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Competence aspects in forensic expertise of documents

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Abstract

The technical expertise of documents, although it already seems to be a well-developed field, in the current stage faces many problems which need to be investigated. This especially concerns the limits of expert-examiners' competences. Apart from the "classic" means of falsifying and counterfeiting documents, new ones constantly appear as the offenders gain new skills and equipment, which makes expertise much more complex.[1]

In the present article, the authors attempt to discuss the limits of competences in the specialties of judicial expertise – code 6.01 (technical expertise of documents) and code

[1] S. Alămoreanu, *Falsul în acte: aspecte clasice şi moderne în cercetarea sa criminalistică* [Forgery in Documents: Classical and Modern Aspect in Its Forensic Research], Bucureşti 2021, p. 10.

10.11 (examination of materials, documents, and writings).[2] Exceeding one's competence in carrying out the expertise cancels the evidence accumulated through scientific effort as well as entails disciplinary and often criminal liability of the expert-executor. The authors also propose an exemplary curriculum for training experts in forensic expertise of materials and documents and writings.

Keywords: technical expertise of documents, limits of competences, expert examiners, training experts, examination of materials, documents, and writings, integrated conclusions.

In practice, we acknowledge that the tasks assigned to the technical expertise of documents within the judicial process are numerous and often formulated without taking into account the specialty of expertise necessary in specific cases. Therefore, the expert is the one who must know the connections between different specialties of forensic/judicial expertise very well in order to "handle the interweaving" of the objectives formulated by the judicial body. This allows them to conduct research based on scientific and objective support, in full compliance with the requirements of the procedure. However, forensic/judicial expertise, regardless of the circumstances, should be based on reliable research.

When analyzing the practice of forensic document examination in Romania and the Republic of Moldova, we see a similarity in the approach to jurisdiction issues. From the perspective of judicial expertise theory, in Romania, we observe the existence of scientific studies investigating the delimitation of the competences of forensic/judicial expertise of documents and writing,[3] as well as the physico-chemical examination of paper and scriptural materials.[4] In the Republic of Moldova, these delimitations are contained in the nomenclature of judicial expertise.[5]

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[2] Hotărâre Guvernului Nr. 195 din 24 martie 2017 privind aprobarea Nomenclatorului expertizelor judiciare [Government Decision no. 195 of 24 March 2017 regarding the approval of the Nomenclature of judicial expertise], https://www.legis.md/cautare/getResults?doc_id=119445&lang=ro (accessed: 12.01.2022).

[3] S. Alămoreanu, op. cit., p. 22.

[4] M.G. Stoian, *Contribuţia expertizei fizico-chimice a probelor materiale la probaţiunea judiciară* [The Contribution of Physico-Chemical Expertise of Material Evidence to Judicial Probation], Bucureşti 2013, p. 375.

[5] Hotărâre Guvernului Nr. 195 din 24 martie 2017.

In our paper, we will only refer to aspects of the connection between technical expertise of documents and that of document and writing materials in the context of delimiting expert skills and competences. In the Romanian literature on the topic, we find these delimitations very well explained in a study by Maria G. Stoian. According to her, forensic investigation of documents can be classified into three types (based on the purpose of the examination):

– identification of the author of a document (judicial graphoscopy);

– technical examination of documents;

– physio-chemical examination of documents (expertise of scriptural support and materials).[6]

In the nomenclature of judicial expertise in the Republic of Moldova, we find the delimitation of the purpose of the mentioned expertise specialties. For technical expertise of documents (code 6.01), the purpose is identified as technical research of documents, writing instruments, and materials for making documents in order to establish the authenticity of certain documents, the presence of complete or partial falsification based on the use of various methods, procedures, and technical-scientific means. This specialty solves the following issues:

– establishing the authenticity of the documents (standard forms, secure forms, banknotes, identity documents, ID cards, etc., taking into account protection elements specific to the original document);

– establishing the manner of making the documents and their conformity with the manner of creating the samples presented;

– establishing the existence of changes made to any type of act or document (removal or addition of text by covering, hatching, mechanical erasure, chemical erasure, etc.);

– reconstitution of the initial textual content of the document;

– identification of latent documents by physical methods;

– identification/discovery of the forgery made by different methods (photocopying, collages, etc.);

– examination of stamp and initial impressions, identification of stamps;

[6] M.G. Stoian, op. cit.

– identification of copiers and calculation techniques used to perform the act;

– establishing the types of printer or mechanical typewriter with which the documents were printed (die, inkjet, laser);

– identification of the mechanical typewriter and the typist according to the text of the printed document;

– establishing the manner of falsifying or counterfeiting identity and travel documents (passports, identity cards, etc.);

– establishing the manner of forging or counterfeiting credit cards and other means of payment (banknotes, bank cards, etc.);

– establishing the age of the document;

– establishing the type of writing materials, if all parts of the document were written with the same scriptural tool;

– establishing the consecutive execution of the parts of the document;

– technical examination of the signature / stamp impression (method of execution of the signature, if it was forged by copying, scanning, etc.);

– reconstitution of damaged documents (burned, washed, deleted, hatched, torn, etc.) and revealing/reconstructing the existing information on them;

– establishing the whole by parts of the broken, cut, etc., documents.

– identification of the scriptural instrument based on the pathological indications from the manuscripts;

– differentiation of scriptural instruments according to the pathological indications from the manuscripts;

– other similar issues.[7]

As for the technical expertise of documents (code 6.01) and writings materials (code 11.10) – forensic examination of materials, documents and writing (paper, inks, glues and other materials used in making documents), the problems solved influde:

– examination of the paper, determination of group membership, presence or absence of protection elements, etc.;

– examination of writing materials, content of scriptural instruments (dyes, inks, inks, pencil mines, etc.);

[7] Hotărâre Guvernului Nr. 195 din 24 martie 2017.

– examination of scriptural materials intended to obtain impressions (ink paints, typewriter dyes, indigo paper, printing paints, etc.);

– examination of scriptural materials intended to obtain the image by multiplication-copying methods (thermo-, electrophotographic toner, ink for jet-color printers, etc.);

– examination of glues;

– examination of cover materials;

– examination of corrosive regents;

– other similar issues.[8]

With regard to delimiting the competencies of these expertise specialties, similar guidelines is found in the scientific literature of other states. For example, in the Russian Federation, the expertise of documents materials includes:

– examination of scriptural materials;

– examination of paper and paper articles;

– examination of auxiliary materials;

– examination of engraving substances (washing).[9]

Thus, the expertise of documents, materials, and writings is conceived as a kind of "frontier" expertise, which accounts for the possibilities of technical expertise of documents and forensic/judicial expertise of materials and substances, sometimes called "technical forensic/judicial expertise of documents and materials."[10] This is confirmed by the fact that in the classification of expertise according to research objects, this specialty is found in the expertise of materials and substances category.[11]

From personal experience, the judiciary rarely distinguishes between technical expertise of documents and expertise of document (and writing) materials – therefore, the tasks of expertise are formulated by interweaving the objectives of forensic study in both specialties. Apparently, their

[8] Ibid.

[9] Russian Federal Center for Forensic Science under the Ministry of Justice of the Russian Federation, *Subject, Objects and Tasks of Technical Expertise of Documents*, http://www.sudexpert.ru/possib/techn.php (accessed: 17.01.2022)

[10] Document examination laboratory, *Issledovanie materialov documentov (sudebno-tehnicescaia expertiza documentov)* [Examination of Document Materials (Forensic Examination of Documents)], http://stolid.ru/content/view/20/36/ (accessed: 17.01.2022)

[11] M.G. Stoian, op. cit., p. 375.

objectives differ very little, as do the methods of investigation used. For example, in order to solve the problem of the documents' age, the expert can rarely limit themselves only to knowledge in the field of technical expertise of documents. Moreover, when required to identify the instrument with which the documents were made, an expert cannot possibly formulate a categorical conclusion only on the basis of route indices, without physio-chemical examinations of materials and substances.

Practice shows that in 50% of the requests for judicial expertise (analysis for 2016–2020) in the field of graphoscopy and document technique by the National Centre of Judicial Expertise of the Republic of Moldova, the tasks sent are meant to establish how old documents or other pieces of evidence are. The beneficiaries designate this type of examination as graphoscopic or technical expertise of documents. In reality, however, to answer such questions, integrated knowledge is needed, both in the field designated in the request and in the examination of document and writing materials, which sometimes requires knowledge of chemistry.

As was also reported by other researchers, we acknowledge that although the scope of our field is becoming increasingly complex, understanding the correct approach remains difficult. We believe that the process of conducting an integrated expertise requires taking into account several criteria:

– the vision about the matter of expertise (the material competence of the expert);

– its purpose (expert version);

– the type of object studied (the nature of the material evidence or actions to be investigated);

– appropriate research methods.[12]

There are opinions, which we agree with, that performing integrated and complex expertise enables the extraction of extensive evidentiary information and widens the circle of scientific research tasks, thus increasing the scientific level of forensic examinations. As for the theory of complex and integrated judicial expertise, it approaches the technology of the respective process differently, which in practice creates a situa-

[12] O. Cataraga, *Expertiza judiciară* [Judicial Expertise], doctoral dissertation, Universitatea Babeș Bolyai, Cluj-Napoca 2022.

tion of confusion. In the absence of clear provisions in this regard, either methodological or procedural, very often even if they do obtain valuable results, judicial experts cannot put them in the "format" of evidence, i.e., in a special form necessary for the judicial process, conceived and easy to understand by the judiciary. Thus, the judicial process cannot benefit from integrated conclusions, having only separate opinions regarding the objects under investigation, which the judiciary body cannot use adequately in order to solve the case.[13]

In practice, it is found that not all forensic experts understand the limits of competence in cases related to issues concerning technical expertise of documents and expertise of document materials. They therefore manifest a "professional impotence" in a sense, which has detrimental consequences to the acquisition of scientific evidence "for the judicial process." As the main problem from which the "professional impotence" stems, we consider the imperfect process of training judicial experts in the given matter.

Judicial expertise in the Republic of Moldova, as well as in other states, more and more often encounters problems related to the training of judicial experts and the establishment of training requirements for candidates. These issues are discussed on various scientific forums, exposing different opinions and experiences in the field. In recent years, the "professional background" of an expert (understood as initial training and qualification) has been often challenged – either in court, at the Ministry of Justice, or before the heads of expertise institutions. Decisions are made in various states regarding the training of judicial experts, the requirements for candidates in this profession, often without taking into account international practice and/or the opinion of the profession's representatives.[14]

The training programs for forensic examiners in the field of expertise must be well thought out, developed on a solid methodological and scientific basis, so that both the topics and the tasks of expertise within each spe-

[13] Ibid.

[14] O. Cataraga, "Erori în concepția contemporană a profesiei de expert judiciar" [Errors in the contemporary conception of the forensic expert profession], *Revista științifico-practică Info-Med* [Scientific-practical Journal Info-Med] 2016, no. 1.

cialty are structured. Table 1 presents an example of a program designed to train experts in the examination of document and writing materials.

Table 1. Model program for expert training regarding the examination of document and writing materials

	Topic	Activity
I	Fundamentals of judiciary examination of document materials	
1.	theoretical fundamentals of forensic science document materials; methods of researching document materials	lectures, test questions, checking the lab, testing
II	Forensic base study documents and materials letters	
2.	forensic paper research, coverslips materials	lectures, test questions, checking the lab, testing
3.	forensic materials research letters	
III	Forensic research of adhesives and etching substances	
4.	forensic adhesive research substances	lectures, test questions, checking the lab, testing
5.	forensic study of etching substances	lectures, test questions, checking the lab, testing
IV	Control examinations (5 units)	expertise check

Additionally, in order to obtain the right to expertise, candidates must prepare scientific papers on certain topics, such as, e.g.:

1. Modern possibilities of forensic examination of materials documents when solving KEMD tasks.
2. Tasks of identification research on document materials.
3. Materials of documents as objects of identification research.
4. Establishing changes in the materials of documents over time or under the influence of specific external factors.
5. Forensic identification of document materials as a complex, multi-stage process.
6. Methods of forensic paper research.
7. Binding materials as objects of forensic research.
8. Methods of forensic research on ink.
9. Methodology for forensic investigation of ball pastes pens.

10. The method of electrophoresis and its potential in forensic study of letter materials.

11. The method of thin layer chromatography and its possible contribution to forensic investigation of document materials.

12. The method of qualitative chemical reactions and its possibilities for forensic investigation of document materials.

13. Establishment of the mineral composition during forensic paper research.

14. Etching substances, the possibility of their detection and research in the examination of forged documents.

15. Methods of forensic investigation of letter materials in strokes.

16. Types of adhesives and methods of their research.

17. Establishing the type of glue using non-destructive methods.

At the same time, theoretical training is accompanied by laboratory work and mock expertise performed by each of the candidates. The practical tasks performed by the candidates during the exam are also very important – these include:

1. Based on the indicated signs (forms brown spots on the surface of the paper, the reaction of the medium is neutral, quenching of luminescence is observed in UV rays), determine the type of etchant.

2. Based on the indicated signs (forms brown spots on the surface of the paper, the reaction of the medium is neutral, quenching of luminescence is observed in UV rays), determine the type of etchant.

3. Based on the indicated signs (forms yellowish spots on the surface of the paper, the reaction of the medium is neutral, luminescence of light tones is observed in UV rays), determine the type of etching substance.

4. Based on the specified characteristics (discolors only strokes of ink from fountain pens, forms yellowish spots on the surface of the paper, the reaction environment is neutral, luminescence of light tones is observed in UV rays), determine the type of poison.

5. Based on the indicated signs (forms yellowish spots on the surface of the paper, the reaction of the medium is neutral, quenching of luminescence tones is observed in UV rays), determine the type of etchant.

6. Based on the presented sample of paper, determine the mass of 1 m^2.

7. Based on the presented sample of paper, determine the weediness of the paper in per 1 m^2.

8. Based on the indicated signs (forms plastic, transparent film of yellowish color on the surface of the paper, luminesces in UV rays with yellow-green color, the reaction of the medium is neutral, highly soluble in hot water, ethyl alcohol, acetone), determine the type of adhesive substances.

9. Based on the indicated signs (forms fragile, matte smooth film of light gray color of various granularity on the surface of the paper, luminesces in UV rays with milky blue, reaction medium neutral, emits the smell of burnt paper when burned, dissolves in hot water), determine the type of adhesive.

10. Based on the indicated signs (forms yellowish or brown horn-like film on the surface of the paper, luminesces in UV rays with yellow or green, the reaction of the medium is neutral, during combustion emits the smell of burnt paper, dissolves in hot water), determine the type adhesive.

11. Based on the indicated signs (damages paper, discolors ink and photographs, forms a brittle on the surface of the paper, transparent or opaque film with numerous cracks, particles of dried glue under a microscope look like shapeless shiny formations, luminesces in UV rays with gray-blue or lilac, the reaction of the medium is alkaline, it dissolves in hot water, when burned turns the flame yellow), determine the type of adhesive.

12. Based on the indicated signs (forms light yellow elastic film on the surface of the paper, sometimes with the smell of gasoline, luminesces in UV rays with yellow-green or milky blue, the reaction of the medium is neutral, will readily dissolve in gasoline and dichloroethane), determine the type of adhesive.

13. Based on the strokes presented, identify morphological signs which make it possible to determine the type of material of the letter.

14. Based on the presented chromatogram, identify the appropriate signs which make it possible to characterize the material of the letter.

15. In the presented paper sample, determine the direction of fibers.

16. In the presented sample of paper, determine the gap.

17. Conduct a paper preparation study and determine the composition fiber paper.

18. Conduct a paper preparation study and determine the quantitative composition of the fibers.

19. Conduct a paper preparation study and determine the degree of fiber grinding.

20. Determine the degree of sizing of the presented paper sample using the dry indicator method.

21. Determine the thickness of the submitted paper sample.[15]

We could continue this list of ideas, but we only aim to present a model program for the preparation of experts in the field of forensic examination of documents and writing materials, which in our opinion – provided it is followed – will solve the problem of differentiating the competencies of this expertise from that of the technical-forensic examination of documents.

From the structure of the program, it is very clear that the competences of forensic expertise of materials are oriented towards the identification of the indices and composition of the substances used in the process of making the documents. In contrast, the other discussed speciality is aimed at examining factors which indicate the methods used in that regard. The truth is that the vast majority of the methods used, especially non-destructive ones, are common to both fields of expertise, but this should not mean (as many experts emphasize) that if we use the same tools, we expose ourselves to issues which go beyond our competence. It must be understood correctly that similar methods can be used for more purposes than an expert in a particular field can know. From a professional point of view, an expert specialized in a certain field can extract results and interpret them exclusively within the limits of their specialty. Only this kind of approach is professional and scientifically correct.

Unfortunately, there are cases in which the judiciary experts exceed the limits of their competence and misinterpret the results obtained from the research carried out, wrongly believing that they can do so. Consequently, due to the fact that the judicial body is not able to guide itself in this matter, such erroneous conclusions may lead to incorrect decisions regarding the case. For these reasons, actions are required to set limits of the competences of forensic expertise specialties, starting from the establishment of a training curriculum. Given the trends of the modern world, we believe

[15] Ministerul Justiției al Republicii Moldova Centrul Naţional de Expertize Judiciare [National Center of Judicial Expertise of the Ministry of Justice of the Republic of Moldova], *Arhiva Consiliului metodico-științific din 2018–2022* [Archive of the Methodological-Scientific Council of 2018–2022], https://cnej.gov.md/ro/content/primirea-%C3%AEn-audien%C8%9B%C4%83-cet%C4%83%C8%9Benilor (accessed: 12.01.2022).

that a unique approach to these competences is important, regardless of geographical area. The first step in this direction, in our opinion, has already been taken by the European Union, which in 2015 adopted a guide to good practice in civil judicial expertise. The guide contains general principles of quality assurance of expert services – one of them being: "The appointment of a legal expert natural or legal person must be based on a legal framework that includes a quality assurance system based on common rules, and uniforms, including accreditation and certification."[16]

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[16] O. Cataraga, "Erori în concepţia…".