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Methodological Aspects Concerning the Crime Scene Investigation in Case of Crimes against the Regime of Arms and Ammunition

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Abstract: Regarding the methodological aspects in cases of crimes against the regime of arms and munitions, one of the most important forensic activity is the crime scene investigation. This forensic activity needs a major and careful attention within the activities that needs to be followed in a case of unauthorized use of guns and munitions. We have also analyzed in the present study the categories and the importance of the clues and evidences discovered at the crime scene, the interpretation in order to determine the nature and the circumstances in which the act was committed.

Keywords: arms and ammunition; forensic activity; methodological aspects; crime scene; clues and evidences;

1. Introduction

The purpose of this paper is to analyse the methodological aspects concerned with the crime scene investigation in case of crimes against the regime of arms and ammunition.

This study sets forth an analysis of its two parts: 2. Crime scene investigation in case of crimes committed with firearms and 3. Some practical specific aspects which crime scene investigation needs to solve.

The subject matter of the study is important to the criminalistics doctrine in this field, and to the doctrine of criminal proceedings law. Crimes against the regime of arms and ammunition have some specific aspects, which have been selectively presented below.

2. Crime Scene Investigation in Case of Crimes Committed with Firearms

Crime scene investigation is the main activity of criminalistics incorporating elements from all disciplines of science. Following the integration of Romania into the European and North-Atlantic structures, it was necessary to make the procedures to follow compliant with international requirements. To that end, a *Good Practice Manual*² has been created, however this manual did not replace all the instructions of M.I. no. S/420 of 01.04.2003 to carry out crime scene investigation.

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² Developed by the members of the National Institute of Criminalistics of the General Inspectorate of the Romanian Police.

As a novelty, we refer here to the obligation for the first policeman who arrives at the crime scene to draw up and hand over to the head of the team a written report, in which the policeman indicates the circumstances of the act, the measures that have been taken, whether the scene suffered any changes or not, what changes, his or her professional opinions by that time, the result of witness interrogation. (Revista Ciminalistica, 2008, p. 35) The head of the crime scene investigation team is the case manager and the operator of evidence, being the person authorised to keep in touch with the media¹. The person in charge with the criminalistics activities coordinates and carries out these activities and, when they are completed, hands over to the head of the team the evidence and the types of evidence together with the custody forms and the photographic board (after making it) and writes down in the register the activities that have been carried out.²

Emphasis is laid on discovering, collecting, preserving, packing and transporting the biological evidence which is necessary for forensic genotyping.³ The success of determinations depends on the quantity and the quality of the collected biological evidence.

An essential role in the activity of the criminal prosecution officer is played by his or her knowledge and experience in the area of criminalistics, as well as by the team that arrived at the scene and carry out the crime scene investigation. The tasks of the crime scene investigation team are not limited to the examination of the crime scene and its surroundings, as they involve even an intuitive activity for the interception of the findings at the crime scene, and this is the reason why, in the view of the authors of the manual, the phrase “inquiry into the crime scene” is also used, which obviously means more than just an investigation. (Revista Ciminalistica, 2008, p. 35)

The crime scene investigation process consists of performing some simple or more complicated operations, which involve thinking and doing, of developing an investigation strategy, and approaching creatively the situations requiring such a knowledge activity. Simple tasks are carried out according to some algorithms in the form of criminalistics tactical methods, in compliance with some procedural rules which are well known to the criminal investigation body.

The ***criminalistics tactical method*** is a scientifically argued recommendation with regard to the order and the type of actions taken by the criminal prosecution body in solving some problems, carrying out concrete actions for the purpose of ensuring their due effectiveness, considering the particularities of the criminal case and the inquiry situations.

The ***tactical operation*** may be defined as a system of activities, integrated and coordinated with regard to the purpose and the tasks of the crime scene investigation or of another prosecution action, aimed at ascertaining the situation of the crime scene or the discovery of the cause, holding down, revealing and picking up the clues of the crime, and determining the circumstances in which the criminal activity was prepared and took place.

Upon the receipt of an announcement⁴, the prosecution body must take immediately the following measures, no matter if it has or not the competence to solve the cause:

- to identify the person who made the complaint or the denunciation;
- to ascertain some initial data about the crime that has been committed, the place and the time when it was committed, the number of victims and their condition, whether the perpetrator is known or not;

¹ The prosecutor or the judicial police officer depending on their competence.

² The police officer or agent who has crime scene investigation duties among his or her responsibilities.

³ Which may be determined from nucleate cells (which contain a nucleus) or from cytoplasm matter (mitochondrial DNA).

⁴ A complaint, a denunciation or an announcement of one's own act, or an action at the initiative of the prosecution body.

- to inform the superiors and the responsible police units;
- to order some urgent measures which the local police need to take;
- to establish the investigation team;
- to ensure the participation of the victim's family;
- to prepare the appropriate technical and scientific means which are specific to criminalistics;
- the universal criminalistics kit;
- the photographic kit and the special kits;
- the mobile forensic laboratories;
- the detection equipment;
- the technical means for identification based on external personal particulars;
- to go urgently to the crime scene.

In a crime scene investigation in connection with crimes committed with firearms, some general activities are carried out, which involve searching for, examining, holding down, picking up and transporting the clues. *Some of the immediate activities of a general nature* are: marking the crime scene and preventing curious people from getting in, if the victim is alive, rescue measures are taken, removing any imminent hazards, perceiving the crime scene as a whole and the significant items in its perimeter, ascertaining the most significant clues and their relation, identifying and detaining the suspects, informing the competent judicial body to carry out the crime scene investigation.

Next, activities will be carried out in order to discover the clues created by the act committed, to discover the corpus-delicti weapon, extract the bullets from the targets objects, pick up and pack the clues that have been discovered, and determine the place where the gun was fired.

The actual crime scene investigation will take place only after the area has been correctly marked, in compliance with the rules of criminalistics tactics. Crime scene investigation has two distinct phases which take over the characteristics of the activities carried out at these two stages:

- the static phase; and
- the dynamic phase.

The static phase of the crime scene investigation involves a careful examination of the crime scene, both on the whole, and in the most important areas, without making any change to it, for the purpose of determining the condition and the position of the physical objects serving as evidence, the visible clues, for measuring the distance between the main objects in order to clarify some circumstances of the cause, determining any possible changes made before the arrival of the investigation team. At the same time, it is necessary to ascertain the odour specific to a recent shooting, proceeding at the collection of air samples.

When the conditions are appropriate, the use of a tracking dog for processing the traces of odour can lead to results which are particularly useful to the cause. (Bercheşan, 1998, p. 141)

The findings of the static phase are held down through photographing, as well as through filming or video-magnetic recording.

The dynamic phase of crime scene investigation involves a thorough examination of all the objects and means serving as evidence, and of the clues which are in a particular relation with the crime that has

been committed. The objects which are supposed to be in a relation with the crime, if they are unknown, are moved from their initial position so as to ensure the optimal conditions for discovering, holding down and picking up the clues.

The most frequent clues in such cases are the blood stains or drops or a pool of blood, the *corpus-delicti* weapon or parts of it, unused cartridges, bullets and burnt tubes, the victim's body, foot prints, as well as different objects which were lost or left on purpose at the crime scene, etc.

Most of attention goes to the position in which the guns and the ammunition were found, their condition, the traces found on them¹. Before examining a firearm, it is necessary to confirm whether it is loaded or not. In case that rusted or blocked guns are found, if possible, a gammagraphy will be requested in order to determine whether there are any cartridges in the detonator. Special attention is paid also to the series of the gun. If the series and the number of the gun have been removed through shaping, action is taken to reconstruct them in order to determine the provenience of the gun, its model, the year when it was made. Different traces may be identified on the armament and the fired cartridges, such as papillary traces, traces of flames, burned powder, smoke, mineral fat and gun oil, blood, textiles, mud, and so on.

The gun may be found at the crime scene, left by the perpetrator for the purpose of creating the version of suicide, but most of times it is hidden. If the act was committed in a building or a courtyard, some suitable places for hiding a gun are the attic or the basement, the layers in the garden, piles of hay, coops, stoves, beds, floors, walls, etc. When the weapon is discovered, it is picked up by gripping it from the parts which are less used in its usual handling, so as not to destroy the traces. The barrel must be at no times directed to any person nearby; it must be held towards the ground. Each piece of the gun is examined, taking down in the report its position, then the number of cartridges and of burnt tubes found nearby. The muzzle is covered with gauze or paper, so as not to destroy the marks in the barrel. The gun is packed for transportation in such a manner that its surface which is more used in handling does not come into contact with the walls of the pack, because this could destroy any possible traces of hands or blood.

The bullets inside the victim's body are extracted by the coroner. Bullets may also be found in different objects such as walls, furniture, trees, ground, etc. Care should be taken not to create any new marks when they are extracted. Separate boxes filled with cotton are used for packing so as not to destroy any clues. Traces of blood are really useful in forensic investigation, because depending on their form, size, colour and direction, a lot of important elements may be determined, such as the place and the position of the victim when hit by the bullet, the time that passed from the moment of shooting.

In close range shooting, besides the entry and exit orifices created by the bullet, there are also the traces of additional factors. Their presence around the orifices shows that the shooting was from a close range and from the direction of those orifices around which they are deposited. Their lack does not mean that the shot was from a long distance, because the action of additional factors can be stopped by placing a cover between the muzzle and the target. For this reason, in determining the distance and the direction of shooting, when there are no traces of additional factors, the marks left by the bullet are used. When the orifices are not convincing enough to determine the direction of shooting, the data provided by the channel created by the bullet are used. In bone tissues, the entry orifices created by the bullet are smaller than the exit ones, so that the lesion in the bone has the shape of a truncated cone, with the large base in the direction of movement of that bullet. Moreover, in its

¹ For example, the digital prints on the butt or grip of the gun, on the trigger and its guard, on the magazine, the cartridges in the magazine, on the barrel or the muff of the stopper.

trajectory, the bullet carries along particles of clothes and of the previously damaged tissues and loses them in the next tissue.

The place of shooting may be determined based on a few elements, such as: the general appearance of the crime scene, the traces of the shot discovered on the victim's body and on different objects, other kind of traces and even statements made by individuals. In those cases when the entry point and the exit point are discovered in a particular object, the place of shooting is determined by connecting these points with a line and extending this imaginary line drawn by the bullet.

3. Some Practical Specific Aspects which Crime Scene Investigation Needs to Solve

3.1. To determine whether it is a Suicide, A Suicide Frame-Up, An Accident or a Homicide

With regard to suicidal, one should consider that some areas are preferred for shooting, primary the head (above or in front of the ear, inside the mouth) or the area of the heart, however, obligatorily, it must be places which allow the victim to make the movement. Another aspect to be carefully analysed is the presence of any hesitation signs (several bullets are fired, and some don't hit the target properly), because this is also specific to homicide, the victim's specific position, who, sometimes, may move after the shooting, whether the gun is firmly held in the hand (it is not possible to place a gun after death so as to create this aspect), the existence of several gunshot wounds, the first in the vital area, may be found only when a automate gun is used, as it does not require a new manoeuvre; the presence of additional factors of shooting on the hands of the body. Sometimes, the additional factors are not found on the clothing too, if it is thin, passing through the entry orifice and into the channel of the wound. (Uȃică & Florescu, 2003, p. 150)

In suicidal, the position of the victim, corroborated with the position of the gun, with the presence of additional factors of the shooting, and the direction and the distance of the shooting may depict an accident situation, which occurred when cleaning the gun, or due to a fall while holding a loaded gun.¹

In homicide, some aspects are revealed which can help to correctly categorize the act, such as the position of the victim, in relation with the existing conditions at the scene, the place where the gun was found, the distance and the direction of shooting, the absence of the additional factors of the shooting, whether the victim is shot from behind or in places or angles which suggest that the victim could not have done it and, usually, through the clothing; the direction of blood flow on the body and on the clothing or under the body may indicate the initial position of the victim at the time of shooting, the presence of digital prints on the used gun other than the victim's, the lack of fire marks on the gun found near the victim, etc.

3.2. To Thoroughly Examine the Crime Scene so as to Discover, Hold Down, Pick Up and Preserve All Traces or Other Types of Physical Evidence

This should contribute, as much as possible, to clarifying the following issues:

- the position of the victim and whether any changes intervened compared to the position at the time of the shooting;
- to determine the distance and the direction of shooting and to identify the place where the shooter fired the gun – in homicide – in order to find any possible traces left there (tubes, plantar prints, traces related to transportation);

¹ The possibility of triggering the fire in the given conditions shall be examined.

- to determine what type of gun was used and the type of ammunition;
- the number of shots and their order;
- the correspondence between the gunshot wounds and the traces left on clothing;
- to discover elements indicating a staging of the crime scene;
- whether it is a suicidal, an accident or a homicide.

3.3. Some Requirements Specific to Crime Scene Investigation for Holding down the Overall Picture and the Position of the Clues and Corpora-Delicti

This refers to:

- Taking pictures of and filming the body from every angle so as to determine its relation to doors, windows, pieces of furniture or other items in the room or in the crime area;
- Taking pictures and making metric sketches, with the exact distances between the main elements of the crime scene; for example, one can determine the direction of the shooting based on the place and the position of the fired tube; metric photographs of the wounds shall also be taken, with the traces around (sometimes the trace is in the form of a radial blackened area, where the number of rays indicate the number of grooves or the form of the printing ring, being possible to determine the calibre of the barrel that left that trace);
- Photographing the naked body and the wounds at the morgue, trying to catch on film any blackened spots inside the channel, which might indicate the direction and the trajectory of the bullet;
- Carefully examining the ceiling, the floor, the walls and other places, in order to discover holes of bullets, stains of blood, tubes, caps, etc;
- Picking up, labelling and preserving the clothing for laboratory examination (examining the holes with X rays to ascertain whether the traces are left by the bullet);
- Picking up very carefully the gun that was found, for specific examinations (dactyloscopic, ballistic, etc); measures shall be taken to cover the channel of the barrel of hunting weapons in order to preserve the mercury vapours;
- Carefully marking the guns (on the barrel or on the metal part – not on replaceable pieces), as well as the bullets (usually, on top);
- Preserving the additional traces of the shooting on the hands of the body (putting and sealing them in plastic bags), as well collecting, with special care, the traces of the additional factors found in the gunshot wounds and around them;
- Taking down accurately the situation of the clues, the main objects and the significant details (type, calibre, model, the number and the series of the gun, the place where blood stains were found, their form, direction of flowing on the body and on clothing, etc);
- Using metal detectors to look for the tubes, the gun, in hidden places, on covered fields, rugged grounds, or powerful magnets to search the wells and the ponds in the area.

3.4. The Specificity of Investigations

Apart from the general objectives and issues of these activities, in case of violent deaths caused by firearms, special attention shall be paid to determining the place where the gun was fired or at least the direction of the shooting, to collecting the data regarding the circumstances of the case – the time when

it occurred, the conditions and the place where the gunshot was heard, to the operative verification of the firearms belonging to the people who were present or moved inside the area and, primarily, the people who are known to officially possess firearms or signalled as possessing such firearms clandestinely, to turn the checks towards a particular direction when the type of weapon is known, to the judicious use of data referring to the personal particulars of the suspects and to conducting the necessary experiments with regard to:

- the possibility to hear the shot or to see some particular circumstances of the case from some particular spots;
- the determination of the distance and direction of shooting;
- the possibility of the bullet to rebound under certain conditions;
- the check of some negative circumstances of the case (the victim was moved, the position of the gun was changed, blood stains are missing).

Additionally, in order to examine the traces left by the gunshot, to determine the direction, the distance and the angle of the shooting, as well as for clarifying the various circumstances of the homicide, the prosecution bodies and the specialists who are present at the crime scene must take into account other factors too, among which the *elements of the shooting* have a significant weight:

➤ *the speed of the bullet, of the projectile* – determined by the type and quantity of powder, the weight and the length of the barrel; due to gases resulting from the burning of powder, the pressure is very high and it continues to grow rapidly with the first centimetres covered by the bullet on the barrel. While the speed of the bullet rises inside the barrel, the pressure of gases lowers down to 420-380 kgf/cm² when the bullet leaves the barrel. For this reason, the criminalistics implications of the interior ballistic phenomena occur especially in case of modified weapons, with the barrel cut, where the bullet leaves the barrel with a reduced initial speed - 400-500 m/s, and the maximum gas pressure, a fact which causes a change of trajectory. The increase of the initial speed of the bullet increases the range of the gun, the piercing force of the bullet and its killing effect. (Bercheşan & Ruiu, 2004, p. 392)

➤ The *trajectory* is the length covered by the centre of gravity of the bullet in the air, from the moment it leaves the barrel until it falls down, being influenced both by the resistance of the air and by gravitation. The effect of these two factors is the reduction of speed and the tendency of the bullet to overturn, inclusively its gradual descent under the throw line. For criminalistics, only a part of the elements of the trajectory are of interest, namely the line and angle of firing, the throw line, the incidence point and angle and the distance of shooting.

➤ The *range of the gun*¹ is the distance from the origin of the trajectory to the point of falling, measured in the horizontal plan. Weapons have a theoretic range (the distance at which the bullet is thrown) and a practical range (the longest distance at which the target may be hit), but in point of ballistics, the effective range is relevant, meaning the longest distance at which the bullet maintains its precision and its destructive force.

➤ The *blow back of the gun*, due to the pressure of gases put on the frontal wall of the stopper through the tube of the cartridge. This should be taken into account by those who carry out the crime scene investigation, the digital prints discovered on the butt and the attachments of the gun having (due to the blow back force) a dynamic aspect. Moreover, the correct interpretation of these elements ensures a premise for discovering a murder disguised as suicide. Therefore, if the perpetrator simulated a

¹ Or the distance of shooting.

suicidal, placing the gun in the victim's hand, both the butt of the gun and its attachments will carry also static traces.

➤ The *piercing force of the bullet*¹ is an element, not an insignificant one, which can help to determine the distance at which the gun was fired.

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¹ Determined by its kinetic energy, its form and hardness, the angle of incidence and the density of the fabric at the impact spot.