MODERN CRIMINALISTIC METHODS

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Abstract

Criminalistic science uses scientific methods used in other scientific disciplines, but adapted to the specific needs of criminal investigation. Criminalistics also uses methods that are designed to be used exclusively for criminalistic purposes. Thus, methods of identifying persons by papillary line analysis, handwriting analysis using graphological methods, odor analysis, scene accident photography with stereo graphometry, comparative trace analysis with comparative microscope, photo robot creation software, and many other methods are applied in criminal investigations.

However, new methods are being developed to improve the work of criminalists who work in the field of investigating, inspecting, alibi determination, tracing and material evidence for pre-trial and court proceedings, as well as other operational-tactical measures and investigative actions. Practical field work also applies methods of profiling persons, application of modern technological means of tracking persons and situations, such as drones, which are also used in criminal intelligence, methods of detection lies, etc.

The authors of the paper analyze contemporary criminalistic methods with particular reference to their application in practical work when undertaking measures and activities within the framework of criminalistic methodology. Namely, in the process of elimination of crimes, special attention is paid to detection, proving, and clarification of crimes. Particularly important in this part are the criminalistic methods that answer the nine golden questions of criminalistic, and reveal the perpetrators.

Key words: criminology, methods, investigations, traces, analysis, etc.
INTRODUCTION

Criminalistics is a science that adapts the methods and achievements of other sciences and scientific disciplines to its needs, in order to detect, prove, and clarify crimes. The ultimate goal is to discover the perpetrators, the motive for the crime, the modus operandi, and other criminal characteristics of the crime. In other words, it answers to the "nine golden questions" of criminalistics. It uses methods, tools, ways, and procedures to undertake various actions, such as the realization of operational-tactical measures and investigative actions. Methods in criminalistics can be of natural or technical sciences, but also of social sciences. In addition to methods developed in other sciences, and with some adaptation applied to criminalistics, there are also original criminalistic methods. Originally criminalistic methods include confrontation, ballistics, graphoscopy, trasology and many others. (Цуклески, 2006)

There are special criminalistic methods for each type of crime. They make a set of measures and activities aimed at discovering only one type of crime as to successfully combat the crime (Angeleski, 2007).

More recently, numerous methods based on the application of modern technical and technological achievements have been more frequently applied in criminalistic investigations. The development of new sophisticated ways of committing crimes by offenders and organized criminal groups using modern technical equipment and facilities necessitates modernization of criminalistic tools and methods for its detection. In fact, there are numerous ways of using computers, satellite systems, software solutions and other systems of committing modern crimes in the domain of cybercrime, money laundering, forgery, etc.

The authors of the paper will focus more on reconstruction and experimentation as actions to clarify crimes. During the reconstruction, certain actions are taken to re-examine the course of the event and establish relevant facts about the perpetrator and the course of the crime. In applying this measure, there are also new contemporary ways of carrying out the reconstruction that greatly facilitate the work of criminalists.
NEW METHODS AND TECHNOLOGIES FOR DETECTION OF CRIME

Various methods and techniques may be used within the scope of criminalistic analysis. Such are: statistical analysis of crime; analysis of patterns of crime to identify the criminal hotspots - mostly related to the use of geographic information system (GIS); network analysis (tactical analysis); analysis of telephone contacts by using sophisticated software as the Analytical program I2 or Watson; analysis of financial transactions; analysis of time series; analysis of criminal markets; risk analysis, and many other (Stefanovska, Gogov, 2015).

Application of GIS systems for combating crime is related to police actions and improvement of police work. To be more specific, certain legal solutions in Serbia treat the electronic devices for locating and tracking the results of their application as evidence in criminal proceedings. Moreover, special investigative measures, such as the controlled delivery and locating and tracking people geospatially, are evidence related techniques realized by the use of modern electronic devices for global positioning i.e. devices for automatic tracking of persons and objects. They can be used to find stolen vehicles by locating the position of the vehicle, with 2 to 5 meters precision. (Milojkovoc, Marinkovic, 2007).

Also, GIS can be used for the purpose of selection of the optimal routes for transportation of dangerous goods and in the implementation of preventive measures to minimize the risk, some forms of simulation can be exercised. Numerous models for selection of the optimal routes can be used. Such is the Geographic Information System (GIS) related to addressing the problem of routing and accurate prediction of the spatial consequences from disposal of hazardous substances. (Ristic, Indjic, Karkalic, 2014).

Other effective tools apart from the GIS systems to detect and prevent certain crimes, especially thefts, are the alarm systems. To be more specific, alarms fitted to certain facilities, vehicles, etc. are electronic devices signaling at the moment of a break-in, as a sign for police or private security agencies action. Thus, alarm systems help actions to detect perpetrators of thefts. Hence, thefts in apartments, vehicles, industrial equipment, and other facilities protected with an alarm device can be exposed.

Drones can also be used for criminalistic purposes as a means of intelligence gathering, terrain reconnaissance, etc. There are also drone
squadrons used to track the movement of terrorists and locate them. In this way, intelligence gathering can be used to plan operational actions to neutralize terrorist groups, etc. (Marina Malish Sazdovska, 2016)

Another way of applying new technologies for crime investigation is also crime mapping. There are various ways of mapping crime used in the daily practice of the police and other law enforcement agencies. One way is the use of Geographic Information Systems (GIS) as a method of crime analysis.

Furthermore, there is a system that has been used for mapping of crime in Macedonia. It is a system consisting of two parts: analysis of events, and filling the database and displaying the data from the database on a map. (Malish Sazdovska, Temelkovki, 2016). It could also be a preventive tool for reducing and combating crime in the country.

More recently, criminalists have been using new methods of identifying falsehoods or lies in the statements of the persons being interviewed. For example, the method S.C.A.N. (Scientific Content Analysis technique), is used to analyze the content of the document and to establish the reliability of the statement. This method can be applied to a written statement in writing, and can be identified the statement of a suspect, witness or a victim. (Malish Sazdovska, Nikolovski, 2018)

**RECONSTRUCTION AND EXPERIMENT**

In order to verify the evidence obtained or to ascertain the facts relevant to the clarification of matters, the body conducting the proceedings may determine reconstitution of the event. The reconstitution shall be carried out by repeating the actions or the situation under which, according to the evidence, the event happened. In cases when in the statements of individual witnesses or suspects or defendants the actions or situations are presented differently, the reconstruction of the event will, as a rule, be carried out separately with each of them.

As with the crime scene investigation, during the reconstruction, the previously established facts are checked through immediate observance by the persons performing the reconstruction. In some cases, the reconstruction can be carried out in full or by partially using computer simulations. Where necessary, the crime scene investigation or reconstructing authority may seek the assistance of an expert in forensic, technical, traffic, or other occupations, who may assist in tracing, securing or describing traces, perform necessary measurements and
recordings, make sketches and photocopies, or collect other data. An expert may also be summoned for crime scene investigation and reconstruction if their presence would be of benefit to the finding or opinion.

Thus, the reconstruction is a repetition of the criminal act or of some of its situations, actions and processes, at the place where the crime was committed. In this way, reliable materials are provided, which will later serve to create certain assumptions or versions about the course of the event, i.e. the crime that has already been committed. The environment created by the reconstruction is artificially challenged, in order to create a repetition, that is, an imitation of the crime, or certain segments of the crime committed. It uses the information and evidence found in the crime scene and the crime investigation.

The specific tasks accomplished by the event reconstruction are related to checking the actual possibility of an event or a particular action occurring under certain conditions, for a specific time or by a particular person, i.e. checking the actual possibility of some phenomena occurring under certain conditions. (Водинелиќ, 1984).

**Figure 1: Crime Scene Reconstruction**

(Source: http://eyewitnessanimations.com/)

In order to successfully carry out the reconstruction, detailed planning is required. Namely, the place, time, and conditions of the reconstruction should be determined, as well as the methods to be applied, the persons to be engaged, the manner of fixing the course of the reconstruction, and perhaps the most
important part - the facts and circumstances under which the whole even happened.

The course of reconstruction is as follows

- Identifying the crime scene. The crime scene will be identified according to the record of the crime scene investigation and transcript attachments, such as a photo album, sketches, recordings, etc. In addition to identifying in this way, the venue can also be identified by witness identification, victims, or accused.
- Preparatory actions after identifying the crime scene. After completing the first phase, which consists of identifying the scene, we proceed to the next phase, which implies undertaking concrete reconstruction actions. It is often necessary to make a "scene" by placing the assets and objects of the crime, with the participation of the participants in the crime and the persons who carry out the reconstruction.
- Conducting of the planned actions (Крстиќ, 1992).

Most often, the reconstruction is performed in the reverse order of the crime which is reconstructed. Namely, the evidence and traces are removed from the scene and a picture is created of the overall procedure of committing the crime. (Котески, 2009). The reconstruction is most often carried out on the spot, after the crime scene investigation. Reconstruction time should be early as the participants' memories of the event are fresh and while the scene can be more easily brought to the authentic state.

Successful reconstruction is possible if the following activities are implemented:
- detailed study of the documentation of the facts established in the preceding procedure (minutes, findings, and expert opinions, official notes, reports, statements and minutes of conducted conversations, etc.);
- determining of the purpose of the reconstruction, that is, determining of the facts and circumstances that need to be established or clarified;
- determining of the place and time of the reconstruction in accordance with the ambient conditions that existed during the particular event;
- determining of the tactics of action, the manner of repeating the event, the means to be used, and the manner of documenting;
- determination and reporting of the participants in the reconstruction;
The reconstruction creates an artificial environment, using all the objects and things that were at the crime scene, implying an imitation of a situation or process at the crime scene. After the completion of the reconstruction activities, the results obtained are to be fixed and this is usually done by preparing a report. As with the other transcripts, we have an introductory section which contains data on the date, time, place, and the participants of the reconstruction. The second part, which is descriptive, contains the reconstructive actions of the crime event, and the final part contains the time of completion and signatures of the relevant participants.

In order to check the set versions and to find solutions to the disputed circumstances after the completion of the crime scene investigation, it is possible to conduct an experiment which is an artificial repetition of the crime event or some of its parts. The experiment is carried out in a systematically organized manner, in order to provide and fix all the evidence to establish the objective truth. The experiment is an independent criminal activity, different from the reconstruction and other measures. The reconstruction is carried out after a thorough crime scene investigation, with the aim to determine uncertain and unverified assumptions, or in the event of new circumstances arising during the crime scene investigation.

More recently, certain experimental activities have been carried out and in such a way that certain situations have been set up in the so-called room for criminal scene reconstruction (RENÉE C. LEE, 2009). The room for criminal scene reconstruction consists of movable walls, dolls, and plastic lightweight movable furniture, used for setting up the crime scene in the room. In this way a scene can be set for different types of crimes such as murders, thefts, robberies, etc., which will help the inspectors to obtain a clearer picture of the event. It also uses lasers to create a visible trajectory of the shooting direction, as well as special long exposure cameras to detect the circumstances. A 3-D computer scanning system can also be used for the purpose of recreating the scene of a specific crime.

The room for criminal scene reconstruction is a good police tool and an asset for both prosecuting and defense attorneys to see evidence in a sterile environment.
Thus, by using the room for criminal scene reconstruction, it is set a precisely defined scene that corresponds to the course of the crime at the scene, in order to clarify certain circumstances in the commission of the offense. In this way, persons who carry out a criminal investigation of a specific crime create versions of the event and check the information already received about the course of the crime.

**CONCLUSION**

New methods and techniques for detecting, proving and clarifying crimes are changing with the emergence of new ways of perpetrating crimes, especially organized crime groups; the new modus operandi also entails new ways of detecting crimes. The appearance of contemporary technical and technological solutions is also the reason for the emergence of new methods and techniques in criminal investigations. Such are the software solutions for data analysis, GIS, drones, electronic communications monitoring, etc. This improves the work of the criminalists, shortens the duration of investigations, and improves the effectiveness of combating certain crimes.

The paper has cited a number of new technological solutions that improve the work of the police and other security authorities. In fact there are several software tools that enable crime mapping, criminalistics analysis, and defining of the trends of crime by which criminalistics predictions can be carried out. There are also numerous technical assets, equipment and instruments which are used for gathering intelligence, and monitoring of persons, events, and conditions. Thus, effective police action aimed at
preventing certain criminal activities is enabled, but also quick and timely detection of recently committed crimes. This is especially important for the sophisticated ways of committing crimes, which require application of new technological solutions for detecting perpetrators of the crimes.

REFERENCES


5. Ангелески, М., Криминалистичка тактика 2, Графос, Куманово, 2007

6. Водинелиќ В., Криминалистика, Београд, 1984

7. Водинелиќ В., Криминалистика, Београд, 1984,

8. Г. Џукелски, Вовед во криминалистика, Скопје, 2006

9. Жарковиќ М., Ивановиќ З., Криминалистичка тактика, Београд, 2017

10. Крстиќ М., Реконструкција догаѓаја и криминалистички експеримент,(магистерски труд), Факултет за безбедност, Скопје, 1992

11. Крстиќ М., Реконструкција догаѓаја и криминалистички експеримент,(магистерски труд), Факултет за безбедност, Скопје, 1992

12. Милојковиќ Б., Маринковиќ Д., Системи за глобално позиционирање и њихов значај у откривању и доказивању кривичних дела, НБП НАУКА • БЕЗБЕДНОСТ • ПОЛИЦИЈА, Криминалистичко-пolicијска академија, Београд, 2007

13. Ристиќ С., Инчиќ Д., Каркалиќ Р., Примена савремених софтверских решења у процесу управљања хемијским акцидентима изозваних
транспортом опасних материја, војно дело (3) ЈЕСЕН/2014 ГОДИНА
LXVI
15. Стефановска В., Готов Б., Улогата на заедницата и на полицијата во
превенција на криминалитетот: состојби во градот Скопје,
Истражувачки извесај, Факултет за безбедност, Скопје, 2015