

# INVESTIGATION OF VEHICULAR CRIME WITH SPECIAL REGARD TO ADOPTING THE NEW MEANS AND METHODS OF FORENSIC SCIENCE

Gyula BÍRÓ\*

**ABSTRACT:** *The scientific and technological achievements of the second half of the 20<sup>th</sup> century - revolutionising science, production and information transfer, altering people's lifestyle in most parts of the world – have inevitably affected jurisdiction as well. It was a two-way affect. On one hand as a negative consequence, delinquency gained a new, dangerous weapon which offers a chance for committing crimes with enormous profit and for making illegal income vanish. On the other hand, as a positive consequence, efficient devices appeared in the armoury of criminalistics.*

*Public area delinquency is an important component of vehicular crime and within that especially road traffic offenses of which those causing mayhem (1999: 3615, 2006: 3374, 2009: 2997) and those fatal (1999: 590, 2009: 350) shows decrease in Hungary. Evaluating modern criminalistics devices as evidences is spreading quickly, which are detailed in the article in connection with traffic offenses.*

**KEY WORDS:** *Criminal procedure, traffic offenses*

**JEL CLASSIFICATION:** *K40*

## 1. INTRODUCTION

The constantly happening endless changes affect the whole of the world, the national, economic and social environment of the certain continents and countries, the state of different nationalities and also affect every single people's life. New technologies radically alter social and economic environment. The main pillars of this development are electronics, chip technology, genetic engineering and the Internet.

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\* Dr. Gyula Bíró retired Police Lieutenant Colonel, Honorary Associate Professor of the University of Debrecen, Faculty of Law, HUNGARY. He teaches forensic science as a main subject and traffic safety and drug prevention as an optional subject.

The changes happened in the past and those happening at present also affect delinquency. In the delinquents wide range of tools both a club and the most modern electronic devices can be found. To hide their catch, to ensure their illegal profit criminals can use the network of ground, water and aerial paths all over the world, and also devices of electronic telecommunication and bank network.

So the scientific and technological achievements of the second half of the 20<sup>th</sup> century - revolutionising science, production and information transfer, altering people's lifestyle in most parts of the world – have inevitably affected jurisdiction as well. It was a two-way affect. On one hand as a negative consequence, delinquency gained a new, dangerous weapon which offers a chance for committing crimes with enormous profit and for making illegal income vanish. On the other hand, as a positive consequence, efficient devices appeared in the armoury of criminalistics.

Public area delinquency is an important component of vehicular crime and within that especially road traffic offenses of which those causing mayhem (1999: 3615, 2006: 3374, 2009: 2997) and those fatal (1999: 590, 2009: 350) shows decrease. Evaluating modern criminalistics devices as evidences is spreading quickly, which shall be detailed later on in connection with traffic offenses.

## 2. EXAMINATION OF THE SPOT

Considering the seriousness of traffic offense, holding a review is mandatory in all cases and its procedure takes longer, as it requires a very comprehensive investigation to perform. 'One of the features of the examination of the spot is that it is generally urgent, irreplaceable, and unrepeatable act of procedure in its original form, a reflection of a past event.' The whole further prosecution is based on the examination of the spot. Any mistakes made during the examination cannot be corrected later. The tasks of the on-site inspection are the following: 1. to examine the location of the crime committed, thus to ensure the conditions of an effective and fruitful investigation, 2. to ascertain whether a crime was committed, and if yes, what sort of, 3. to collect data from which a conclusion can be drawn in connection with the process of the crime and the person of the offender. (One of the most important tasks of the examination on the spot is to search for, collect and record physical evidences, and to preserve the state of these evidences ensuring the conditions of forensic work.) Within the examination of the spot, a coroner's inquest also happens.

### 2.1. Issues of examination of the spot of a vehicular crime

The forces of the traffic department are on a constant state of standby, The service possesses a Crime Scene Investigation (CSI) car with cognizance, bilateral connection of appropriate range, photographic and video equipment for both day and night use meeting the requirements of criminalistics, measuring and drawing tools, devices for physical evidences to be able to record and wrap clues and remains of materials, supplemented by specific traffic control devices.

*The members of the site visit committee* are the head of the committee, CSI investigator(s), in case of extremely serious traffic offense the head investigator of the county, experts – in case of a fatal road accident a medical expert of justice and a traffic accident analysing

expert are mainly involved – and official witnesses. The head of the team is responsible for keeping the regulations of the prosecution and following the criminalistics principles. The leader's task is to command the examination according to plan – to find and record trails, to distract clues, to pack the material for the investigation precisely, to take everything down on record accurately – and to co-operate with members and specialists of other organizations ex. ambulance, fire department, electricity and gas works. If clinical symptoms show that the suspect might be influenced by alcohol or any other drugs causing detrimental effect, the head of the team takes the necessary actions – in case they have not been done during securing the spot of the accident. The tasks of the CSI investigator are to take photographs and to make a map on the scale of 1200 meters to the centimeter of the spot – at the site a sketch of the spot is sufficient, but after returning from the field a detailed map of the spot must be made which would be colored later. In case of extremely serious traffic offense the head investigator of the county also takes part in the examination of the spot. He or she helps the work of the committee with some professional advice, but if needed he or she may also take part in collecting some data and in any other investigative actions. If the suspect is unknown, a criminal technician may help the work of the committee. His or her tasks are to find and record trails found at the spot, to secure and distract clues and pack them accurately. If needed he or she takes photographs or makes videos. The examination of the spot starts after the arrival and inquiring at the spot, when from the available data a crime can and must be concluded. In case of emergency investigative actions can be made without decision. The examination of the spot usually happens this way. The fact of urgency and its reasons must be indicated in the police record made on the actions of the prosecution.

*The procedure of the examination of the spot:* It is necessary to inquire where, when, how and why the accident happened, who is involved in, in what capacity (driver, passenger, or pedestrian) and which vehicles belong to them. It must be ascertained if any changes happened or were made on the site. If yes, it must be recorded what was changed, who did the change and for what reason. Concerning road accidents the basic task is to make official statement of facts, an overall recording. It is necessary to be informed about witnesses. It must get cleared where they were and what they exactly saw. They must be asked about the accident in order to inquire, and must be asked not to leave the spot until their questioning has been finished. Trails, residual materials clues and alterations must be found and photographed on the spot if it is possible which have or may have significance and may help to solve a crime or find out an unknown suspect. In most traffic accidents special expertise is needed, that is why the opinion of a vehicle and traffic expert of justice is necessary in such cases.

## **2.2 Summarizing it the purpose of the examination of the spot is to find answers for the following questions of criminalistics:**

*1. What happened?* This is the fundamental question. Thus we are able to find out whether an affair is a traffic offense and how the prosecution must be carried out. On the spot of a fatal traffic offense the first thing that has to be investigated is, whether it has been a natural death, or happened by traffic offense or by any other crime. In case of the latter, there may be several options; it might as well have been a suicide or homicide.

2. *Where did the crime happen?* It might happen that the offended had not died where the body was found later. It is an essential factor in the process of investigation and prosecution to clarify questions like where the victim suffered the first injuries and where the further ones, how the offender had taken the body of the victim to the place where it was discovered later.

3. *When did the crime happen?* On the site of a traffic offense the time of the crime can be determined mainly from the telling of those involved and the witnesses. There are cases when a driver dies by colliding to a tree or to another object. In connection with this matter it must be emphasized, that the coroner's inquest is only able to determine an approximate interval of time which can be clarified later by the autopsy. In connection with finding out the time of death the medical examiner involved tries to conclude from the condition of the body during its examination.

4. *How did the crime happen?* During the examination of the spot we usually get the answer for this question in case of a traffic offense. Certainly there are exceptions when further investigation – expert verification, questionings and proof tests – gives the answer for some questions.

5. *Who was/were the offender(s)?* It is obviously one of the most important questions in case of a traffic offense. In many cases – and in not just the serious ones, but for example in case of the Section 188 of Btk (i.e. Criminal Code of the Republic of Hungary, hereinafter referred to as CC) – at the examination of the spot this is the most important thing to prove. During a precisely carried out, detailed examination the person of the offender can be proved.

6. *What did the offender commit?* The personal and the material side of the deed join at this point. We seek answers for the following questions: who were involved in the offense, exactly who did what in the offense, and how the people involved behaved.

7. *Why did the offender commit the deed?* We only look for the reasons, motives and causations of an offense, if the traffic offense was made wilfully, or it was followed by the failure to give assistance. It can often be determined from the data of the examination of the spot, for what reason the offense happened. That is why the people doing the examination of the spot have to make an effort to determine the motives.

### **2.3. Finding, collecting and securing trails, clues and residual material, and the information we can gain from them**

When people and objects collide, due to the interaction of forces and impulses, trails, deformations, therefore residual material come into being. According to the formation mechanism of traces, they can be either mechanical which are the most common traces in the practise of criminalistics, and they come into being as a result of mechanical forces. Or there might be thermal traces, which come into being due to thermal effect, and they reflect the features of the object they were made by (for example the trace of the hot silencer of a vehicle on the human body in case of a road accident). These traces and residual material may be irrefutable evidences later during the prosecution, because they are suitable to determine the physical, chemical or other qualities of the whole object, hence identifying the object. During the examination of the spot, in some cases blood, textile fibres, hair of animals, human hair and residual material fallen from vehicles. When a vehicle becomes a device of an offense, therefore in case of a road accident as

well, a forensic examination of the tracks of the vehicles is made. The tracks and trails created can be individual or connected. The latter ones come from the tyres of the same vehicle but they are issued in the same track forming process. These show not only the features of the tyres – regarding their relative position and distance – but features of the vehicle itself allow to draw the conclusion about the movement and the type of the vehicle. The tracks can be: stationary, rolling, braking marks, reverse, skidding etc. During the examination of the spot besides the examination of the tracks other alterations which give information about the vehicle and the offence must be considered as well (motor oil, water, petrol, paint, glass etc.). Alterations caused by different interactions, appearing on the different surfaces involved in the collision are also important, for example the traces of the pieces of the vehicle on the injured's or on the victim's clothing or traces of paint, etc. and alterations on the vehicle for example dents and cracks of paint. In connection with road accidents alterations and deformations has got a significant role in determining the mechanism of the accident, while the other residual material has got an important role in finding out the identity of the driver, and in the seeking and identification of the vehicle used in a hit-and-run accident.

#### *a. Tracks of vehicles*

A forensic examination of tracks of vehicles is carried out if the vehicle is

- *the aid* of a crime (when a vehicle is used for transport, in Hungary mobile crime is quite common, offenders use cars to reach and leave the place of the crime)
- *the mean of committing* a crime (road accidents or crimes, in some cases against life crimes)
- *the target object* of the crime (vehicle theft, etc.).

Track of vehicles may be the base of the examination, in these cases the offender used some kind of vehicle as an aid to get away from the place of the crime. After examining the tracks of the wheels, the direction, speed and type of the car, as well as the time and place of parking can be concluded.

According to the conditions of origin tracks of wheels can be divided into groups:

1. stationary, 2. rolling, 3. braking (originated from blocked wheels), 4. skidding tracks. To be able to determine the type of the car the following data must be recorded: the number of tracks, span and wheelbase, the width of the track of the tyre, the pattern of the track, and the circumference of the tyre. In case of crime committed by car driven by an unknown offender, after taking photographs of the car, the following trace recordings must be done:

- collecting residual odour on Agnes diaper (diaper of textile) from the front seats of the car, or from the back seats as well, if needed.
- collecting residual material with distilled water method on stick from the surface of the outer and inner handles of the car, from the surface of the steering-wheel, from the glove compartment, and from the terminal of the car cassette player in order to make DNA test.
- collecting micro-track on Sellotape from the underside of the frame of the broken window, fibre from the front seat and the headrest if needed recording the seat cover in its origin in order to make a forensic expert examination.
- collecting fingerprints on the outer surface of the car near the door handles, window frames, the outer and inner surface of the windows, on the glove compartment if its

surface is smooth, and on any other places if it is necessary according to the collected data.

Other track research procedure: examination of the car foot mats for any residues of falling substances<sup>1</sup>.

The investigation data and the types of crimes can determine track research applications at the physical inspection of the cars and the seizure of objects in original condition in the cars. This information can be determine and exclude certain track record necessity. The vehicles tracks are usually recorded by photography, descriptions, or modeling. For comparing these observed specialties, the methods of the direct optical comparison (microscopic examinations, superposition, and forensic analysis system) are the most suitable.

### *3. Press conference, public information by media in order to the facilitation of the investigation*

In order to the credible and accurate information, the media makes available the necessary data and enlightening. Thus the findings under the procedure, the circumstances and causes of the crime, the measure of the investigating authority in order to the discovery and the obtaining of the means of evidence as well as the process status may be communicated. In case of the failure of assistance, the traffic police authorities constantly apply calls, which almost always help the investigation.

### *4. Testimony*

The witnesses of road crimes – often also victims – are usually volunteers. However, there are many cases where action must be taken to search for witnesses. In my opinion, the examination of a witness is an important tool for the successful investigation of the crime.

### *5. Face identification, the importance of profiling*

The result of the profiling is the personality profile, which is nothing more than a short, picturesque description, which briefly summarizes the characteristics of a person; in fact, they try to make a possible description about the perpetrator. Csaba Fenyvesi considers the personality profile making in his study a special forensic sector. (The Criminal Minds American-Canadian crime television series picturesquely demonstrate how the profiling happens.).

### *6. Taking of evidence by experts*

*'The task of the judicial expertis to help determine the facts and decide the special issue with the expert opinion which made using the results of science and technical development on the basis of an appointment of the court, the prosecutor, the police and the other statutory authority, furthermore by a commission. The judicial expert must conduct activities under the Act on the judicial expert activities and other legislative provisions, as well as the professional rules as best it can be done.'*

Separate legislation sets out that special issues for which only specified organization can give expert opinion and those organizations which can give expert opinion in certain fields.

In criminalistics issues the following expert institutions are available:

- Hungarian Institute for Forensic Sciences (HIFS)

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<sup>1</sup> The Hungarian name for it: 'rázadékolás'.

- Central Office for Administrative and Electronic Public Services and Criminal Registry Division
- Document and Chirographic Expert Office of AH (Constitution Protection Office).
- Judicial Expert and Research Institutes (ISZKI)

*Main peer reviews in case of vehicular crimes*

For discovering and taking evidence, experts can be involved: motor vehicle-traffic experts, technical experts, judicial experts, tire specialists, forensic medical experts, serology experts, toxicologists, physical-chemical experts, track experts, road driving eligibility experts and other specialized experts. I analyzed what are the issues that may require the appointment of different experts in general.

*a) The role of the forensic medical expert in reviewing traffic accident mechanism*

Medical expert competency is reviewing the influence of being drunk or drug use. The task of the dead examining doctor is to determine the fact, the time and the probable cause of the death.

The motor vehicle accidents – in a medical expert’s point of view –are usually classified in four main categories in general: 1) *hitting of a pedestrian*, 2) *running over of a pedestrian*, 3) *hitting and running over of a pedestrian*, 4) *impact*.

*g) Traffic, technical, motor vehicle experts*

The subject matter of the examination by the traffic-technical experts is the car that took part in the accident. As a result of the peer review can be established:

*k) Genetic (DNA) expert examinations*

DNA, as ‘genetic fingerprint’, is becoming increasingly important in the exploration and taking of evidence of the unknown perpetrator of vehicular crimes. Today, in many cases, there is DNA testing when it becomes important: who was driving the vehicle or the driver defends himself that not his blood was transmitted to the forensic medical expert for blood alcohol tests, etc.

The DNA profile registry is under the regulation of Hungarian Act XLVII of 2009.

The great advantage of DNA testing compared with other tests: uniqueness, stability, versatility, and applicability to multiple uses.

Disadvantages: expensive, time consuming, complicated process, the lack of universally accepted standards.

*l) Computer expert:* responsible for saving and recording data in an appropriate way for analyzing the contents of the seized mobile phones, electronic instruments, computers. (Analysis and evaluation is the task of the authority.)

In this context, the activities of the mobile operators should be mentioned as well, though they are not professional experts. Analysis of the call lists are becoming more important in the exploration, taking of evidence of the vehicular crimes, it can rebut or support confessions, shed light on relationships. Operators provide the incoming and outgoing call list of specific phone numbers in specific time periods, the cell information, the SIM or phone card data content and the subscriber data to the authorities.

*7. Suspect interrogation*

The vast majority of suspects of vehicular crimes do not have any criminal records, they are ordinary working man. This category of crime occur in cases where serious crimes even if the suspect has voluntarily.

The suspect in criminal proceedings is a person who can be reasonably suspected in committing a crime.

The rights of the suspect have four main categories. The first one is related to the knowledge of the crime and the other is related to the advancement. The rights related to the knowledge of the case: suspicion and accusation, the right to understanding the changes, to presence, to know the documents, and to information. The other rights: to prepare to the defence; to present the protecting facts, data; to submit petitions and comments and the right of appeal.

#### *8. Attempt to taking of evidence*

In the occurrence of vehicular crimes (including death, serious accident), the detection and visibility conditions are very significant. In order to prove or exclude the liability of the defendants, an attempt to taking of evidence should be performed in many cases. The court or the prosecutor – and the investigating authority, if the prosecutor disposes otherwise – orders an attempt to taking of evidence when it is necessary to identify or verify that an event or a phenomenon could happen or not at a determined location, time, in a specified manner, or circumstance.

#### *9. Polygraph examination as a means of taking of evidence*

The Hungarian Joint Decree No. 23/2003 (VI. 24) BM-IM of the Ministry of Interior and the Ministry of Justice was a milestone in legislation, which regulates the documentation of polygraph test, the matter of mother tongue usage and the certain matters of the presence at the examination.

In case of vehicular crimes, the lie detection with a polygraphic can contribute to the successful exploration in various ways. Since the establishment of the Criminal Psychology Laboratory of the Hungarian National Police Department (1993), hundreds of people nationwide were tested with a polygraph. Use of a consultant is required if the defendant's testimony is tested by a polygraph in the investigation. According to the past experiences, it is concluded that in the vehicular matters the polygraphic test in about half of the cases contributed to detect the crime accomplices in the following manners: the authority was oriented in connection with the identity of the probable culprit; the achievement of the confession was indirectly hastened; several times, the attention was focused on new persons who were not hitherto taken into account; new, previously unknown data was set; evidence search could proceeded; the suspicions indirectly were weakened related to a part of the people who can be considered.

#### *10. Coercive measures*

Only in case of very serious vehicular crimes (such as in Section 184 (2), 186(2), 187(2)b)c) + 172(3) in case of (2) CC), the courts usually order the preliminary arrest of the suspects after the perpetrators was taken into custody. If the offender is known, but hidden, observation at the residence of relatives, of friendly relations, or performing search of premises in case of reasonable suspicion may be appropriate.

#### *11. The potential of surveillance cameras*

The surveillance camera is a new tool in crime detection, prevention, or in exploration of the circumstances of the already occurred crime and of the perpetrator. Today, the surveillance cameras are among the most expensive tools in crime and accident prevention, and in law enforcement, furthermore employment of workforce – who is monitoring – is also necessary. The surveillance cameras are invaluable assistance to the subsequent reconstruction of crimes, to the identifying of the perpetrator description and of the car, and to exploring the arrival and departure routes.

*12. Investigating of very serious vehicular crimes and short summary of the evidence evaluating*

<b>Scientific examination</b>	<b>Investigating vehicular crime</b>
Defining the problem	What kind of crime did they commit? Which traffic investigating body is the responsible?
Standing of hypothesis	Standing of hypothesis for possible suspect on the basis of personal or physical evidence and the thought motive.
On the basis of data collection, observation and experiments	Searching in the records, witness research. To obtain the comparative samples corresponding to the marks at the spot and more examination of a witness
Hypothesis controlling and data interpretation	Evidence review and evaluation, preparation of proceedings against possible suspects. Investigation focus on the most likely suspects. The suspect interrogation
If the data support the previous hypothesis, further data collection is necessary	More research of evidence that supports or refutes the hypothesis of suspect
Conclusion	- Prosecution or further investigation based on the data of the investigation - The traffic investigation body shall inform the competent state or local bodies in order to prevent vehicular crimes, accidents

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