Research on Combined Operations Model of Forensic Science, Technical Investigation, Network Security, and Visual Investigation

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Abstract As methods and means of the current criminal investigation to obtain important clues and evidence, Criminal Technology, Network Security, Technical Investigation and Visual Reconnaissance and other technical means have played their parts in the case investigation. Traditional ways of evidence were traces of touch to leave traces, the way for the use of electronic evidence left behind traces, video evidence left way after leaving marks. They have their own distinct advantages and constraints. To effectively integrate the above means as the combined operation model to obtain clues and evidence, integrated use of a multi-purpose evidence, the investigation will be able to work more efficiently.

Keywords: Touch material traces, Traces of use, After traces, Combined operations, Complementary advantages, Forensic science.

With the advancement of modern science and technology development and the rule of law, criminal cases clues, evidence connotation and extension of expanding. At the same time, in order to adapt to the new situation of public security work, to police training and technology support, diversified technology and methods of criminal technology, network security, techinical investigation, visual reconnaissance and other evolving, promote investigative work ethic, mode change occurs, get a clue, the method of evidence is becoming more diverse ways, increasing technology content. To achieve rapid strike, precision strike, to effectively combat the goal must be to effectively integrate a variety of technical means, the use of professional advantages, to maximize the effect of combined operations.

1 Comparison of the technical method to get clues and evidence

1.1 Content

Forensic Science and Technology at the scene get clues, evidence mainly comprising: one with personal individual identification of the role of trace evidence, such as fingerprints, footprints, DNA, etc., and second with the same materials found or species identified traces of evidence, such as shoe prints tire marks, overall separation of traces and other third is special modus operandi, such as technical unlock burglary means.

Technical investigation, network security to obtain clues, evidence mainly for communications, networking and other electronic data.

Visual reconnaissance obtain clues, evidence video image data.

1.2 Source

A variety of technical means to obtain clues, evidence derived from different sources. Forensic Science and Technology Centre mainly from the scene of the crime, the external field and the associated field, and techinical investigation, mainly from the virtual space network security suspects or related personnel activities within the interval, visual investigation is mainly derived from the suspect's activity space.

1.3 Forming mode

Obtained through criminal means technical clues, evidence, its main mode of contact was formed traces of that object in contact with the suspect committing the crime during the occurrence of crime-related mass transfer or deformed to form traces.

By technical investigation, network security to obtain clues, evidence, formed the main way for the use of the traces that the suspect people use mobile phones, computers and other electronic products, in particular electronic systems on a network server and left under the relevant electronic data. Visual investigation by obtaining clues, evidence, that are formed primarily through the traces that the suspect in the video recording device coverage, and track events are recorded external image.

1.4 Respective advantages

Technology acquisition criminal clues, evidence, the individual characteristics of the same life, traces of evidence is relatively stable, single directional legacy of persons or goods, proof and strong.

Techinical investigation, network security to obtain clues, evidence, as smart phones, computers and other electronic products, the growing popularity of its role to highlight the growing Internet, big data era is changing our social interaction, lifestyles, people in their daily lives food, housing, transportation, marketing, entertainment electronic products, network usage and the increasing reliance by the use of electronic data analysis generated by people and left, you can restore its data of the image, and to determine in reality real images. Most people were cognitive and objective reasons, do not have the skills to circumvent electronic evidence and conditions, thus effectively left behind clues, evidence of the possibility of growing. In addition, due to the particular nature of electronic data, so legacy electronic

data is hardly affected by the external objective environment, the possibility of the physical sense of loss of small holders can also track activity, the relationship between man as dynamic control.

Visual reconnaissance obtain clues, evidence, can be intuitive, dynamic reaction suspects committing the crime process, activity track activity patterns and body physical characteristics can be realized "from the text to the image from the image to the people" paradigm shift, the correct plan provide an objective basis for a given direction of the investigation; by multi-period, multi-point video information to identify suspects and temporal variations of the characteristics of narrow scope of investigation; may be determined to obtain suspect related track information based on a wealth of information resources; in conditional, by directly fixing a suspect in a particular time and space "characteristic", identified crime.

1.5 Each deficiency

Criminal technology acquisition trail, lack of evidence are: First, the formation of the way, and made marks object objects bearing marks of physical characteristics, the objective environment, weather conditions, etc. There are different levels of requirements, in the physical sense, not necessarily an effective traces; the second is a high dependence on sample library; the third is likely to be the perpetrators circumvention relatively simple manner.

Techinical investigation, network security acquisition trail, lack of evidence are: First, intuitive poor, everyone, holder or user of directivity

better than the traditional mark evidence; the second is as it relates to the privacy of individual citizens and other issues, said the limited scope of application means, strict examination and approval procedures, complex; the third is part of the evidence according to the situation may need to be converted into other forms of evidence; Fourth, information massive, low-value density screening workload.

Visual reconnaissance obtain clues to lack of evidence are: First, by the point of the video installation layout, external environmental conditions (such as lighting conditions, angle, distance), hardware constraints (image sharpness) big impact; the second is that the suspect, suspicious article itself external image whether camouflage affect occlusion and other factors; Third, information massive, storage is difficult, and the video data in addition to the properties of space and time, the biggest technical obstacle lies in the structure of the video data processing is difficult, resulting in the value of density low screening workload.

2 Give full play to the technical method to get clues, evidence of the effectiveness of the basic method

Forensic Science and Technology, Network Security, Technical Investigation, investigation and obtain clues visual evidence their own strengths, their own characteristics, but also have shortcomings, there are inevitable, intrinsic link between them. Only by fully understanding their formation mechanism, characteristics and the intrinsic link between each

other, the integrated use of a little breakthrough, promote the overall development, in order to play their respective roles, to maximize the effectiveness of the investigation.

2.1 a comprehensive collection, focus, emphasis on "broad."

A criminal investigation is evidenced by the fruit due to the reverse process, at the beginning of the investigation, in many cases obscure, limited clues and evidence, the nature of the case, as well as to determine the suspect's motive for the crime portrayed by a lack of effective support, presence many possibilities, requires a lot of clues, evidence case to restore the truth. However, the trail of evidence may be lost due to various reasons, must assess the situation, give full play to the characteristics of each technology and methods, timely, comprehensive, detailed and extensive collection of various types of Full-time mark evidence, image data, electronic data and other clues, evidence, for the future judgments, analysis, comparison, string and provide resources possible to effectively prevent the clues, evidence of omission.

2.2 Boils, discriminating, and strive to "fine."

The collected mass of clues in a timely manner, "further processing" organizations capable forces analysis judged through proper and effective method, the use of advanced equipment, resource database, boils, Ebb Tide, find out the relevance and work according timely reorientation, we found the suspect involved grasp the individual characteristics, habits, and other personal information as well as clues to the crime, the evidence.

2.3 Detection technology combined, integrated judged a view to "accurate"

Clear the suspect is an investigation into the work of the primary task, after the technical methods collected clues by "deep processing", it requires a combination of other clues investigation acquired comprehensive judgments, mutual evaluation, in order to ascertain its value, faster, and more accurately. clear suspects. Value judgment on the trail of feedback is a multi-channel, interactive, such as: crime scene investigation found the suspects in visual human activity track criminal technique can be targeted accordingly found the suspect may be left traces of evidence in a particular space, Furthermore it is possible to determine the exact identity of the suspect information; Jizhen, net encore whereby access to electronic data for a specific time period. Forensic Science and Technology in the context of the scene of the case or to identify and trace evidence in the case by a series of cases in visual investigation can thus extract information about the image data in a particular space; technical investigation further support and network security in a particular period of time, to extract information about the space information, obtain valuable clues, evidence.

The era of big data, lack of investigation clues are often not the main problem, the lack of data is a way of thinking big, and change the working methods and expand the use of information thinking. Traditional criminal techniques and increasingly sophisticated and efficient network security, technical investigation, visual reconnaissance and other technical means, to the legacy of different ways and characteristics of clues, evidence to use, and there is a specific correlation between them. If you can effectively integrate the above means to obtain clues, evidence, synthetic combat mode, multi-level, all-round judged, so that mutual interaction, a multi-purpose card, complementary advantages, will complement each other, play in the investigation of a multiplier effect.

Conflict of interest

The authors declare that no conflict of interest, whether commercial, financial or any other kind concerning the topic related in this article.

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