The International Journal of Social Sciences World
TIJOSSW is Available Online at:
https://www.growingscholar.org/journal/index.php/TIJOSSW
Vol. 5 No.1, January- June 2023, pages: 317~324
DOI: https://doi.org/10.5281/zenodo.7939533
ISSN **2690-5167**
Growingscholar Publisher

The Application of Criminalistic Assistive Sciences in Solving Hit-and-Run Cases

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Article history:
Received: March, 08, 2023; Accepted: May 07. 2023; Displayed Online: May 16, 2023; Published: June 30, 2023

Keywords

Criminalistics;
Hit and run;
Review;
Crime;
Law;

Abstract

The purpose of this research is to find out what criminalistic assistive science is in uncovering a crime and what is the role of criminalistic science in uncovering hit-and-run crimes by using the library research method, which is a method used by studying literature books, laws, and regulations. Invitations and other written materials related to the discussion material the author uses to write this paper. The role of criminal science in uncovering hit-and-run crimes as an auxiliary science in criminal law to realize legal ideals. Criminalistics is efforts made in the form of techniques and tactics in finding perpetrators of crimes. Hit-and-run crime is a crime that, until now, law enforcers, in this case, the police, sometimes have not found the culprit. For this reason, criminalism as an auxiliary science in finding the perpetrators of crimes is very significant. Thus, investigators or investigators must be able to find the perpetrators of these irresponsible crimes for the sake of creating legal ideals.

1. Introduction

Humans, as social beings according to the nature of nature everywhere, always live together or live in groups. At least that life together consists of two people, husband, and wife. In the history of human development, no one lives independently and is separated from other human groups except

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in circumstances of compulsion, and even then, only temporarily. Since time immemorial in humans, there has been a desire to gather with others in one group, a desire to be in society.

Aristotle (384-322 BC), an ancient Greek thinker, stated in his teachings that humans are *zoon politikon*, meaning that humans as creatures want to be together, mingle and gather with other humans. Hence, they are creatures who like to socialize and, therefore, nature that likes to get along with each other; then, humans are referred to as social beings (Gintis et al., 2015). Humans as individuals have a solitary soul life, but humans as social beings cannot be separated from society. Humans are born, live, develop, and die in society (Bogin & Smith, 1996).

Especially in modern times, even though the development of science and technology is increasing, a person cannot live properly and perfectly without help or cooperation from other people. Even in the past Covid-19 Pandemic era, every community was encouraged to work and study from home, so people tend to meet their economic needs; they need services from online traders (Lyu et al., 2020). Unfortunately, every human has his own nature, character, and will, so in society, when establishing relationships, working together, helping each other, and helping to get the necessities of life, sometimes some things do not agree (Dickman, 2010).

Every human has their own needs, but often these interests are different, and some are even contradictory, which can lead to conflict that disturbs the harmony of living together. These differences often become disputes and can cause divisions in society. Therefore, in an orderly society, one must pay attention to certain rules, norms, or rules of life that exist and live in the society in which one lives. The rules of life instruct humans to behave and act in society; rules like this are called rules of social life.

Existing and applicable laws must be obeyed, meaning that people who violate applicable regulations or laws will be subject to strict sanctions (Riederer et al., 2012). However, in Indonesian case, it is realized that the Criminal Code and various laws and regulations outside the Criminal Code do not guarantee that the Indonesian state is free from various crimes or criminal acts. The Indonesian government, of course, continues to strive so that these existing regulations can at least minimize the emergence of crimes and criminal acts (Ardani & Ibrahim, 2022).

Reports to the Police for Hit-Run Crimes occur almost daily (Robinson, 2004), and it is difficult to find the hit-and-run perpetrators. Therefore, Criminalistic Science is needed to uncover the case and investigate crimes using other assistive sciences to find the perpetrators. Hit-run criminal actions are a serious problem that endanger public safety and violate the law. However, identifying and prosecuting the perpetrators of such actions is often challenging due to the lack of direct evidence and witnesses.

Criminalistic science can play a vital role in revealing hit-run criminal actions by applying various methods and techniques to collect, analyze, and interpret physical traces left by the vehicles and drivers involved in the incidents (Fisher et al., 2009). This manuscript aims to provide an overview of the main aspects of criminalistic science in relation to hit-run criminal actions, such as the types of traces, the methods of examination, the interpretation of results, and the legal implications. The manuscript also discusses some of the challenges and limitations of criminalistic science in this field, as well as some suggestions for future research and practice

2. Materials and Methods

In compiling this paper, the author uses the library research method, which is used by studying literature books, legislation, and other written materials related to the author's discussion material to compile this paper. Data research (field research) is used to obtain primary data by conducting interviews with predetermined respondents and informants. Library research is used to obtain

secondary data by following Law Number 22 of 2009 concerning Road Traffic and transportation, the Criminal Code, other textbooks, other journals, and other laws and regulations (Cf. Sastrini, 2021).

3. Results and Discussions

A. Various Kinds of Criminalistic Assistance in Revealing a Criminal Act

Forensics medicine

Forensic Medicine, or Legal Medicine Judicial Medicine, is no new field studied by medicine or law. A branch of specialist science from medical science that studies the use of medical science for the benefit of law enforcement and justice or courts. Incidents often occur in society related to law violations involving the human body and life. In investigating and investigating as well as resolving this legal issue at a different level until finally the case is decided in court, assistance from various experts in related fields is needed to make clear the course of events, as well as the link between one action and another in the series of events. If there are victims, either still alive or dead, as a result of the incident, an expert in the medical field is needed to explain the parties handling the case. Doctors are expected to be able to assist in this judicial process, armed with medical knowledge that is owned and compiled in the treasures of Forensic Medicine (Dettmeyer et al., 2013).

Forensic Medicine has been known since the Babylonian era, noting that doctors at that time had an obligation to provide healing for their patients with an agreement of compensation if this was not achieved. History records Antithius, an ancient Roman physician, who, in a forum, a kind of judicial institution in his day, stated that of the 21 wounds found on the body of the emperor Julius Caesar, only one wound penetrated the second left anterior rib, and was a fatal wound. After that, Forensic Medicine was born from this forum.

To provide maximum assistance for these various needs, a doctor must be able to make optimal use of his medical knowledge. In carrying out his function as a doctor who is asked to assist in a forensic medical examination by the investigator, the doctor is required by law to do so honestly and to make the best use of his knowledge. Assistance provided by doctors when requested by investigators is to conduct a forensic medical examination of a person, whether alive or dead, body parts or objects suspected to have come from the human body. If the doctor neglects to provide this assistance, then he can be threatened with imprisonment.

In a criminal case that causes a victim, a doctor is expected to be able to find abnormalities that occur in the victim's body, when these abnormalities occur, what causes them, and what consequences arise for the victim's health. In the case of a deceased victim, doctors are expected to be able to explain the cause of death in question, how the mechanism of death occurred, and assist in estimating the time of death and the estimated method of death.

For all of this, in the field of Forensic Medicine, medico-legal management, thanatology, traumatology, toxicology, examination techniques, and everything related are studied so that all doctors, in fulfilling their obligations to assist investigators, can utilize all their medical knowledge for the benefit of justice and other interests. useful for social life.

Forensic Physics

Examination of the Field of Forensic Physics is a criminalistic technical examination of the crime scene and criminalistic laboratory examination of evidence using science and technology in the field of physics. Forensic physics is the application of physics to the investigation of crime scenes and the

analysis of evidence (Katz, E., & Halámek, 2016). Forensic physicists use their knowledge of physical principles and techniques to examine various aspects of a crime, such as the trajectory of a bullet, the origin of a blood spatter, the authenticity of a document, or the cause of a fire or explosion. Forensic physics can also help to reconstruct the events that occurred before, during, and after a crime, and to provide expert testimony in court.

Counterfeit Documents and Money

Counterfeit documents and money are fake or forged versions of currency and security documents, such as passports, identity cards, banknotes, etc. Criminals often use them to finance illegal activities, evade law enforcement, or undermine economies. Counterfeit documents and money can be detected by using specialized tools, databases, and forensic analysis (Campbell, H. R., & Lodder, 2021).

Forensic Ballistics and Metallurgy

Forensic ballistics and metallurgy are two branches of forensic science that deal with the analysis of firearms and metal materials, respectively (DiMaio, 2015). Forensic ballistics involves the examination of evidence from firearms that may have been used in a crime, such as bullets, cartridge cases, gun barrels, etc. Forensic ballistics can help identify the firearm's type, caliber, and origin, as well as the shooting distance, angle, and trajectory1. Forensic metallurgy involves the investigation of metal failures and defects that may have caused accidents, injuries, or crimes. Forensic metallurgy can help determine the root cause of a problem, such as material defects, manufacturing errors, corrosion, fatigue, stress, etc. Forensic metallurgy can also help identify the source and history of metal objects

Forensic Photographic Shooting

Forensic photographic shooting is the creation of visual records of crime scenes, accidents, or other incidents using photography for investigation, analysis, or evidence. Forensic photographic shooting aims to provide an accurate and objective representation of the scene and the evidence that can be used for measurement, comparison, identification, or reconstruction. Forensic photographic shooting requires following certain guidelines and standards to ensure the photographs' quality, reliability, and admissibility. Forensic photographic shooting also involves using different techniques and tools to capture different aspects of the scene, such as lighting, angles, distances, scales, etc (Murgod et al., 2018).

Anything found at a crime scene can become physical evidence. In crime scene scientific investigation, the first activities at the crime scene are critical to successfully preserving physical evidence. First responders and, ultimately, crime scene investigators should make the scene safe and ensure that any further activity at the scene does not alter the evidence. Using a nested security method will accomplish this task. The initial scene survey is the first scene activity (Fahmi, 2016)

All forensic photography must consider three elements of a crime scene: subject, scale, and object of reference. Also, the overall forensic photographs must show a neutral and accurate representation. Forensic Photography, used to refresh memory at a location when the location is no longer available or cannot bring the TKP to trial. Judges, juries, and lawyers also use Forensic Photography as evidence or reference and even as a way to collect valid evidence.

Forensic Fingerprints (Dactyloscopy)

Fingerprints are defined as an impression left by the friction of a human finger. Taking fingerprints at a crime scene (TKP) is a very important method in forensic analysis of a case. Moisture and grease on the fingers cause fingerprints to remain on surfaces such as glass or metal. Human fingerprints are very detailed and unique. This is because patterns are difficult to change in fingerprints and last a long time throughout a person's life. This uniqueness makes it suitable as a marker of human identity. Fingerprints are used to identify suspects and victims in criminal cases, to victims of natural disasters (Kaur & Mazumdar, 2012).

Before the development of computerized techniques, fingerprints were grouped using the manual method. The fingerprint grouping system is seen according to its characteristics. Early classification systems were based on a broad ridge (curvature) pattern, including the presence or absence of a circular pattern of some or all digits. Popular manual fingerprint grouping systems include the Roscher, the Juan Vucetich, and the Henry Classification System.

The Roscher system was developed in Germany and implemented in Germany and Japan. The Vucetich system was developed in Argentina and implemented throughout South America. The Henry Classification System was developed in India and is implemented in most English-speaking countries. In the Henry Classification System, there are three basic fingerprint patterns, namely loop, whorl, and arch, which consist of 65 percent, 30 percent, and 5 percent of the total fingerprints in all humans in the world (Cole, 2004).

Fingerprint identification is known as dactyloscopy. Dactyloscopy compares two samples of fingerprint patterns left on a surface by a human finger or toe to determine whether these (latent) fingerprints are from the same person. No two people, even if they are twins in this world, have the same fingerprint pattern. Fingerprint identification involves an expert in computer systems to determine whether two former (latent) fingerprint patterns likely originate from the same finger or palm. Exemplar print is the term given to fingerprints deliberately collected from subjects and registered in a data system with an alleged criminal offense. During criminal arrests, a set of print copies will usually include one print taken from each finger that has been rolled.

B. Role Criminal Science in Revealing Hit-and-Run Crimes

A hit-and-run case is a collision where the vehicle that crashed into it fled and tried to hide its identity to avoid legal action against it. The possible crime is as follows. (a) After hitting the vehicle, do not stop, and the driver will do the following: (1) Run the vehicle as fast as possible; (2) Trying to avoid recognizing the vehicle, for example, by turning off the lights; (3) The vehicle was taken and left in a place far from the scene of the incident, then reported that the vehicle was burnt.

(b) After a crash, the vehicle stops briefly, and the driver may do any of the following; (1) getting rid of the victim and hiding it; (2) arranging for own accidents, for example, riding a bicycle and falling in a ditch. In this case, there may be traces of the driver at the scene, such as the driver's fingerprints on the victim's body and other objects.

The following signs can be noticed by officers on the road so that action can be taken immediately if the vehicle is suspicious: (a) run at high speed; (b) lamps and windows may have broken; (c) turn off the lights at night; (d) dented vehicle bodies, and so on; (e) there are scratches and traces of paint in a different color than the color of the vehicle.

After marking the victim's location (with chalk and so on), immediately take the victim to the nearest hospital or doctor to get help immediately: (a) if the victim dies, the body must be asked for

a post-mortem et repertum; (b) if the victim is still alive, a temporary post-mortem et repertum may be requested.

Next, evidence in the hit-and-run case is sought in the following objects: (a) Around the scene. Used and (in the form of an impression or print) used brakes on the road, broken glass, broken paint, and so on. (b) On human victims, on the victim's used clothes, tires, torn clothes, blood, pieces of paint, samples of the victim's hair, documents regarding the victim's identity, and so on. (c) On the burnt victim's vehicle, traces of paint from the crashing vehicle, broken glass, parts of the vehicle that may be torn or broken, and fingerprints of the suspect vehicle's driver. (d) On the suspect's vehicle that crashed, traces of paint on the vehicle that was hit, broken glass of the victim's vehicle, parts of the vehicle's chords which were torn or broken, torn fibers of the victim's clothing, the victim's hair, the victim's blood, and the suspect's vehicle parts of the suspect's vehicle that were damaged, marks (mark) on the part of the vehicle that crashed.

Moreover, it is about collection of evidence. Before the evidence is collected, a complete sketch of the incident scene must first be made. The position of the evidence must be visible in the sketch. Similarly, shooting must be done on all objects. After that, the following evidence must be collected: (a) evidence must not be mixed; (b) each type of evidence is included in the container; (c) evidence that cannot be taken can be examined directly at the incident scene.

After collecting evidence, security can be carried out as follows:

a. Paint shards:

(1) the fragments of evidence paint must be separated between the paint on the victim's vehicle and the paint on the suspect's vehicle,

(2) similarly, samples of comparative paint taken from vehicles must be separated; (3) each is put in a separate container.

b. Broken glass; as far as possible, it is separated according to the tool; each type is put in a separate container.

c. The victim's clothing; The victim's torn clothing must be separated from the torn or lint attached to the suspect's vehicle

d. blood:

(1) The victim's blood must be separated from the splashes of blood on the suspect's vehicle.

(2) fresh blood is put in its bottle and given a preservative

e. Fingerprint; Fingerprints must be taken and checked by a doctor for identification.

f. Tire Footprint;

(1) tire tracks in the form of an impression must be cast;

(2) traces in printed form are sufficiently photographed perpendicularly using a scale.

g. Mark (Sign): Marks on the vehicle's parts that collide can be checked directly by an expert inspection.

The stages above are stages in uncovering the perpetrators of the hit-and-run crime by using a criminalistic approach and other assistive knowledge needed in uncovering the case. The criminalistic role is very important in uncovering the hit-and-run case where the police have yet to find the perpetrator; for this reason, the presence of criminalistic knowledge is very helpful for the police in uncovering the hit-and-run perpetrators.

4. Conclusion

Based on the results presented above, it is concluded that (1) Criminalistic assistive sciences in uncovering a crime, namely:

a. Medicine Forensics
b. Forensic Physics

c. Fake documents and money
d. Forensic Ballistics and Metalurgics
e. Forensic Shooting and Photographie
f. Forensic Fingerprints

(2) Role of criminalistic science reveals the Crime of Hit-and-Run as an auxiliary science of criminal law to realize legal ideals. Criminalistics is efforts made in the form of techniques and tactics in finding the perpetrators of crimes, including hit-and-run perpetrators. Criminalistics gives as much space as possible to other sciences to become a science that assists in criminalist.

Acknowledgments

We would like to thank all parties including reviewers and journal editors who have helped us so that this article can be published in this journal.

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