Application of the achievements of natural sciences in forensic research

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Abstract. The relevance of the research topic lies in the fact that criminalistics is engaged in the collection and research of physical evidence. In recent years, it has made significant progress due to the introduction of various elements of physics, chemistry, and analytical chemistry. Due to their use in various examinations, they are successfully developing (tracological, biological, forensic).

Sometimes the study of the chemical composition has a positive effect on obtaining important information about the commission of crimes and their participants. During the trasological examination, it is necessary to carefully examine the traces, including those invisible to the ordinary eye. For this purpose, technical means and materials obtained as a result of the development of natural sciences are used.

Keywords: criminalistics, physics, mechanics, special knowledge, natural sciences, communication of sciences.

Introduction

Criminalistics (and not only it) can be quite taken for a mathematical science simply because it, in most cases, uses mathematical methods. Even if the "mathematization" of criminology begins to be applied at a more increasing pace and in a more global sense, criminology will still be (and will be) a legal science, even in this case. This situation is similar to the use of data science in criminology, such as information theory, etc.

The interaction of criminology with the natural and technical sciences does not mean that these sciences are absorbed and included in their content by criminology, or, on the contrary, they are absorbed by criminology. However, such opinions are sometimes expressed. For example, some criminologists in European countries believe that forensic medicine, psychiatry and chemistry help in the fight against crimes. Our domestic criminologists do not agree with these opinions and understand criminology and forensic psychiatry as a branch of the "mother" science that serves in the fight against crime through its data.

Forensic science takes this scientific data into account when developing practical recommendations.

So, for example, when formulating strategies for examining corpses at the scene of an accident, they take into account the features of the phenomenon of corpses and their changes over time, the signs allow us to judge damaged weapons; when formulating investigations of murders, rapes, corpses, these data are taken into account [2, p.63].

Similarly, the use of certain medical and chemical methods in criminology does not, in accordance with its provisions, apply to certain sections of criminology or to this type of practice as part of forensic science, such as forensic medicine or forensic examination.

Purpose of the study – to establish the current issues that arise in forensic activity, including forensic experts, and after analyzing individual sciences that are closely interrelated with criminology, to suggest ways of their mutual integration. The study is intended to identify certain positive results obtained in a number of natural sciences that are used for forensic purposes.

Materials and methods

The methodological basis of this research is based on the general scientific dialectical method of cognition, as well as on the use of structural-functional, system-structural, comparative-legal, formal-legal, and other particular methods of scientific cognition.

Results and discussion

Scientific and technological progress needs to increase the interaction of criminology not only with the natural and technical sciences, but also with their special areas. Such a field will include more and more new sciences, such as bionics, quantum electronics, cybernetics, biophysics,

etc. "Feedback" shows how the advances of criminology have begun to be applied in other sciences: the sciences of archaeology, archaeology, paleopathology, etc.

Chemistry, physics, physical chemistry, electrical engineering, material resistance, metal science, etc., will be actively used in forensic technology. Their influence on tactics and methods is applied through the use of technical means. According to the synthetic nature of criminology, the result of integrating the achievements of other natural sciences and technical sciences into it is a huge introduction to them within their subject matter and content (even in the once traditional "purely forensic" fields, such as fingerprinting, microscopic visualization, document technology and forensic examination, etc.). At a time when forensic technology and forensic expertise are just emerging, they combine the advantages of natural and technical sciences. For example, portable solid-state lasers, vacuum deposition of metals, and various chemical reagents are used to detect potential mudra [1, p.98].

Without the use of electronic scanning microscopes, it is now difficult to imagine the detection and investigation of particles and microcracks. The method of research of documentary materials is based primarily on physical and chemical methods of research (X-ray, molecular spectroscopy, X-ray diffraction analysis, chromatography). It should be noted that the collection and study of forensic objects is carried out with the introduction of generally recognized methods and techniques used in the fundamental natural and technical sciences, and (mainly) with the introduction of deliberately created forensic techniques, taking into account the special circumstances of the object-the possibilities of physical evidence and methods.

Forensic and optical microscopes are used for forensic examination. They consist of a lens and an eyepiece. The magnifying lens produces multiple images. The most accurate will be the actual image. It can be displayed on a computer, thanks to technical means.

In an imaginary image, it allows a certain percentage of error, because our consciousness tries to see what it wants. Therefore, the expert sees the continuation of the optical rays, but not the rays. A stereo microscope. Its difference from an optical microscope is that the image is always straight, and this eliminates the possibility of errors in the analysis. The expert will see a clear, not ambiguous picture. Electronic microscope. It will be used in the study of objects to determine their special properties.

The image is formed due to the influx of electrons. It is literally impossible to see this, as a result, the electron beams fall on special screens.

For more detailed results of the examination, special methods are used, which will imply the presence of special knowledge in the field of physics: Color Separation. Specialists use light fil-

ters to increase the contrast. This method will be used for photo-portrait examination. UV illuminators.

This method is used if the traces disappear under infrared radiation or the traces are indistinct. These will be traces of blood or traces of fingerprints. With the right lighting, they will be visible. Radiography. This method is used to detect traces on metal objects (for example, inside a revolver or on a broken lock).

The electrolytic method will be used when detecting traces of pressure in a metal object. The criminal goes to the trick and tries to return it to its original state or paint it over.

This method helps to determine whether a given item has been exposed to external influences. For example, these are broken auto numbers. Molecular spectroscopy.

It will be used to study the texture of materials and substances. When traces of unknown substances are found at the crime scene, their samples are taken, and then subjected to examination.

Such traces can be absolutely anything-medicines, paint, gasoline, engine oil, etc.

Conclusion

We see that criminology and physics are strongly linked. Most of the expert research is carried out through physical methods, and their results serve as a solution to many forensic problems and tasks.

For the analysis of physical evidence (photos, personal belongings, jewelry, etc.), a technique is used, whose principle of operation will be based on the laws of physics.

In order to avoid errors in the conduct of examinations, employees are required to have special knowledge, which is given at the higher chemical and physical-mathematical education.

It should be noted that modern technical means of forensic tasks, as a rule, are carried out on the basis of orders from forensic scientific services of special research institutions, machine-building enterprises, production units (radio electronics, optics, etc.) [3, p. 122].

Much can be said about the interaction of criminology. The provisions of ethics, logic, psychology, and philosophy are extensively used to create an individual forensic teaching.

Criminology can be safely attributed to the integrated science. It makes extensive use of the findings of scientific disciplines and then applies these findings to its potential.

Criminalistics widely shares its own achievements, knowledge, and results with other fields of science.

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