tim Shorrock, a journalist and private intelligence industry researcher, with reason stated that "this unaccountable oligarchy of spies controls the information that guides our military and civilian leaders (Shorrock, 2016).

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THE IMPORTANCE OF FORENSIC ENTOMOLOGY IN CRIMINAL INVESTIGATIONS

Review Article

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Abstract: This paper demonstrates the importance of forensic entomology in criminal investigations and points to post-mortem interval estimation, procedures at the death scene, which are important for entomological research. The focus of the paper is on entomotoxicology, that is, how entomotoxicology can help determine the presence of toxins in the body at the time of death when this is not possible by means of traditional methods. The paper also demonstrates how insects can contribute to the discovery of mass graves and provide information that can help prove war crimes.

Keywords: forensic entomology, post-mortem interval, entomotoxicology, insects, war crimes, mass graves

INTRODUCTION

The term forensic entomology is derived from the Latin term *forensic,* which means of or before the forum, and the Greek words *entoma* – insect and *logos* – science, meaning the study of insects in the forum, which is explained by the fact that in Ancient Rome, in the event of an unknown cause of death, the body was displayed in the forum and " *forensic examination*", that is, the determination of the cause of death, took place there, so it is about determining the cause of death based on the knowledge of insects (Janković-Rapan, 2009).

Forensic entomology is important both in human medicine and law and in veterinary medicine and law. By studying the insects found on or around the corpse, we can get answers to some questions important for death investigations, such as the time between death and the collection of insects and larvae from the body (the post-mortal interval – PMI), the place of death, whether the body has been moved to a second site, including the cause of death (poisoning, explosion, neglect...) (Lindgren et al., 2015). Forensic entomology is the

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broad field where biology and the judicial system interact, because biologists or entomologists are the ones who collect evidence that will be used in legal proceedings at a later time. Thus, forensic entomology, like other forensic sciences, calls into question the traditional division of sciences into natural and social sciences, because the question arises as to whether a forensic science is a natural or social science.

It can be said that forensic entomology is still an emerging field of forensic science; however, although forensic entomology (hereinafter: FE) has been around for hundreds of years, forensic entomology literature is scarce and the number of forensic entomologists is insignificant. Evidence provided by forensic entomologists is of great importance, because the exact time and place of death, the cause of death, and so on, can be key answers that should steer both investigations and legal proceedings in right directions.

THE IMPORTANCE OF FORENSIC ENTOMOLOGY IN FORENSIC INVESTIGATIONS

There more than 1,000,000 species of insects and the number is still not final; such a large number of species indicates that insects are adaptable to any habitat and all kinds of environmental conditions, therefore it can be said that insects can be found in almost every conceivable type of habitat. It is impossible and pointless to know all species of insects, which is why entomologists specialize in a single order or even a family of insects.

Saprophyte and facultative saprophyte insects are of great forensic importance – namely necrophagous insects that feed directly on remains. Within minutes after death (it is not uncommon for necrophagous insects to colonize a dying host) necrophagous insects arrive at a dead human or animal body. According to Byrd (1998), insects will rapidly locate a body regardless of how it is "protected" – except for those kept in a completely protected area, which is possible only in specialized institutions. A buried or wrapped body or a body protected by chemical means is not an obstacle for insects and other invertebrates to perform their natural function – help to decompose the body into mineral matter that will serve as a building block in a new life cycle in nature. The arrival of insects at the place of death is as certain as the death itself. To take advantage of the potential forensic value of insects and other invertebrates, evidence must be systematically collected and processed. According to Castner and Byrd (2000), for investigators to collect and process such material at a crime scene, they must know what to look for, and be familiar with insect biology and anatomy.

Four orders of necrophagous insects are important for the purpose of FE – *Diptera, Coleoptera, Hymenoptera* и *Lepidoptera* (Ilić, 2019).

The order *Diptera* includes the following families:

- *Calliphoridae*
- *Muscidae*
- *Phoridae*
- *Piophilidae*
- *Sarcophagidae*
- *Sepsidae*
- *Sphaeroceridae*
- *Stratiomyidae*
- *Psychodidae*

The order *Coleoptera* includes the following families:

- *Staphylinidae*
- *Histeridae*
- *Silphidae*
- *Dermestidae*
- *Cleridae*
- *Scarabaeidae*
- *Nitidulidae*
- *Trogidae*

The order *Hymenoptera* includes the following families:

- *Formicidae*
- *Chalcidae*
- *Diapriidae*

The order *Lepidoptera* includes the following families:

- *Tineidae*
- *Vespidae*

Since in our region entomologists rarely get opportunity to attend a crime scene, even less often forensic entomologists because there are very few qualified practitioners in FE, it is important that crime scene technicians conducting investigations be familiar with the procedures related to collecting entomological evidence at the crime scene and in death investigations.

According to Joseph et al. (2011), the importance of FE is reflected in the following:

- Assist in establishing a period of insect activity – PIA and time of colonisation –TOC, and at the same time determine the minimum post-mortal interval – *mPMI*
- Assist in determining the geographic location of death

- Assist in determining whether the body was moved and whether the site where the body has been found is the primary or secondary site where death occurred
- Insects found at the death site can be used for toxicological analyses
- Insect gut content found at the death site can serve as a basis for DNA sampling
- Based on the insects found, injuries on the body can be classified into antemortem, perimortem or postmortem injuries

To use insects as forensic evidence, it is necessary to accurately identify, collect, store, and ship entomological evidence found at a crime scene. Immediately upon arrival at a crime scene, the procedures important for the entomological part of the investigation should be followed, which concern the location where the corpse was found, the possibility of infestation by insects, that is, their larvae, clothing and objects found around the body (Sharma, 2003). According to the manual by Catts and Haskell (1991), the entomological sampling procedure itself can be partially invasive in terms of damaging the integrity of the body (especially in an advanced stage of decomposition), so before taking entomological samples, photographs of the body should be taken and the body should be accurate positioned in relation to the environment. It is important to record all the facts regarding the growth and development of insects – particularly temperature and humidity, because this can be of crucial importance when drawing conclusions regarding entomological evidence. The slightest mistake in the procedures can lead to a wrong conclusion, and consequently to a wrong decision by the judicial authorities. For example, a body was found in the warm period of the year, let's say, in June, and based on the developmental stages of the larvae, the entomologist drew a conclusion that death occurred seven days before the larvae had been collected from the body; however, it was not mentioned during the investigation, for example, that the body had been found in a dark-colored car parked on the asphalt that was exposed to sunlight, where the temperature is significantly higher, so the development of the larvae is faster, while the main suspect had a viable alibi for a time period of seven days before the death had occurred. In that case, based on the erroneous conclusion reached by the entomologist, the court must order a release of the person, because someone failed to mention, during the crime scene investigation, a detail important for the forensic entomological investigation as stated by White (2021).

FORENSIC ENTOMOLOGICAL PROCEDURES AT THE DEATH SCENE

The collection of entomological evidence begins a few steps from the body at the death scene and it consists of several stages:

1. Observation and notation of general scene characteristics

At this stage, visual observation of the site where the body was found should be made, in terms of the appearance of the site itself, the position of the body, exposure of the body to sunlight or shade depending on times of the day, etc. Observation should be made at a distance of at least 6 m so as not to disturb adult insects because they can either fly away or otherwise move away from the body itself. The time when you arrive at to the scene is also important because some adult insects (flies) are active only in daylight. If traces are collected at the site where the body was found at night, this must be noted because it cannot be expected to find adult flies. Photographs should be taken of and notes should be made about all the characteristics of the place where the body was found, because some details that are irrelevant to the entomologist can be extremely important for other experts investigating the place where the corpse was found and vice versa.

2. Visual observation and notation of insect infestations at the scene

The body itself and the immediate surroundings are observed, photographs are taken and written notes are made about what can be observed on and around the body, which parts of the body are infested by insects, the degree of colonization, the forms of the insects observed (adult insects, larvae, pupae or eggs); notes about the presence of insects in the close proximity of the body and the developmental stage of insects or the presence of insects that should not be expected are also made. This is important because it can indicate if there were antemortem injuries on the body, because in the case of antemortem injuries, if the time from the moment of death to the arrival of the investigator is short enough for the body to be infested with insects post-mortem, and infestation can be observed on the body, this indicates antemortem injuries, and death occurred subsequently. Attention should be paid to every detail that can provide information to entomologists or other types of investigators (White, 2021).

3. Collection and notation of climatological and microclimatological data.

At this stage, data on temperature and air humidity are collected at the site, where it is necessary to determine whether the body was found in an enclosed, semi-enclosed or outdoor environment, where ambient air temperature should be taken first (if it is an enclosed environment, the temperature inside and outside the room should be taken), air humidity in the room as well as outdoors must be taken. After measuring ambient air temperature, body surface temperature is taken, then ground surface temperature or floor surface temperature if the body was found in an enclosed environment, including under-body interface which is taken by sliding the thermometer between the body and the surface. The metabolic temperature of the maggot mass is also important information, which is measured where the largest number of maggots is by directly inserting the thermometer into the maggot mass. The metabolic temperature of the maggot mass is significant because due to metabolic processes the temperature in the mass itself rises, which can be significant because differences in the

speed of maggot development can occur due to differences in temperature. In addition to this data, it is important to determine and record some other facts that may be important, such as cloud cover, fog, smoke, etc. All data is recorded immediately to avoid subsequent errors.

4. *Collection of adult insects*
5. *Collection of eggs, larvae, and pupae at the scene*
6. *Collection of specimens (imago, pupae, larvae, eggs) from the surrounding area 5-6 m from the body*
7. *Collection of specimens (imago, pupae, larvae, eggs) from under the remains after the body has been removed*

These phases are completed simultaneously, so they will be explained accordingly.

Flying adult insects are collected out with an areal insect net, by performing movements above the body in the form of a horizontal figure eight, that is, in the form of a sign for infinity – ∞, or by holding the net above the body until a sufficient number of flying insects is collected. Ground crowling insects can be collected with forceps or fingers, so as not to damage the insect's body. After collecting a sufficient number of insects, they are placed into a killing jar containing ethyl alcohol which kills insects; then they are transferred into vials containg 70-80% ethyl alcohol.

According to the protocol explained by Haskell et al. (2000), a data label completed in pencil on a regular cotton bond paper is placed inside of the collection container together with an individual insect, while a data label completed in ballpoint pen is affixed to the outside of the collection container. Both labels contain the same information about location of adult insects on the remains, time of collection, location, case number, and the collector's initials. In this way, adult insects and insects in all other developmental stages are collected, but it is important to note that the samples prepared in this way – killed insects and their developmental stages are stopped and the developmental stage cannot be completed, but based on a developmental stage, the time of PIA, TOC, and mPMI can be determined. Eggs of larvae and pupae are collected separately from each area of the body colonized by insects (body cavities are mainly colonized – oral cavity, nasal openings, genital or anal area, etc., the whole body is covered with eggs, larvae and pupae in the advanced decomposition stage). Eggs are collected with a soft moistened brush. Larvae and pupae are more visible and easier to collect; they can be collected with fingers, fine point forceps or a brush. More than 50 eggs and larvae should collected, which should not a problem considering their number, and it is important to label the samples for each area of colonization and record the temperature of the area of colonization itself (Petrović, 2012). After collecting samples of larvae and eggs, they need to be preserved by immersing them in hot water for a few minutes or using previously prepared fixatives. Following immobilization, eggs and larvae are

preserved in 70-80% ethyl alcohol solution. In order to rear eggs and larvae in laboratories, living samples are also collected according to the already described principle; the collected living samples should be packaged in a glass vial with a piece of dump cotton wool (to prevent dehydration), in case it takes longer than 1 hour to reach a laboratory. The living samples are packaged in special shipping containers.

Pupae as the last developmental stage are easy to collect due to their size; they can be collected with fingers or fine point forceps and they are packaged in glass vials:

- The living pupae to be transported to the laboratory are placed in glass vials lined with cotton wool or paper, in order to prevent damage to the pupae.
- Pupae that need to be preserved at the stage in which they were found at the scene, after having been immersed in fixative, are placed in glass vials filled with 80% ethyl alcohol (Fujimura et al., 2009). For the purposes of further research, larvae and pupae of insects found at the site must be collected and preserved alive. Further research and rearing of larvae in laboratories is important to determine the species of insects based on imago, but also to compare the speed of development with that estimated development at the scene. Also, development in laboratories can be of importance due to entomotoxicological analyses. In larvae (maggots) rearing containers, a substrate is placed as a base (soil or sand), then a source of food (beef or pork liver) and a piece of dump paper towel is placed into a tinfoil bag (aluminum foil) to preserve humidity in the container and prevented the drying of larvae, food and substrate (Miller & Naples, 2002). The container prepared in this way is labeled and prepared to be shipped to entomological laboratories, which must be notified of the arrival of the larvae rearing container and to be able to accept the samples (White, 2021). Samples of adult insects, larval pupae and eggs are collected both from the close proximity of the body and under the body, because larvae at the final stage of development will leave the place of their previous life and development and move away in order to enter the pupa stage, that is, the last stage of metamorphosis, from which they will develop into adult insects. When larvae complete their development and enter the pupa stage, feeding is over – pupae and adult insects do not feed, they only aim to reproduce, that is, lay eggs.

8. *Documentation of historical climatological and microclimatological data (depending on the stage of decomposition of the body and the estimated length of time the body had been lying)*

Data on air temperature and air humidity from the desired time frame should be obtained from the nearest hydro-meteorological station, so that entomologists can calculate the time required for individual insects to undergo

their development (Gennard, 2012). These data are necessary to calculate ADD – Accumulated Degree Days and ADH – Accumulated Degree Hours – these two parameters allow forensic entomologists to estimate the time required for insects or its larva to reach a certain degree of development based on the accumulated heat during hours or days .

9. *Assessment of the ecological characteristics (soil, plant, animals, water...) at the recovery site*

Ecological characteristics can provide valuable information not only to entomologists but also to other experts involved in death investigations.

If it is necessary to examine a body that has already been buried (legally sanctioned or in order to hide evidence), the procedures are similar to those described for a body found on the surface of the ground. The only difference is that soil is sifted from the surface to the remains in order to find imago, pupae, larvae, and eggs. After removing the body, the soil under and to the side of the body is examined and sifted with the same goal (White, 2021).

DETERMINING THE TIME OF DEATH

Determining the time of death is of crucial importance in investigations of homicides and other untimely natural deaths (related to legal and economic matters concerning insurance, inheritance, the conclusion of a *dubious* contract...), missing persons cases, in cases when it is not possibile to identified a person, the time when the person was last seen alive is matched with the time elapsed since death, which was determined on the basis of entomological evidence. The time elapsed since death is called postmortem interval – PMI. Determining the PMI can be quite a difficult task because even in the initial stage of body decomposition when the physical and chemical changes accompanying the decomposing body are predictable, they depend on many environmental factors that determine the speed of these physical and chemical processes. However, as the time since death increases, all methods based on physical and chemical changes become less useful. In this case, methods in forensic entomology, even after a long period of time since death, can help to determine the time of death, that is, the PMI, quite accurately: samples of all the insects present in all developmental stages are collected from the body found and for which the PMI needs to be determined, and based on the immature imago necrophagous insects, which fed on the body, we can, based on microclimate conditions to which the corpse was exposed, determine the PMI, not as precisely as when the period is short, but an accurate PMI can be determined with an error as law as one day.

Isomegalen and isomorphen diagrams can be used to determine PMI. Isomegalen diagrams represent the determination of the developmental stage of the larva since the larva hatched to the stage found depending on the temperature. The length of the largest larva found is measured and the time since

the larva hatched is determined based on the curve dimension in the isomegalen diagram. This method is quite accurate only if the body was not undergoing fluctuating temperature, for example, in an enclosed environment where the temperature was nearly constant, but if the body was found outdoors and underwent daily temperature fluctuations, the mean temperature between daily minimum and daily maximum is taken. The specified time is approximate.

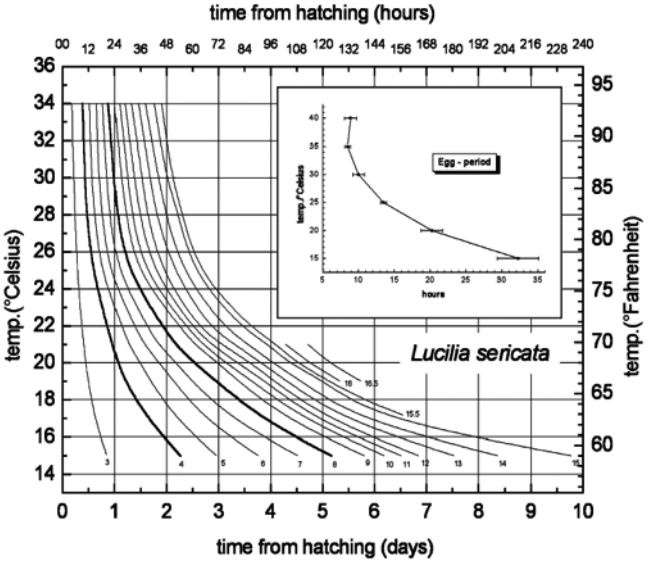

Figure 1. Isomegalen diagram (Grassberger & Reiter, 2001)

An isomorphen diagram is used when post-feeding larvae or pupae are recovered from the body, and the last metabolic stage of the pupa-to-larva transformation remains. It is especially useful when larvae that have already left the carcass they were feeding on are recovered from the body. Based on all insect developmental stage in the diagram, from egg laying to the transformation of a pupa into an imago, the period from egg laying to the developmental stage observed can be determined on the basis of the determined temperature of the environment, or the mean temperature per day due to daily temperature fluctuations.

The second method is based on the succession of insect species that inhabit the decomposing corpse, because it is possible to form models for which insect species inhabit the corpse and in what period depending on the PMI, but the formation of these models requires a comprehensive knowledge of the insect fauna in a given area.

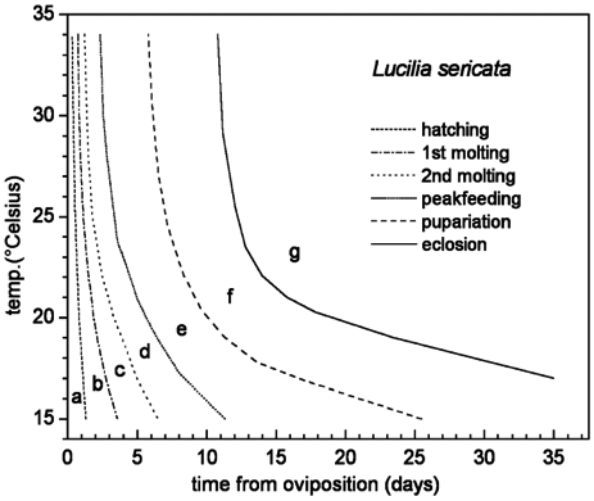

Figure 2. Isomorphen diagram (Grassberger & Reiter, 2001)

Factors impacting the development cycle:

1) Temperature and seasonality – the growth and development of insects is temperature-dependant, but due to normal distribution, temperature values for individual phases depend on insect species. We distinguish 5 points:
   - cold death point, where development is irreversibly interrupted and the larva dies (these values are -10 ºC до 0 ºC)
   - cold stiffness point, when all developmental processes stop, but with an increase in temperature they will continue – hibernation
   - optimal development point is said to develop the fastest and the optimal development values are 22-26 ºC
   - thermal stiffness point, as temperature rises above optimal growth and development slows and stops and protein coagulation begins, warm stiffness is irreversible and very close to the warm death point
   - thermal death point is the temperature at which proteins coagulate and death occurs.

Depending on the season, insects in certain stages of development can enter the cocooned larva or pupa stage, when in that stage they spend a certain amount of time in hibernation, waiting for a season that is favorable for their further development (Vasić, 1971). These data are important because, based on season and temperature data, one can predict and determine the time spent in certain developmental stages of insect species, as well as "abnormalities" related to accelerated or arrested development due to temperature effect.

2) Presence of a maggot mass

If a number of larvae is large enough, the so-called maggot mass is formed where, due to the metabolic processes carried out by the larvae themselves, the temperature is substantially higher than the temperature in the environment – this is important during cold weather when maggot mass temperature can deviate significantly from temperatures in the environment. In the case of a maggot mass, a complex phenomenon occurs and the oldest larvae develop faster. Based on the metabolic temperature of a maggot mass, the larva development period that developed preferentially can be determined, because the development period would have been significantly extended if there was no effect of the maggot mass temperature.

3) Food type

Some larvae found on the remains do not feed exclusively on decaying animal organic matter; some larvae can also feed on decaying plant organic materials, or only on plant matter, and some larvae have even been found feeding on any food type and even on paint. This is important because the larvae of insect species that are facultative necrophages can be found on and around the body, so based on knowledge of the specifics of the diet of certain insect species, some answers can be found that are significant for the forensic entomological investigation itself. Sometimes insect species that feed exclusively on plant remains can indicate facts that are of interest for the investigation, especially if there is a primary and a secondary site, and when the primary and secondary site should be linked.

All these factors indicate development rate and a diet type of the larvae of certain insect species, and these are facts that can provide the entomologist with enough information on the basis of which he can determine the elapsed time since death. According to Wells & LaMotte (2017), there are computer programs hat simulate insect development and thus provide data to entomologists about the length of development up to a certain stage. All this can help to determine the PMI as accurately as possible. However, insects don not only play an important role in determining the PMI; necrophagous insects have a much wider importance in FE, and they can, as silent witnesses, provide a lot of information on the last moments of people whose fate is being investigated. We can find out from the larvae of necrophagous insects not only when death occurred, but also, in some cases, the cause and manner of death.

ENTOMOTOXICOLOGY AND THE PRESENCE OF PSYCHOACTIVE SUBSTANCES

An autopsy is ordered when the cause of death of a person whose body is found is unclear or it is about a suspicious death and available body fluids, blood and urine, and tissues if necessary, are used for toxicological analysis

This is possible only if the body found is preserved, but what to do in a situation in which the decomposition of the body has advanced and is in the stage of active decomposition or even skeletonization. In this situation, the larvae of necrophagous insects or adult insects found on or around the body can provide the answer. In cases when only a skeleton is found, meaning there is no tissue to analyze, no living larvae of necrophagous insects, no living imago in the close proximity of the skeleton, insects are the ones that can provide answers by collecting cast larval skins or empty pupal cases during the molting process. In the skins and cases, which should be carefully analyzed in laboratories, using chromatographic methods, according to Milošević (2022) (immuno-chromatographic tests, gas chromatography, gas chromatography, headspace – gas chromatography with) the presence of toxins or drugs can be found, which could have been the cause of death of the person whose skeleton was found. Toxins and/or controlled substances are found as accumulated and unmetabolized products that insects ingest while feeding, and as harmful, rather than non-nutritive substances, they are accumulated in the insect's body, and thus in the skin, which remain after the development of the insect larva is finished. According to Sohal & Lamb (1977), insects have inhabited the world much longer than all mammals, so during evolution they have adapted even to the presence of heavy metals. Heavy metals, especially mercury, can accumulate in organisms, which may lead to the death of a warm-blooded organism, and as such the body will be exposed to decomposition. Larvae of necrophagous insects will arrive at the body and feed on the tissues containing high mercury concentrations. The mercury ingested by insect larvae will be retained in their organisms and based on the mercury content found in the larvae, poisoning death can be suspected; however, caution should be exercised when deciding whether it is poisoning during the analysis of larval pupae and adults. If only pupae, or only imago, were to be analyzed, the concentration of mercury and other heavy metals would be significantly lower, because insects have the ability to partially eliminate heavy metals in the larval or pupal stage. In addition to mercury, recent studies demonstrated similarities with the concentrations of some other metals – iron, zinc, copper, lead, etc. The concentration detected during the analysis indicates that metal poisoning should be suspected. Utsumi (1958) observed that, while studying housefly larvae, adult female flies behave differently toward rat cadavers depending on which poison caused death. In this study, no further research into toxins in the larvae was conducted, but it was indicated that insects easily detect the presence of substances that humans are insensitive to. Although research has been conducted at the Fraunhofer Institute in Hanover and Braunschweig, Germany, it is still not possible to determine, based on the toxin concentrations in the larvae, whether the toxin is the immediate cause of death. It may lead us to think that it is still not possible to convert the concentration measured in the larva to the concentration in the body of the person whose death has been investigated, because no certain correlation can be established between the level of the toxin found in the larva and the level of the toxin found in the body in the moments when the larvae used the body

to feed on, but the presence of toxins in the larvae can indicate what should be investigated because sometimes something may arose sufficient suspicion to conduct a more detailed investigation during which overlooked details can be noticed, which can provide an answer as to the cause of death. The importance of toxicological analyses of larvae, cast skins or pupal cases lies in providing answers as to whether the person whose death is investigated consumed certain substances or not. It is significant that the skin shed by larvae and pupae during the molting process can be found in a preserved state for a long time after the decomposition of the body, therefore we are not limited in time as in the case of larvae that can only be found during decomposition. If psychoactive substances are present in tissues and blood, the same substances will be found in larval or pupal skins.

Human medicine deals with how certain substances, specifically cocaine, affect the human body, but what is important for FE is how cocaine can affect the development of larvae. In the study by Goff et al. (Goff et al., 1989), it was determined that if larvae are offered liver tissue containing sub-lethal and lethal concentrations of cocaine, the larvae that consumed the sub-lethal dose of cocaine have approximately the same period of development, but the larvae that consumed significantly higher concentrations of cocaine (a lethal concentration or as twice as lethal) develops significantly faster. In both cases, pupal development duration was the same for both groups of larvae.

Forensic entomology has the possibility, but also a scientific and moral obligation, to provide answers to questions concerning human remains, because the family, society and the general public have the right to know how a member of the social community ended his life. These questions are much more complex than PMI, therefore forensic investigators asked to provide answers to the questions of where the death occurred, how the death occurred, whether the diseased was tortured before death, sexually tortured, whether there were indications of abuse of narcotics and substances, and so on. These and similar questions cannot often be answered by forensic investigators, therefore experts such as forensic entomologists, forensic pathologists and other experts must be included in the investigation. According to Rasmy (2008), insects as silent witnesses can provide an answer as to whether there was antemortem torture, because the victims' hands are usually tied, they are often unconscious as a result of the torture, so they cannot defend themselves against the attacks of the flies that can lay eggs on fresh wounds or natural openings of the body. Thus, the presence of wound scabs and myiasis on the body (infested with fly larvae antemortem) indicate that injuries were inflicted antemortem, which indicates torture. Insects can often provide answers as to where a substance comes from. For example, when the Drug Enforcement Administration – DEA seized marijuana packed in a so-called "brick" for which none of the suspects claimed responsibility, and an insect larva was found on the packaged marijuana, they called in entomologists. In this case, the task for the entomologists was easy because it was determined that the type of insect larva found lives only in

Colombia, so it was easy to link the perpetrator who traveled from Colombia to the drugs found. In cases when a completely decomposed body of a woman was found, it was necessary to determine whether she had been raped antemortem. Due to putrefactive changes, it was not possible to extract the semen of the possible rapist; however, the DNA of a man was extracted from the larvae found, which indicated that the victim was also raped (Rasmy, 2008). Insects can also provide answers in cases of mass graves, whether the grave found is an original primary grave (the term original primary grave means a grave in which bodies were first placed after death, which has not been excavated and the bodies have not been moved from it), or a secondary or tertiary grave (the term secondary grave means a grave to which the remains of victims were moved from the primary grave, often with the aim of disguising the crime and making it difficult to find and identify the victims). It often happens that after the crime has been committed, in order to disguise it, bodies are moved from the primary grave to the secondary or tertiary grave, and those attempting to disguise their crime often make "mistakes" during the relocation of the bodies, because new fly larvae invade the bodies in the advanced stage of decomposition, which have already been buried once. It is impossible to encounter fly larvae underground, which indicates that the bodies were in the light of day and they had been moved. FE can provide answers related to terrorism. According to Cruz (2006), if a plane crashed and there were no survivors, and it is unclear how the plane crashed, by examining insect larvae we can establish whether there was an explosion.

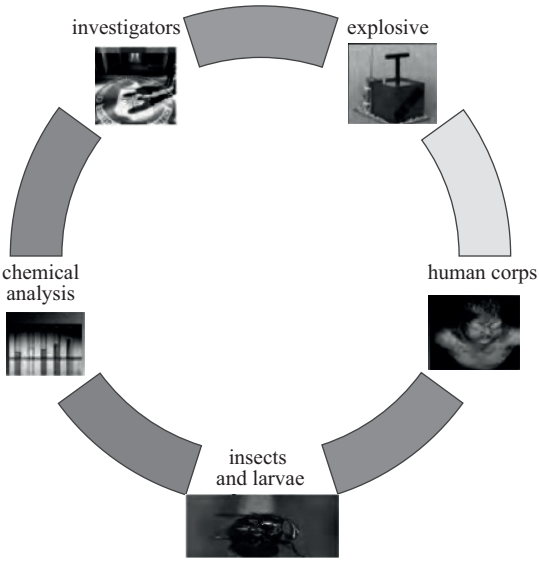

Figure 3. Explosive detection cycle (Cruz, 2006)

Specifically, traces of explosives will be found in the system of digestive organs of the larvae, because the bodies were blown up by the effect of pyroclastic impact due to the explosion and part of the burned and unburned explosive particles remained on them. After feeding, these same particles can be found in insect larvae or cast larval skins during the molting process, which can be preserved for years at the site where the traces were found. It was this method, that provided the answer as to how the Korean plane crashed in 1983, because the Soviets did not want to accept responsibility for shooting down the passenger plane, but the larvae found on the remains of the victims provided evidence there was an antemortem explosion and traces of TNT were found (English, 2022).

FORENSIC ENTOMOLOGY AND WAR CRIMES

It has already been mentioned that FE can provide answers concerning war crimes indirectly. If a mass grave is found that is suspected of containing victims of war crimes, it is first necessary to determine whether it is a primary or secondary grave – this answer can be provided by necrophagous insects because there is a precise succession of species as the body decomposes. Thus, if insects are found on the bodies in the advanced stage of decomposition, which primarily invade fresh corpses, it is clear that the bodies were moved to a secondary grave in order to cover up war crimes. Also, before the excavation of a grave site suspected of being a mass grave site, the fauna of the specific area should be thoroughly examined, because species that "do not belong" to the specific location can also be found. According to the data obtained by Jugo and Muzaferović (2008), mass graves vary in their dimensions and depth. For example, graves over 8 m deep were dug in Bosnia and Herzegovina, and since mass graves were hidden, the most demanding task was to uncover mass graves. What was observed in the search for mass graves were the so-called "geophysical anomalies". In the search for mass graves sites suspected of being mass graves, a large number of blue butterflies were observed. Margaret Cox explained this phenomenon described as a "geophysical anomaly" – it was observed that mass graves were mostly covered with *Artemisia Vulgaris*, a species of plant (mugwort), which these insects feed on (Cox et al., 2001). Areal images, according to Redmon (2019), showed that parts of the land on which mugwort prolifically grew show geophysical anomalies – the soil is slightly warmer than the environment (this is explained by the thermal energy released during the decomposition of organic matter). The soil where mugwort grows is richer in nitrogen than the surrounding soil (this is also explained by the nitrogen coming from the decomposing body), the geophysical structure of the soil has been changed (digging the soil to bury the body changes the soil structure in the sense that the soil is no longer as compact as before digging, but also the layers of soil that are at a greater depth appear on the surface, primarily clay). The presence of mugwort can be easily noticed by observating blue butterflies, which pollinate

mugwort, according to Warner (2004). Insects only signal us where the remains of victims might be found and where we should investigate, because the presence of mugwort and a blue butterfly does not necessarily mean that a mass grave containing human remains is there. All the aforementioned geophysical anomalies can also occur due to the burial of organic matter that does not have to be human (for example, by burying slaughterhouse waste). Certainly, geophysical anomalies and the presence of mugwort and blue butterflies can be a sign that something needs to be investigated, because there is no perfect crime, there are always witnesses, it is up to people to notice these "witnesses" and understand what they are saying. Blue butterflies signaled mass graves in all climates, and they were observed in Rwanda, Sudan, Iraq, Bosnia and Herzegovina, Serbia (Cox et al., 2008).

CONCLUSION

Insects and their developmental stages can provide answers to questions that are important both for individual criminal cases and very complex cases, such as terrorism and war crimes. Forensic entomologists are employed in cases in which the cause of death of the person whose body is found is unclear, because the behavior and metabolism of insects may provide investigators with answers they are looking for. The involvement of forensic entomologists in criminal investigations will not solve all cases, but we can certainly expect some answers. The importance of forensic entomology is growing, and training in forensic entomology is organized throughout the world. Serbia and the countries in the region still do not have adequate staff in the field of forensic entomology; therefore, crime scene technicians and investigators need to be properly trained to deal with insects and larvae encountered during investigations, as well as to consult forensic entomologists during investigations. Only a professional approach and use of entomological procedures can provide authoritative and court-acceptable evidence.

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THE RELIABILITY OF NEWLY DESIGNED SPECIFIC TESTS FOR ASSESSING PROFESSIONAL FIREFIGHTERS' PHYSICAL FITNESS

Original Scientific Article

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Abstract: The aim of this study was to determine the reliability of newly designed tests for assessing professional firefighters' physical fitness. A total of 15 healthy and physically active firefighters participated in this study. The following tests were performed: Modified Step Test ($MS_{tep}T$), Fire and Rescue Obstacle Course (VPol), Firefighting Equipment Carry Test (NVO_{pr}, and Dummy Drag Test (VL_{ut}). The testing was carried out using a randomized method. There was a 10-minute break between the tests. After a week, retesting was conducted under the same conditions. The results of the regression analysis showed that the value of the adjusted coefficient of determination ($adjR^2$) for all tests ranged from 0.90 (90.00%) to 0.98 (98.00%), from $MS_{tep}T$ to NVO_{pr} respectively, and the repeatability (reliability) of the tests in relation to the sample used in testing for all variables was highly statistically significant ($p = 0.000$). A moderate effect size ($d = 0.748$, 95% CI = 0.162 – 1.314) was found for the VPol variable, while the effect size was found small ($d = 0.212 – 0.281$) for the variables ($MS_{tep}T$, NVO_{pr}, VL_{ut}). The findings demonstrated that the examined tests can be applied in the practice of professional firefighters for the purposes of testing physical fitness related to the job. Methodologically, it is acceptable to conduct tests for firefighters in complete PPE so that the test conditions and workload are similar to the situational conditions during intervention in the field.

Keywords: firefighters, specific testing, work capacity, reliability.

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INTRODUCTION

Firefighters are organized differently in different countries, but they are characterized by a common professional duty to protect people and their property from the uncontrolled effects of fire. Firefighters are often organized according to the principle of political neutrality for the common good, but in history this was not always the case. Firefighters are divided into professional firefighters and volunteers. Professional fire brigades can be territorial and industrial, while voluntary ones are founded by citizens who join together in volunteer firefighters associations (VFA). All professional territorial fire brigades in the Republic of Serbia are fire and rescue services within the Ministry of the Interior of the Republic of Serbia, the Sector for Emergency Situations (SES).

Firefighting is recognized as an occupation associated with a high level of physical and psychological demands (Ärnlöv et al., 2011; Baur et al., 2012a; Baur et al., 2012b). Firefighters are faced with diverse and complex situations, which are often dangerous and difficult to deal with (Melius, 2001). For example, fires vary greatly in burning material, size, and weather conditions. The nature and concentration of airborne particles change at a fire location and during stages of a fire (Golden et al., 1995). Firefighters are often exposed to toxic environments and smoke inhalation (Gledhill & Jamnik, 1992; Bergman et al., 2011; Blacker et al., 2016), therefore they must wear personal protective equipment and self-contained breathing apparatus in an attempt to limit exposure. While necessary, this protective equipment can equate to an additional load of more than 20 kg (Guidotti & Clough, 1992), which increases the stress and difficulty (e.g., increased aerobic and anaerobic energy cost, decreased mobility, increased perception of effort) of fireground job tasks (Kales et al., 2007; Jacobsson et al., 2015).

Firefighters are exposed to high rates of traumatic events, such as being assaulted in the line of duty and death/severe injury of victims or fellow firefighters (Hanson et al., 2010; Komarovskaya et al., 2011; Kesler et al., 2021). Firefighters are required to perform numerous demanding and motor-specific tasks when on the fireground, including operating hose lines, carrying equipment, forcible entries, ladder raises, crawling and searching, and victims or casualties drags (Lindberg et al., 2014a; Lindberg, 2014b). Consequently, physical fitness can be an important contributor to firefighter's job performance.

Numerous studies (Shalev et al., 1998; Rhea et al., 2004; Michaelides et al., 2011) recommend that the maximum aerobic capacity (VO2max) be at least 45 ml/kg/min for future firefighter candidates (Gledhill & Jamnik, 1992). Similarly, a study by Michaelides et al. (2011) found a positive relationship between a high level of difficult working conditions and firefighter's job tasks performance. Among several fitness factors, cardiovascular endurance and muscle strength were reported as most important and contribute to more efficient tasks execution in firefighting (Soteriades et al., 2011).

Sothmann et al. (1990) determined that firefighters require a minimum of 45 ml/kg/min of maximum oxygen consumption to safely perform firefighting tasks. This finding is in line with the findings of other similar studies (Williams-Bell et al., 2009; Skinner et al., 2020), which determined that the body needs to absorb at least 40 ml/kg/min of oxygen at an exercise intensity corresponding to 84- 100% of peak heart rate.

Different systems, that is, different countries use different methodologies to assess firefighters' job preparedness and physical fitness. In most modern countries, tests used to assess working physical abilities dominate. For the development of the given area, it is necessary to apply the most adequate, that is, the most expedient testing program for firefighters as a very specific profession.

To ensure general health and adequate physical fitness of firefighters, it is recommended that they wear full PPE during exercise in their firefighting brigades by performing daily activities according to the plan and program related to that working day. Regarding testing, it is best to conduct it twice a year in order to monitor the level of firefighters' physical fitness, wearing full PPE with firefighting equipment while performing tasks.

Until recently, in the system of the Ministry of the Interior of the Republic of Serbia (MUP), the testing of firefighters has been based on a battery of tests assessing only the level of general physical fitness (Pravilnik o kriterijumima za izbor kandidata za polaznike kursa za Osnovnu obuku pripadnika vatrogasno-spasilačke jedinice, *Službeni glasnik RS*, br. 12/2019; 14/2020; 49/2021; 27/2022). Given that firefighters have a very specific job, which implies completely different knowledge, skills and movement activities compared to the rest of the MUP, there is a methodological and professional need to design a new set of tests for assessing physical work abilities. The new set of tests is based on professional tasks and includes the following tests: Modified Step Test, Fire and rescue Obstacle Course, Firefighting Equipment Carry Test, and Dummy Drag Test.

This study aims to determine the reliability of newly designed tests used to assess physical work abilities. High reliability is assumed in the newly designed tests: Modified Step Test ($MS_{tep}T$), Fire and Rescue Obstacle Course (VPol), Firefighting Equipment Carry Test (NVO_{pr}), and Dummy Drag Test (VL_{ut}).

METHODOLOGY

A non-experimental study was carried out using field trials, by means of the test-retest method, using the following modified tests: Modified Step Test ($MS_{tep}T$), Fire Range (VPol), Firefighting Equipment Carry Test (NVO_{pr}) and Dummy Drag Test (VL_{ut}). The study was carried out in accordance with the postulates of the Declaration of Helsinki (Christie, 2000) and with the approval of the Ethics Committee of the Faculty of Sport and Physical Education, University of Belgrade (Ethics Committee permit number 484-2).

Respondents

Fifteen adult, healthy and physically active male respondents, professional firefighters (age = 30.60 ± 5.78, body height = 181.88 ± 6.03 cm, body mass = 86.95 ± 7.64 kg, body mass index - BMI = 26.30 ± 2.18 kg/m^2, and work experience = 5.6 ± 4.3 years) participated in the study.

Instruments

The following tests were used to measure physical fitness of professional firefighter: Modified Step Test ($MS_{tep}T$), Fire and Rescue Obstacle Course (VPol), Firefighting Equipment Carry (NVO_{pr}), and Dummy Pulling test (VL_{ut}).

Measurement procedure

Modified Step Test

Test for assessing cardiovascular capacity in firefighters. Required equipment: a stopwatch, a mobile application called Metronome Pro, and a bench (40cm high). The 60-second test was performed while wearing PPE and a tank. Respondents listened to the sound on their mobile phone's built-in speaker and stepped right, left, right, left to the 4/4 beat/60 BPM. Heart rate was measured 15 seconds after the test. Thereafter, the pulse value after the test and age were entered into the table to calculate the VO2max in the step test (TrainerMetrics app).

Fire and Rescue Obstacle Course

This test/obstacle course is used to test dexterity, agility, coordination and the strength of the whole body, which is 85m long. Firefighters crawled on their knees for 10 m as far as a 12 kg tractor tire; they picked up a 5 kg hammer and punched for 10 reps, ran to an 8 kg truck tire, flipped it back and forth for 6 reps, and continued to run to the grappling hook on top of which there was a 5 kg weight plate, moved it up and down using their arms for 10 reps; then they put down the grappling hook and overcame a 200 cm high fence as the last obstacle. Respondents performed the test wearing full PPE without a tank.

Firefighting Equipment Carry Test

Respondents wore full PPE with a tank and were asked to walk a distance of 22m from one cone (a start point) to another cone (an end point), carrying firefighting equipment:

1) They picked up two 52 mm filled hoses and ran with them for one length of 22 m to the cone, placed them down, then returned to the start point.
2) They picked up two 75 mm coiled hoses by the handles and carried them to the cone, placed them down, then returned to the start point.

3) They picked up one suction hose and a submersible pump, carried them to the cone, placed them down, then they returned to the start point.
4) They picked up two "S9" devices and carried them to the cone; they placed them down and returned to the start.
5) They picked up two buckets (20 kg) of Eco pour and carried them to the cone.

The stopwatch was stopped when respondents reached the second cone.

Dummy Drag Test

Respondents had to wrap their hands underneath the arms of a 75-kilogram dummy and drag it backwards for a length of 15 m, go around the obstacle and drag it back for another length of 15 m to the start. Respondents dragged the dummy over a 30 m distance.

Testing was carried out on the sport court of the Belgrade Fire Brigade in full PPE in the morning hours from 10:00 a.m. to 2:00 p.m. After a detailed explanation of the test tasks and the individual implementation of each test individually with low intensity, and in order to familiarize respondents with the task, respondents did a 10-minute warm-up and had a 10-minute passive rest. Testing sessions were carried out using a randomized testing method. There was a 10-minute break between the tests. After a week, retesting was carried out under the same conditions.

Variables

The following variables were measured in the tests (test and retest):

- $MS_{tep}T$_test – maximum oxygen consumption (ml/kg/min),
- Vpol_test – fire and rescue obstacle course completion time (s),
- NVO_{pr}_test – firefighting equipment carry task completion time (s),
- VL_{ut}_test – dummy drag task completion time (s).

Statistical data processing

A descriptive statistical analysis was performed to calculate measures of central tendency: mean value (Mean), minimum (Min) and maximum (Max) values; measures of dispersion – standard deviation (SD), the coefficient of variation (CV%). The dependent sample t-test was used to analyze differences. Also, the effect size was calculated according to the following formula (Sullivan & Feinn, 2012):

$$d = (Mean1 - Mean2) / SDD \quad (1)$$

where Mean1 – mean value of the test variable; Mean2 – mean value of the retest variable; SDD – difference SD test and retest variable. Effect sizes were

classified as follows: < 0.2 (trivial), 0.2 – 0.49 (small), 0.5 – 0.79 (moderate), and > 0.8 (large) (Cohen, 1988). To assess the degree of agreement of the results of retesting, that is, reliability, a linear regression analysis was performed. Statistical significance (alpha level) was set at $p < 0.05$. Statistical analysis was performed using IBM SPSS software, version 20.0 (Armonk, NY: IBM Corp.)

FINDINGS AND DISCUSSION

The results of descriptive statistical analysis for the test and retest of the completed tests are shown in *Table 1*.

Table 1. Descriptive indicators of all variables

Descriptive statistics						
Variables	N	Mean	SD	CV%	Min	Max
$MS_{tep}T$_test	15.00	50.35	3.05	6.10	45.80	56.70
$MS_{tep}T$_retest	15.00	50.60	3.05	6.00	46.70	56.70
Vpol_test	15.00	69.82	9.76	14.00	57.74	88.00
Vpol_retest	15.00	68.21	9.07	13.30	56.00	84.56
NVO_{pr}_test	15.00	85.18	11.62	13.60	69.46	111.42
NVO_{pr}_retest	15.00	84.69	11.55	13.60	67.26	109.00
VL_{ut}_test	15.00	25.37	5.80	22.90	19.83	41.46
VL_{ut}_retest	15.00	25.08	5.35	21.30	18.69	38.33
Valid N (listwise)	15.00					

N – number, Mean – mean value, SD – standard deviation, CV% - the coefficient of variation, Min – minimal value, Max – maximum value.

Table 1 demonstrates that the mean value for the Modified Step Test variable is 50.35 ± 03.05 ml/kg/min, while in the retest the mean value is 50.60 ± 3.05 ml/kg/min. For the Fire and Rescue Obstacle Course variable the mean value is 69.82 ± 9.76 s, while in the retest the mean value is 68.21 ± 9.07 s. For the Firefighting Equipment Carry variable the mean value is 85.18 ± 11.62 s, while in the retest the average value is 84.69 ± 11.55 s. For the Dummy Drag variable the mean value is 25.37 ± 5.80 s, while in the retest it is 25.08 ± 5.35 s. The coefficient of variation (CV%) does not exceed 30%, which indicates that respondents represent a homogeneous sample in relation to all abilities tested.

Regression analysis results for the Modified Step Test ($MS_{tep}T$) are shown in *Table 2*.

Table 2. Regression analysis for the $MS_{tep}T$ variable

Regression Statistics		ANOVA	
Multiple R	0.95	F	Significance F
R Square	0.91		
Adjusted R Square	**0.90**	**131.05**	**0.000**
Standard Error	**0.95**		
Observations	15		

Table 2 indicates that the adjusted coefficient of determination (Adj.R^2 = 0.90) with the standard error of prediction (SEE = 0.95) is significant (F = 131.05, p = 0.000).

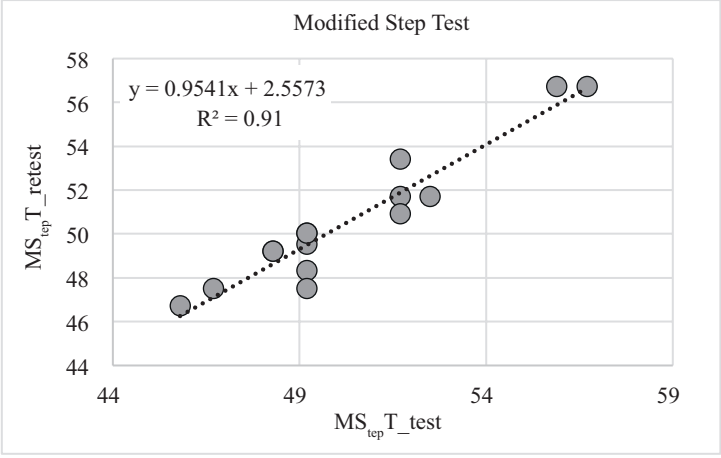

Figure 1. Linear regression of the $MS_{tep}T$_retest variable based on the variable of $MS_{tep}T$_test

Figure 1 shows the linear dependence of the $MS_{tep}T$_retest variable based on the $MS_{tep}T$_test variable, where the coefficient of determination is significant (R^2 = 0.91, p = 0.00), which is greater than the value of 0.90, meaning there is a high degree of reproducibility of the results. All this indicates a reliable application of the Modified Step Test ($MS_{tep}T$)) in practice.

The predictive equation is of the following form: $MS_{tep}T\_retest = 0.9541 \cdot MS_{tep}T\_test + 2.5573$.

Regression analysis results for the Fire and Rescue Obstacle Course (Vpol) are shown in *Table 3*.

Table 3. Regression analysis for the Vpol variable

Regression Statistics		ANOVA	
Multiple R	0.98	F	Significance F
R Square	0.95		
Adjusted R Square	**0.95**	**265.20**	**0.000**
Standard Error	**2.19**		
Observations	15		

Table 3 indicates that the adjusted coefficient of determination is (Adj.R^2 = 0.95) with the standard error of prediction (SEE = 2.19) is significant (F = 265.20, p = 0.000).

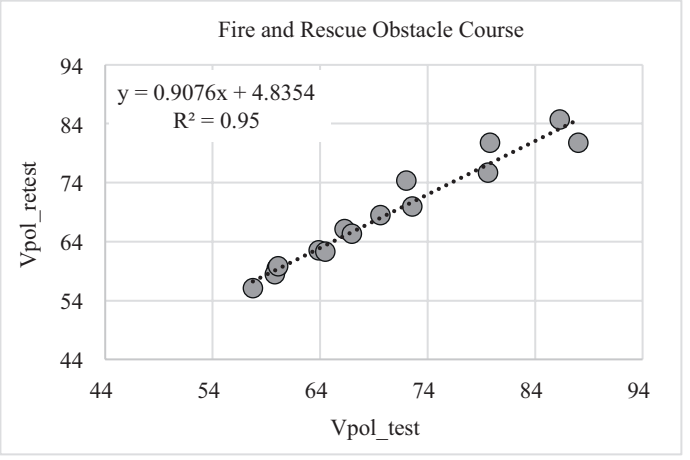

Figure 2. Linear regression analysis of the Vpol_retest variable based on the Vpol_test variable

Figure 2 shows the linear dependence of the Vpol_retest variable based on the variable of Vpol_test, where the coefficient of determination is significant (R^2 = 0.95, p = 0.00), which is greater than the value of 0.90, meaning there is a high degree of repeatability of the results. All this indicates a reliable application of the Fire and Rescue Obstacle Course (Vpol) in practice.

The predictive equation is of the following form: Vpol_retest = 0.9076 · Vpol_test + 4.8354.

Regression analysis results for Firefighting Equipment Carry за (NVO_{pr}) are shown in *Table 4*.

Table 4. Regression analysis for the NVO_{pr} variable

Regression Statistics		ANOVA	
Multiple R	0.99	F	Significance F
R Square	0.98		
Adjusted R Square	**0.98**	**572.86**	**0.000**
Standard Error	**1.80**		
Observations	**15**		

Table 4 indicates that the adjusted coefficient of determination (Adj.R^2 = 0.98) with the standard error of prediction (SEE = 1.80) is significant (F = 572.86, p = 0.000).

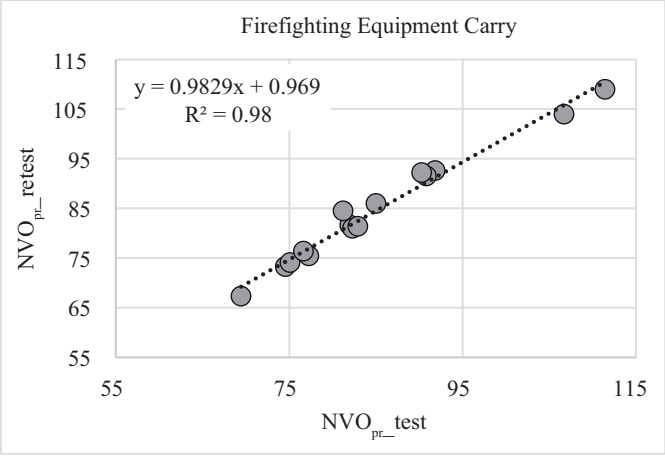

Figure 3. Linear regression of the NVO_{pr}_retest variable based on the NVO_{pr}_test variable

Figure 3 shows that the linear dependence of the NVO_{pr}_retest variable based on the NVO_{pr}_test variable, where the coefficient of determination is significant (R^2 = 0.98, p = 0.00), which is greater than the value of 0.90, meaning there is a high degree of repeatability of the results. All this indicates a reliable application of the Fire and Rescue Obstacle Course (NVO_{pr}) in practice.

The predictive equation is of the following form: NVO_{pr}_retest = 0.9829 · NVO_{pr}_test + 0.969.

Regression analysis results for Dummy Drag (VL_{ut}) are shown in *Table 5*.

Table 5. Regression analysis for the VL_{ut} variable

Regression Statistics		ANOVA	
Multiple R	0.97	F	Significance F
R Square	0.95		
Adjusted R Square	**0.94**	**239.01**	**0.000**
Standard Error	**1.37**		
Observations	15		

Table 5 demonstrates that the adjusted coefficient of determination (Adj. $R^2 = 0.94$) with the standard error of prediction (SEE = 1.37) is significant ($F = 239.01$, $p = 0.000$).

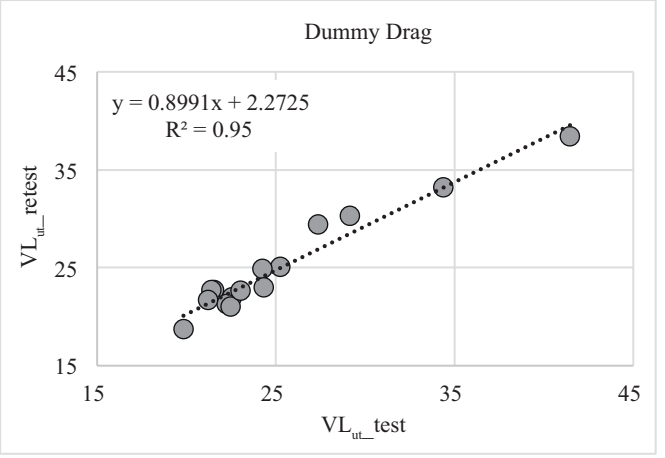

Figure 4. Linear regression of the VL_{ut}_retest variable based on the VL_{ut}_test variable

Figure 4 shows the linear dependence of the VL_{ut}_retest variable based on the VL_{ut}_test variable, where the coefficient of determination is significant ($R^2 = 0.95$, $p = 0.000$), which is greater than the value of 0.90, meaning there is a high degree of reproducibility of the results. All this indicates a reliable application of the Fire and Rescue Obstacle Course (VL_{ut}) in practice.

The predictive equation is of the following form: VL_{ut}_retest = 0.8991 · VL_{ut}_test + 2.2725.

Table 6 shows the results of the dependent sample t-test for all variables.

Table 6. The results of the dependent sample t-test for all variables

Paired Samples Test	Paired Samples Test									
	Paired Differences					t	Sig. (2-tailed)	Cohen d	95% Confidence Interval	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					Lower	Upper
				Lower	Upper					
$MS_{tep_}$T_test MS_{tep}T_retest	-0.25	0.93	0.24	-0.76	0.27	-1.03	0.320	-0.27	-0.77	0.25
Vpol_test Vpol_retest	1.62	2.16	0.56	0.42	2.81	2.90	0.012	0.75	0.16	1.31
NVO_{pr}_test NVO_{pr}_retest	0.49	1.73	0.45	-0.47	1.45	1.09	0.296	0.28	-0.24	0.79
VL_{ut}_test VL_{ut}_retest	0.29	1.35	0.35	-0.46	1.03	0.82	0.425	0.21	-0.30	0.72

Table 6 indicates statistically significant (t = 2.90, p = 0.012) differences between the variables Vpol_test and Vpol_retest. No significant differences were found between other variables (p > 0.05). A moderate effect size (d = 0.748, 95% CI = 0.162 – 1.314) was found for the Vpol variable. A small effect size was found for the MS_{tep}T variable (d = -0.27, 95% Cl = -0.77 – 0.25), the NVO_{pr} variable (d = 0.28, 95% Cl = -0.24 – 0.79), and a small effect size was determined for the VL_{ut} variable (d = 0.21, 95% Cl = -0.30 – 0.72).

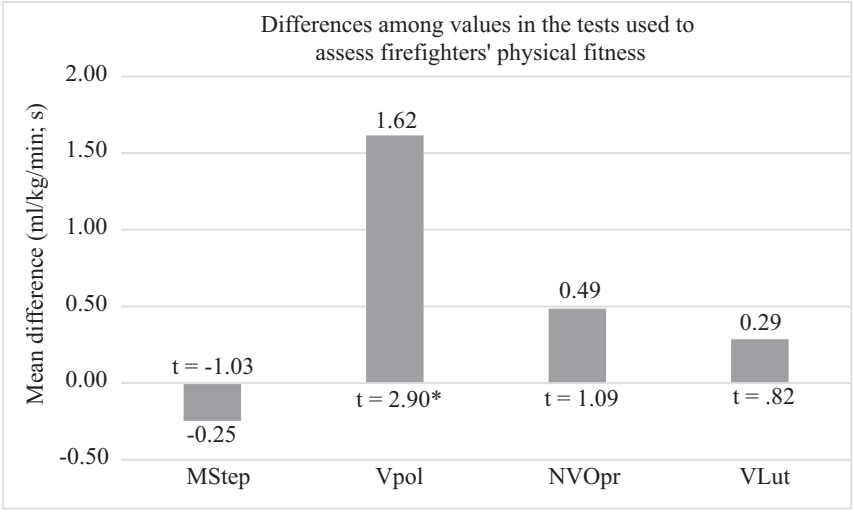

Figure 5. The results of the differences in the mean values of the variables examined on repeat testing (retest) in relation to initial testing (test)

Based on the results of differences in the mean values of the examined tests used for testing (test - retest), it can be claimed that respondents achieved statistically different results only on the Fire and Rescue Obstacle Course (Vpol) test, while they achieved better results on the retest (*Table 1* and *Table 6*). As the test was of a very complex motoric character with very complex motor tasks requiring endurance, it is possible that the better result achieved on the retest is a consequence of a component of motor learning, but also a consequence of respondents' greater self-confidence in terms of the intensity of the performance of the test (they were less "afraid" to perform the test at very high intensity compared to the initial test). Methodologically, for the test to be applied, it is necessary for respondents to perform the test at least once before the actual testing, in order to gain individual experience of its implementation and complete familiarization with the test task, while the actual testing should be performed after a 48 hour-break.

CONCLUSION

Regression analysis results show that there is a high and significant coefficient of determination (adjR2 = 0.90 - 0.98, $p < 0.05$) for all conducted tests (MStepT, Vpol, NVOpr and VLut)). This indicates a high degree of reliability of the conducted tests. No significant ($p > 0.05$) differences were found between test trials on the MStepT, NVOpr and VLut tests. A moderate effect size (d = 0.748, 95% CI = 0.162 – 1.314) was found for the Fire and Rescue Obstacle Course variable. The effect size of other variables was small (d = 0.212 – 0.281). It would prove useful for future research to include a larger number of respondents (including women) and another retest (third attempt).

Based on the obtained results, the examined tests can be applied in the practice of professional firefighters for the purposes of testing physical fitness related to the job. Regular conduct of tests envisaged in monthly work plans and programs should contribute to a more efficient work of firefighters, including annual physical ability testing. In addition, initial testing is recommended when recruiting new firefighters. Also, it can be indirectly concluded that it is methodologically acceptable for firefighters to perform tests wearing full personal protective equipment so that testing conditions and workload are similar to those encountered on the fireground.

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THE OFFENSE OF AVOIDANCE OF WITHOLDING TAX IN THE CRIMINAL LEGISLATION OF SERBIA

Review Article

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Abstract: This paper analyzes the offense of avoidance of withholding tax from the aspect of provisions in the criminal legislation and practical application and explains tax crimes that are subject to the regulation of basic and secondary criminal legislation. On the one hand, the paper explains in detail *ratio legis* for criminalization under Article 226 of the Criminal Code of the Republic of Serbia and in the context of the relationship between the provisions of the Criminal Code and the Law on Tax Procedure and Tax Administration, and blanket legal norms affecting the application of the provisions governing the structure of the offense of avoidance of withholding tax, on the other. Empirical, comparative-law and interpretation of criminal law methods are used in the paper. The paper presents and analyzes available statistical data on the offense of avoidance of withholding tax from the aspect of the criminal policy of the legislature, courts, public prosecutor's offices, police and tax police. The paper aims to contribute to the elaboration of this problem from the dogmatic-legal and criminal-political aspects in order to improve the practice of courts, prosecutor's offices, lawyers, tax police, criminal police, tax inspection, and tax administration. Some issues are illustrated by court decisions.

Keywords: taxes, contributions, withholding tax, payment invoice, failure to pay the calculated amount in the name of withholding tax.

INTRODUCTION

Most countries prescribe tax offences in their basic criminal laws. In some reputable national legislation of European countries, tax offenses are the subject of special criminal legislation. The legislation of the Republic of Serbia has a mixed approach to this issue – it provides for two criminal offenses in the basic criminal code, and four in the tax code. The Criminal Code of the Republic of Serbia provides for two criminal offenses whose object of criminal legal protection is *the right to tax*: the criminal offenses of tax evasion and avoidance of withholding tax (Krivični zakon, 2019). Before this section was added to the

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Criminal Code (Zakon o poreskom postupku i poreskoj administraciji, 2021), the Code clearly provided that all public revenue is deemed as tax. After amendments were introduced to the Criminal Code, the Code adopted the conceptual definition from the previous provision of the Law on Tax Procedure and Tax Administration after a number of paradoxical problems which generally had arised in court and legal practice concerning the application and interpretation of the concept of tax (considering that the Code did not prescribe that the tax also included other public revenues).

In Serbian law, tax crimes are subject to the regulation of primary and secondary criminal legislation. The Criminal Code is based on the decision that criminal legislation, including criminal law response in terms of *ultima ratio*, should be reduced to a relatively small number of criminal offenses. The question concerning a relationship between primary and secondary criminal legislation arises in the area of economy which also includes the tax system as an object of criminal law protection (Stojanović, 2006). Criminal offenses against economic interests are contained in Chapter XXII of the Criminal Code, which is in accordance with the domestic legislative tradition. From a comparative legal point of view, it can be seen that the majority of European legislation regulates the main economic offenses by secondary criminal legislation, rather than by a systemic criminal code. In some European codes, so-called *economic crimes* are classified as crimes against property, and a typical example is the Criminal Code of Switzerland (Swiss Criminal Code, 1937). Out of a total of 29 economic offenses, Article 226 of the Criminal Code provides for two so-called tax crimes: tax evasion and avoidance of withholding tax.

The term withholding tax includes taxes, contributions, fees, rents, reimbursements, self-contributions, etc., including all public revenues earned by the state and provincial governments, local self-government units, cities, municipalities and city municipalities (Bojić, 2011: 87).

REVIEW OF THE HISTORY OF TAXATION

The state means taxes (Ekmečić, 2010: 226). Even Plato in his famous work *The Republic* emphasized the importance, *reason (logos) of beings*, *things*, taxes and morals for people's wealth, which could also be applied to a state: "A state arises, as I conceive, out of the needs of mankind; no one is self-sufficing, but all of us have many wants (Plato, 1983: 48), "Presumably when all are engaged in money-making, the men most orderly by nature become, for the most part, richest" (Plato, 1983: 261). Taxes emerge with the birth of civilization. There are often archaeological representations of an ancient Egyptian tax collector, a manager of the pharaoh's treasury and collector of taxes in kind (Karličić, 2015). Three millennia later, we can find a normative expression of the principles of legality, fairness and justice that is unique in its beauty in Dušan's Code, which reads as follows: "See thou to it that everything is done in accordance

with law, giving to every man his right." It is an abomination of the god to show partiality... Look upon him who is known to you like him who is unknown to you... and him who is near the King like him who is far from him" (Djurant, 2004: 170).

In the civilizations of the ancient East, taxes were an important source of income for the ruler to finance the court, administration, and army. This was the case in China during the reign of the Han dynasty, ancient Indian states, Persia, Sumer, Egypt. Peasants were often despised and burdened with high taxes.

The Roman Empire, whose citizens, just like the Greeks, called their state *res publica* (public affair) or just Rimili *civitas*, which corresponds to the Greek *polis*, recorded and assessed one's property, in the era of the republic, through two censors from the ranks of magistrate. The reason was tax collection. The Turks, as conquerors and enslavers, brought to the Serbs and other occupied nations a great civilizational asset – census. Specifically, as skilled occupiers, they took over administration and diplomacy from the conquered Byzantium. Tax collection goes hand in hand with the administration, and the condition for that was the census. The first censuses of the enslaved Serbian lands were carried out in 1455 (Macura, 2001), 1468, 1476, 1478, 1489, 1516, 1528, and 1530 in the sandjaks, which are very detailed and reliable (Šćepanović, 1979). The sources of our national history are precious. Based on them, we can see that taxes were paid in kind and money and there was a tax-favored status (Miletić, 2021). The main goal of the administration of the Ottoman Empire was to collect taxes through submission, the maintenance of peace, and cutting people off from public life and keeping them out of power, in the following ways: through the rayah (tax-paying subjects) system for the rural and small urban population and the so-called privileged Vlach system, often in Serbian lands, in which free livestock breeders – Vlachs retained their freedom and some internal princely autonomy, provided they pay taxes. For example, each house paid taxes in kind, in other words, they had to give a ewe with a lamb and a ram on St. George's Day, and every few houses and villages were had to pay taxes collected by the prince, which in the first century and a half were bearable especially for those who retained the privileged Vlach status as a social category of free livestock breeders who were not rayah.

After its *revolutionary legislation* in 1808 and 1812, Serbia adopted an independent Penal Code in 1860. In this regard, Article 84 of the Law on Direct Taxes of Serbia, provided for the criminal offense of not reporting one's situation to the tax board (Zakon o neposrednom porezu, 1884).

The income tax paid by citizens, natural persons, was introduced into the British tax system in 1798. The tax systems of modern state systems evolve historically and rest on two basic tax forms, the value added tax and before it tax on personal incomes, the global income tax system is typical of modern tax systems in Europe.

The crime of withholding tax is a "modern" offence introduced in our catalog of offenses in 2002. Before being taken from the Criminal Code, it was the subject of secondary criminal legislation – the Law on Tax Procedure and Tax Administration (LTPTA), Article 173. The same law explicitly stipulated that it applies to all public revenues paid by the tax administration. Public revenues include both taxes and public revenues earned by local self-government units in accordance with the extensive term according to the then LTPTA. The extensive concept of tax defined in this way also referred to the criminal offense contained in Article 173 of the same law, which was added to the then Article 229 of the Criminal Code (Stojanović et al., 2018). The LTPTA stipulates that all public revenues are equated with tax in the strict sense, but this does not apply to the Criminal Code. After criminalization in the LTPTA was added to the Criminal Code, the Code prescribed that the subject of the criminal offense of avoidance of withholding tax includes taxes, contributions, and other prescribed duties.

Tax crimes are prescribed by criminal codes in many countries, while some countries, such as Switzerland and France, regulate tax crimes with tax legislation. Austria, the Russian Federation, Hungary and Bulgaria classify tax crimes in the basic criminal laws (Kulić & Milošević, 2011:322). In the countries with "Germanic" legal tradition, with modalities, such as Germany, Austria, and Switzerland, there is an offence of *Untreue*, as the central criminalization of response to corporate, financial, and tax crime (white-collar crime, corporate crime, fraud and compliance crime, and tax evasion) (Newburn, 2013: 182).

A POSITIVE-LAW ASPECT

According to a similar interpretation, legally, criminologically and criminalistically, they are classified in the so-called white-collar crime and also constitute a part of economic, financial or corporate crime and procedural forensic rules regarding the detection and proving of criminal offenses apply to them. Unlike the response to other forms of illegal behavior in the case of the Wall Street's heist, financial and banking crimes were not subject to criminal or penal control (Barak, 2013: 3), while in terms of a connection between the economic and political elite, as a reason for not instituting criminal proceedings, which is a feature of the legal systems of the most developed, richest and most orderly countries, because, for example, none of the largest participants in the biggest financial frauds that led to the collapse of Wall Street in 2008 were subject to criminal or penal control (Barak, 2013: 9). This is similar to the author's thesis that tax crime is a subtype of economic, financial and corporate crime, which is easy to see when looking at the methodology used to prove crimes, which includes specific methods and modern technical means that are applied through forensic document examination to identify signatures, handwriting, numbers, computers, social networks and digital platforms, which is a common feature and challenge in detecting and proving this category of crimes (Aleksić & Škulić, 2011: 319).

The criminal offense of avoidance of withholding tax was prescribed by the provisions of the LTPTA from 2007 to 2009, which ceased to apply when the Law on Amendments and Additions to the Criminal Code was enacted on September 11, 2009. Article 226 of the Criminal Code of the Republic of Serbia provides for avoidance of withholding tax as a criminal offense, according to the legislation after 2012. Failure to pay withholding tax is a blanket, corporate, non-violent, and financially motivated crime (white-collar crime). The object of protection is the economic regulation and state budget in the broadest sense. The ephemeral tax crime is a crime that was transferred from the secondary criminal legislation in 2009, thereby opening up some questions as to what the *ratio legis* of the "transfer" is, considering that it is a specific crime described using technical terms such as "the prescribed payment account of public revenues", and in blanket norms (Pravilnik o načinu utvrđivanja, plaćanja i evidentiranja poreza po odbitku i o sadržini zbirne poreske prijave o obračunatom i plaćenom porezu po odbitku, 2013) "consolidated tax return", etc., then the issue of interpretation of the term tax, which had a meaning in the context of the application of that law and tax legislation only as a collective term for both contributions and fees. Particularly worthy of attention is the question as to whether legal protection in this case could also be achieved through tax protection, that is, by prescribing this act as a tax offense or perhaps even through economic criminal protection, given that this effective legal fossil from the era of *joint work* in the second half of the last century still exists. The 2012 Law on Amendments and Additions to the Criminal Code describes this offence more appropriately, in the then Article 229a, by providing for avoidance of other dues. By providing for the basic form of offense of avoidance of withholding tax, the Criminal Code of does not provide for the objective condition of criminalization, therefore the existence of a criminal offense can be excluded by applying the offenses of minor importance, which is not the case with more serious forms of this criminal offense, which, in addition to the fulfillment of the elements of substance in the legal description of the criminal offense, also require conditions of punishment (over one million five hundred thousand dinars, that is, over seven million five hundred thousand dinars).

The perpetrator of the crime is the taxpayer – the responsible person in a tax-paying legal person and a tax-paying entrepreneur who cannot be the taxpayer himself. The responsible person in a tax-paying legal person –a taxpayer and an entrepreneur – a taxpayer, who with intent to avoid payment of taxes and withholding taxes does not pay the amount calculated in the name of taxes and withholding taxes on the prescribed payment account of public revenues or fails to pay other statutory dues, commits the criminal offense of avoidance of withholding tax. The subject (perpetrator) of a criminal offense is a person with personal characteristics, that is, a personal status, and that is a responsible person (Karličić, 2015) in a tax-paying legal person, as well as a tax-paying entrepreneur – a taxpayer.

A taxpayer as a perpetrator of a criminal offense is a responsible person in a legal entity (company, public enterprise, institution, public authority, organization and other proper forms of employers) and entrepreneur. A taxpayer cannot be the perpetrator of this criminal offense, regardless of whether they themselves are, exceptionally, obliged to calculate and pay taxes and withholding taxes (for example, in cases of so-called self-employment, real estate rental tax, etc.).

At the subjective level, intention and direct intention are foreseen, as in the case of tax evasion. The most serious forms of this offense provide for, as the qualifying circumstances of premeditation, amounts exceeding one million five hundred thousand dinars, or seven million five hundred thousand dinars, whose payment is avoided, rather than the objective conditions of criminalization. For the basic form of this offense, the Code provides for imprisonment of up to three years and a fine. For more serious form of this offence, imprisonment of from six months to five years and a fine is prescribed, while for the most serious form of this offense imprisonment of from one to ten years is prescribed.

An act of commission is a missed payment or a failure to pay the calculated tax, and the deed is completed by the payment of only the net amount by the taxpayer.

An act of commission and consequences of the so-called objective injustice (Živanović, 1922: 55) consists in omission, that is, the avoidance of payment of the amount calculated in the name of public revenues fully or partially (taxes in the narrower sense). Therefore, it can be performed both by commission and omission. In practice, a criminal offense will not exist if the taxpayer calculates public revenues and does not pay them, having previously signed an agreement on the postponement or rescheduling of tax debt with the tax administration or the revenue administration of the local self-government unit.

The consequence occurred with the very act of failure to pay the full amount of the calculated taxes and contributions, given that the objective conditions of criminalization as an imperative for the existence of this criminal offense are not provided for in the legal definition. The criminal offense of avoidance of withholding tax is completed if the responsible person in a tax-paying legal person and a tax-paying entrepreneur, that is, a taxpayer, pays the net amount but avoids payment of public revenues in the name of taxes, social security withholding contributions, transfer donations and other revenues, that is, taxable income (Popović, 2017) (tax on income, profit and capital gains, tax on wages and labor force, payroll taxes, reimbursements, fees or other types of payment related to the taxpayer's income), but avoids to pay the amount calculated in the name of taxes and withholding tax and other statutory dues on the prescribed payment account of public tax revenues.

The term avoidance of withholding tax, that is, the substance of the offense constitutes, as with any criminal offense, a set of mandatory features, the so-called typification of certain forms of criminal wrongs, which constitutes the

substance of the concrete, individual criminal offense, in this case avoidance of withholding tax. For a criminal offense to exist, the factual situation must correspond to the legal description. In other words, the substance of the offense must be realized for any criminal offense to exist. Instead of the substance, one can also talk about the concept of avoidance of withholding tax, given that the term substance serves as a synonym for a special concept of a particular criminal offense. The substance of the offense results from the legal description of the constitutive forms of the offense, that is, objective (act, means, manner of crime commission, personal characteristics, personal relationship or personal status of the perpetrator, the place and time of the commission of the criminal offense) and subjective (intention and negligence) (Stojanović, 2019)).

The object of a crime, which consists of avoiding the payment of the amount calculated in the name of fiscal obligations (means of execution), is a filed and completed tax return. As a rule, a manner of crime commission is omission – failure or omission to pay the amount, according to which this offense is typical of the so-called crimes of omission.

For the criminal offense of avoidance of withholding tax to exist in terms of culpability, premeditation is required, as well as intent to avoid paying taxes. **The subjective element** (Ristivojević, 2003) is characterized by the tax payer's intent to avoid payment of withholding tax, mandatory social insurance withholding contributions, health insurance contributions, and unemployment benefits. Therefore, *intent* is required in addition to direct *premeditation* (Tekelija, 2009), *which precedes awareness and willfulness*, which constitutes *premeditation* and manifests and therefore verifies itself at the time of the commission of the offense. The term premeditation was used in the Kingdom of Yugoslavia law, which could perhaps encompass the category of intent. In practical application, therefore, it is necessary to prove, in addition to objective elements, the defendant's premeditation and intent to fully or partially avoid the payment of taxes, contributions or other prescribed dues, although opinions on this matter differ (Presuda Apelacionog suda u Kragujevcu, 2020). In practice, the burden of proving the absence of intent lies with the defendant and it is often dealt with during the main trial (Karličić, 2015: 101).

The offense has one basic and two serious forms. The basic form of the offense is punishable by imprisonment of up to three years and a fine. For the most serious form, if the amount of calculated tax whose payment is avoided exceeds the amount of 1,500,000.00 dinars, the perpetrator shall be punished by imprisonment of from six months to five years and a fine, and for the most serious form, by imprisonment of from one year to ten years, when the amount whose payments is avoided exceeds 7,500,000.00 dinars. Individual amounts of tax liabilities cannot be added together, and whose payment is avoided from different tax periods. Withholding tax for each taxpayer and for each individually paid income is calculated, suspended and paid by the income payer on the prescribed accounts at the time of income payment, in accordance with the regulations valid on the day of income payment.

The application of lenient laws has an interesting consequence in tax criminal law, to which the legal practice of the courts provides an answer. Should the principle from the norm of criminal law be applied in the case of a blanket criminal offense if the Criminal Code was subsequently amended, thus abolishing tax liability. However, if the Criminal Code was to be amended or if the Criminal Code was subsequently amended, thus abolishing tax liability – tax liability is not abolished. The amendment of the criminal code can only result in the decriminalization of a certain type of tax evasion; however, tax liability remains, because it is determined by the blanket tax norm. The most obvious example is the change in the monetary census as an objective condition for criminalization. Thus, when the statutory maximum was raised to one million dinars, everything below that amount was decriminalized, but tax liability remained. A significant novelty in the 2012 Law on Amendments and Additions to the Criminal Code is the removal of the provision in Article 229a, paragraph 4, because it was not in accordance with the general provisions of the Criminal Code, which regulate the security measure of prohibition to exercise one's profession, activity or duties, and which are imposed based on them (Article 85 of the Criminal Code). The provisions of the Criminal Code, unlike some other security measures, do not stipulate that these measures must be prescribed and imposed, as was envisaged in the 2009 Law on Amendments and Additions to the Criminal Code.

THE RELATIONSHIP BETWEEN THE CRIMINAL OFFENSES OF TAX EVASION AND AVOIDANCE OF WITHHOLDING TAX

Substantive criminal law, whose basic rules are contained in the Criminal/Penal Code, establishes the characteristics of punishable actions, and stipulates legal consequences (punishments and security measures), which are associated with the commission of a criminal offense (Škulić, 2019).

In practice, there is often confusion concerning these two criminal offenses, as well as in the views of the highest courts. Specifically, avoidance of withholding tax and tax evasion are often confused, that is, the qualification of tax evasion includes avoidance of withholding tax. Thus, in 2021 the Supreme Court of Cassation stated the following reasons for the judgment: "the court incorrectly applied the provision of the LTPTA, which ceased to apply ... that an individual tax return for withholding tax is submitted ... once a year..." while canceling the judgment on the request for protection of legality due to the incorrect application of the rules on accounting periods ...while not calling into question the erroneous legal qualification pertaining to the offense of tax evasion under Article 225 of the Criminal Code, rather than the offense of avoidance of withholding tax under Article 226 of the Criminal Code (Presuda Vrhovnog kasacionog suda, 2021). We are of the opinion that in this particular case the apparent ideal combination of criminal acts cannot be applied, because

it is not a matter of choosing the substance of criminal acts. The difference between the legal descriptions of these criminal offenses is the lack of an objective condition of criminalization in the case of avoidance of withholding tax in practice therefore, minor offenses may be imposed for small amounts.

On the subjective level, there is a similarity, because intent is required for the existence of both offenses. The perpetrator of tax evasion is also a taxpayer, unlike avoidance of withholding tax. Tax evasion will exist if the tax on public revenue has not been calculated by the responsible person or entrepreneur, that is, if the legal requirements contained in the description of that offense have been met, and not avoidance of withholding tax.

A clear distinction between these two offenses lies in the fact that avoidance of withholding tax exists only if taxes and contributions have been calculated and reported as a fiscal liability, based on true data, whose payment has been avoided. According to a court decision (Presuda Vrhovnog kasacionog suda, 2020), the basic distinction between these two criminal offenses lies in the fact that the criminal offense of avoidance of withholding tax is committed by the income payer, although he or she is not a taxpayer, unlike tax evasion which is committed by a "taxpayer". This attitude expressed in the judgment rendered by the Supreme Court of Cassation, is subject to criticism and could only be reduced to the fact that this happens as a rule, that is, very often, because the perpetrator of tax evasion does not have to be only a taxpayer, but also "any person" who, with intent to fully or partially avoid the payment of taxes, does at least one of the three alternatively prescribed acts of commission, and that person can also be another person, e.g., director (Presuda Osnovnog suda u Užicama, 2016; Presuda Apelacionog suda u Kragujevcu 2016), bookkeeper, accountant, tax advisor, the responsible person in a tax-paying legal person, business decision maker, or an entrepreneur (Zakon o privrednim društvima, 2021) is a taxpayer who can also be a perpetrator of the offense of avoidance of withholding tax.

Until 2010, the Corporate Profit Tax Law prescribed the obligation for the taxpayer to calculate and pay the profit after being deducted from the capital gain, which the non-resident taxpayer derived from the resident taxpayer (Zakon o porezu na dobit pravnih lica, 2021), and the non-fulfillment of which constitutes the criminal act of tax evasion (Popović, 2017).

The determination of the unpaid amount is not so important nor is it a problem like tax evasion.

Qualifying circumstances, such as some typical aggravating circumstances, which are included in the legal description, represent and are a part of the substance of the criminal offense, that is, additional features that give more serious (qualified) forms of the criminal offense for which more severe penalties are prescribed compared to the basic form. These are amounts exceeding 1,500,000.00 dinars, that is, 7,500,000 dinars.

Table 1. Criminal offence of avoidance of withholding tax (Republički zavod za statistiku, 2011; 2012; 2013; 2014; 2015; 2016; 2017; 2018; 2019; 2020; 2021)

	A total number of reported persons	Persons charged	Convicted persons
2021	16	10	9
2020	20	17	13
2019	22	18	12
2018	39	24	6
2017	30	27	23
2016	52	44	20
2015	63	56	30
2014	62	55	44
2013	106	66	22
2012	103	44	24
2011	105	15	9

Avoidance of withholding tax is a minor offense compared to tax evasion, if the severity of penalty is taken into consideration as a criterion. Specifically, the least serious form of tax evasion carries a penalty of 1 year, while the legal minimum of 30 days applies to avoidance of withholding tax (члан 45 КЗ). A more serious form of tax evasion carries a penalty of 1 year and the most serious form of tax evasion carries a penalty of 3 years, while avoidance of withholding tax carries a penalty of 6 months or 1 year.

In practice, a real joinder of offenses is possible, provided that there is not a continued crime as a form of apparent real joinder of these two offenses (while an ideal merger is difficult to imagine) (Živanović, 1922).

CONCLUSION

Out of a total of 618 reported cases, 212 persons were convicted for the offense of avoidance of withholding tax over the last ten years in the Republic of Serbia (2011-2021). After the concept of tax was clarified and amended through amendments to the Criminal Code of the Republic of Serbia in 2012, a typical blanket criminal offense against the economy no longer causes major problems in practice when defining what is meant by taxes, if we exclude interference with tax evasion. The offense is suitable for the application of an apparent real joinder – a form of construction of a continued crime, bearing in mind the tax accounting periods whose amounts are not added up outside of those time intervals. Intent, as a condition for the existence of this criminal offense, as in the case of tax evasion, is unthinkable without premeditation,

whose existence is assumed by directing it to its realization, which is another specificity of the legal description of this criminal offense that is an essential characteristic of the existence of a criminal offense of a subjective nature, which must be proven during the course of the procedure. Within the field of general and individual prevention, there are potentially colossal resources that are in line with the effectiveness of detecting, proving and punishing this criminal offense, which primarily protects existentially the poor social classes, which cannot, for example, exercise the right to health care or pension as a result of benefit payment avoidance. The effectiveness of the detection of the criminal offense and the quality of evidence from the aspect of applying modern financial forensics tools, cross-assessment and financial investigation, give this part the characteristic of modernity and exactness, whereby we must not lose the sight of principles of criminal law, substantive and procedural, for a single moment, bearing in mind potential problems related to proving the perpetrator's intent. From 2011 to 2021, a total of 618 individuals were reported to have committed the offense of avoidance of withholding tax, while a total of those accused amounted to 376, and the number of persons convicted for this criminal offense in the same period amounted 212. The EU countries did not form a single tax system to reduce abuse in the area of taxation – they opted for tax coordination, that is, the harmonization of their tax systems (Randjel ović, 2021: 193). Assessment of the quality of criminal protection of the tax system, and accordingly through criminal law protection by applying the provisions contained in Article 234 of the Criminal Code – the criminal offense of avoidance of withholding tax can also be committed on the basis of its effectiveness, "that is, the ability to stably generate necessary amounts of tax revenue, as well as based on its effects and the dynamics of economic growth" (Randjelovic, 2021: 194). *De lege ferenda*, perhaps through appropriate changes to court organizational and procedural laws, we should think about the establishment of special tax crime departments, which would result in the effectiveness and efficiency of criminal law protection in the area of fiscal crime.

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Review of the book *Global Security and the Changing World – Concept, Actors, Challenges, Risks and Threats* by Boris Tučić

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The book *Global Security and the Changing World - Concept, Actors, Challenges, Risks and Threats* by Boris Tučić is the first academic book in Republika Srpska that systematically and scientifically deals with the topic of global security.

The concept of "global security" itself is very controversial considering disagreement among scholars over the definition of global security. Tučić emphasizes that some scholars reduce this term to an auxiliary conceptual and categorical element of contemporary international relations, while others perceive it in a more ideological and abstract manner, failing to scientifically identify all its key aspects, such as its entities or a referent object of security. According to Tučić, the essential elements of the concept "global security" are "the scope, reach and vector intensity of security threats." In this regard, Tučić defines global security as the totality of security aspects, that is, challenges, risks and threats that transcend national borders and potentially or actually endanger key elements and stability of the international system/international relations. Defined in this way, global security includes all sources and forms of security threats, that is, areas/sectors in which security issues are observed, including all security levels and entities. Tučić classifies the sources of global security into military, political, economic, ecological, and societal sources.

In this way, Tučić accepted the so-called sectoral approach to security, which Barry Barzan considered theoretically in his book *People, States and Fear,* in 1983.

While discussing these sectors or areas of emerging security threats, Tučić clearly observes that in the last fifty years, in addition to states, various non-state actors have appeared as security entities, ranging from regional and global organizations to multinational/global companies and the non-governmental sector. Tučić states, throughout his book, that many liberal authors have at-

tempted to base the concept of global security on the denial of the state as a security framework and considered that the position and role of the state has been replaced by global society or the emerging global community. However, Tučić emphasizes that the idea of a global society that replaces the state, that is, the state security framework, does not offer an answer to the question of who would be responsible for preserving global security instead of states. In this regard, over the last few decades the liberal concept of security has attempted to impose the Euro-Atlantic Security Community (NATO) as the key model for achieving global security. However, the author states that the multi-polarization of international relations has created and will create a number of other regional security communities. That is why Tučić observes that at the global level, that is, the "federalized" security level, "security issues that directly affect the entire international system, its key elements and values, about which there should be no disagreement or doubts, must be singled out, while regarding other less important security issues, regional actors, and their individual members, act with greater independence and autonomy." However, the author states at the same time that this is an idealistic approach to global security, and the realist approach is still dominant. In this regard, the cluster model of managing global security issues, as Tučić writes, "fails to reflect the real balance of power in the modern international system." According to Tučić, the modern system of international relations could be qualified as "uni-multi-polar", in which there is a very pronounced disproportion regarding political, economic, military, and "soft" powers at the disposal of world powers.

Bearing all this in mind, Tučić especially emphasizes the crisis of the concept of the United Nations (UN). The UN represents, as Tučić points out, "a recurrence of a bygone era, without real potency and capacity for effective global action." After all, the United States is trying to remove many issues from the United Nations and resolve them within organizations, forums and structures that they can easily control.

The book consists of four parts, with an introduction and concluding remarks. The first part entitled "The concept of global security" analyzes the concept of global security and presents the key theoretical approaches (liberalism and realism).

The second part entitled "Challenges, risks and threats to global security" discusses the areas in which global security issues arise: military, political, economic, social, environmental sectors.

The third part entitled "Actors of global security" deals with the key entities of contemporary security relations. The United Nations (UN), regional actors of global security (European Union, North Atlantic Treaty Organization – NATO, Organization for Security and Cooperation in Europe, Collective Security Treaty Organization – CSTO, African Union, the Shanghai Cooperation Organization, the Association of Southeast Asian Nations – ASEAN, the BRICS;

State actors in global security, Non-state actors in global security; Individual, human and global security.

The fourth part entitled "Managing global security" deals with theoretical reflections on global security management models.

Boris Tučić's book also represents a textbook, which can help students in any study cycle to better understand the issue of global security.

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JOURNAL OF THE FACULTY OF SECURITY STUDIES, UNIVERSITY OF BANJA LUKA AND UNIVERSITY OF CRIMINAL INVESTIGATION AND POLICE STUDIES, BELGRADE

- GUIDELINES FOR REVIEWERS -

The Journal of Security and Criminal Sciences publishes innovative scholarly articles that address topics ranging from security studies, criminalistics and forensics, protection and rescue, the organization of policing and police activities, to special physical education. Additionally, the journal publishes articles in other scientific fields that are closely related to the profile of the journal.

The journal publishes original research articles, review articles, short communications, article critique or response papers, conference reports, book reviews, and research projects reports that have not previously been published or submitted to another journal for consideration in any form.

Article 53 of the Rulebook on Publishing Academic Work ("Official Gazette of Republika Srpska" No. 77/17) provides for the quality of a review as one of the criteria for the categorization of journals.

- Pursuant to Article 35(5) of the Rulebook, the review must contain the following:
  1. Evaluation of the relevance and originality of the article and its contribution to the relevant field;
  2. Evaluation of the novelty and originality of research;
  3. Evaluation of the methods used;

4. Recommendation for assorting the manuscript into the relevant category or article type;
5. Evaluation of the literature used;
6. Recommendation to publish the article.

- Article 23 of the Rulebook provides for the following article types:

1. ***Original research article*** is, in principle, organized according to the IMRAD scheme for experimental research or in a descriptive way for descriptive scientific fields, in which the text about the research results of the author's own study obtained using scientific methods, which are textually described and allow for the research to be replicated and the facts to be verified, is published for the first time.
2. ***Review article*** presents an overview of recent articles regarding a specific topic with the aim of summarizing, analyzing, evaluating, or synthesizing the main ideas arguments and findings, with new syntheses that must encompass the results of the author's own research.
3. ***Short communication*** is a short article or a preliminary study which does not have to include all the IMRAD elements. It summarizes the findings of the author's completed original research or article still in progress.
4. ***Article critique or response paper*** is a discussion of a certain scientific topic, based exclusively on scientific argumentation, in which the author expresses his/her opinion which must be supported with evidence, that is, confirms or disproves the findings of other authors.
5. ***Informative review*** such as editorials or commentaries.
6. ***Review*** is an evaluation of a book, instrument, computer program, case, or a scientific event. It evaluates the correctness/incorrectness of a scientific paper, criteria, or starting points, with a particular emphasis on the quality of the work evaluated.

- When reviewing the article, the reviewers should consider the following:

1. Does the article fit the scope of the Journal of Security and Criminal Sciences?
2. Does the title clearly describe the article?
3. Does the article adhere to the journal's standards?
4. Does the article in the relevant category have all the necessary elements (for example: original research article – introduction, methods, results, discussion, conclusion)?
5. Are tables and figures easy to interpret and understand?
6. Are the sources cited in accordance with the Instruction for authors?

- Other notes (Article 35, items 2, 4 and 6)

  1. Articles are evaluated descriptively.
  2. Reviewing form must be signed if it is in printed form and sent to the editorial office via email for each article reviewed.
  3. Reviewers are required to point out possible violations of ethical standards in the work.
  4. Reviewers should provide a full reference to a representative single author/co-authored articles from the narrower scientific field, such as the work they have reviewed.