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Certain issues on methodical support of forensic examinations of images on the dorsum of the hands

With the proliferation of video surveillance systems and an increase in their quality, it is becoming increasingly important to identify suspects using these video recordings. Given the importance of wearing masks, due to quarantine requirements, identification by facial images is not always possible. The next element of an appearance, which is usually not covered by clothing, are the hands, namely their dorsum. At the same time, there are certain gaps in the methodological support of forensic examination of hand images. The article deals with certain problematic issues of scientific and methodological support as to forensic examination of images on the dorsum of the hands. Modern scientific developments in this area are indicated, namely guidelines: "Personal identification by photographic images of hands", subsection 2.1.3: "Examination of traces of the dorsum of the hand" taken from the textbook: "Forensic examinations in the procedural law of Ukraine" and a methodological manual which is now being developed at the Ukrainian Research Institute of Special Equipment and Forensic Science of the Security Service of Ukraine. The Expert specializations were analyzed for their compliance with the type of research under consideration. Based on the results of the analysis, it is concluded that the research of images on the dorsum of the hands now corresponds to several expert specializations at the same time. An opinion is also expressed about the imperfection of the modern system of expert specializations in Ukraine.

Keywords: *criminalistics, forensic examination, examination of hand images, expert specialization, methodical support.*

Formulation of Research Problem. In recent years, various video surveillance systems have become increasingly common. Although the quality of video recording of such systems is gradually improving, it is not always sufficient to identify individuals. However, even with sufficient quality, situations may arise where the video does not capture the suspect's face (for instance, due to quarantine requirements, the face may be covered by a mask) and shows only other features of his appearance (other body parts, dynamic features, etc.). Among images of body parts, a special place is occupied by images of the dorsum of the hand. This

is because the dorsum of the hands is usually bare (even in winter people do not always wear gloves), and dorsum of the palm is clearly visible. Thus, the study of images of dorsum of the hands is becoming increasingly important.

Analysis of Essential Researches and Publications. Certain aspects of the study of handprints in their works were considered by such outstanding forensic scientists as R. S. Belkin, N. I. Klymenko, V. K. Lysychenko, M. V. Saltevskyi, M. Ya. Sehai, A. V. Ishchenko, etc. For example, V. V. Yusupov clearly covers the history of detection, fixation and study of fingerprints¹. Problems of using dactuloscopic information in the investigation of crimes are considered by A. O. Logvinenko². A similar issue, namely the problems and prospects of forensic examination of traces of dactyloscopic origin are studied by T. I. Savchuk, T. S. Kostiukova and I. A. Hretskykh in their publication³.

At the same time, despite the significant number of scientific developments and publications on the study of human handprints, scientific and methodological support for the study of the images of dorsum of the hands still remains underdeveloped.

The **Article Purpose** is to study the latest scientific and methodological developments in the field of forensic examination of images of hands, identify and highlight existing issues.

Main Content Presentation. In 2006 specialists of the State Research Forensic Center (Expert Service) of the Ministry of Internal Affairs of Ukraine developed guidelines: *Identification of a person by photographic images of*⁴ (although insignificant in volume — only 27 pages) — the first in Ukraine methodical material on this topic. These methodical recommendations consisted of four sections (one of which had three subsections), introduction, conclusion and a list of used and recommended literature:

Introduction

1. Anatomical features of the structure of hand.
2. Photographing the hand
3. Procedure of the study
- 3.1. Preliminary study of the provided and comparative images

¹ Юсупов В. В. Сліди пальців рук: історія виявлення, фіксації, дослідження. *Криміналістичний вісник*. 2015. № 2. Р. 190—201. URL: https://nbuv.gov.ua/UJRN/krvvis_2015_2_28 (date accessed: 25.02.2021).

² Логвиненко А. О. Проблеми використання дактилоскопічної інформації в розслідуванні злочинів. *Юридичний вісник. Повітряне і космічне право*. 2017. № 1. Р. 174—178. URL: https://nbuv.gov.ua/UJRN/Npnau_2017_1_29 (date accessed: 25.02.2021).

³ Савчук Т. І., Костюкова Т. С., Грецьких І. А. Проблеми та перспективи криміналістичного дослідження слідів дактилоскопічного походження. *Право і безпека*. 2020. № 3 (78). Р. 109—113. DOI: <https://doi.org/10.32631/pb.2020.3.14> (date accessed: 25.02.2021).

⁴ Ковальов К. М., Нізовцев Ю. Ю. Ідентифікація особи за фотографічними зображеннями кистей рук : метод. рек. Київ, 2006. 27 р.

- 3.2. Comparison of hands according to general signs
- 3.3. Comparison of hands by separate signs
4. Evaluation of results of comparison and formulation of the conclusion

Conclusion

List of the used and recommended literature.

These method recommendations are studied the anatomical structure of the hand and its anomalies; recommendations for photographing the hand for a comparative study are given separately; special attention is paid to the procedure of the study. In the framework of the previous study, the general characteristics of images, conditions of photography, quality of photographic images were compared. It is suggested to compare the hands according to the following general features: color, length, width and general features; shape, relief, contour, length, width, color, size of the free edge and features of nails. There is a wider range of individual features: dimensional characteristics; features of the skin pattern; visible location of veins; individually acquired features (tattoos, scars, amputations, tanning, etc.). The description of the features is given accompanied by visual illustrative material and explanations, in particular, regarding their stability and identification value.

First of all, these methodical recommendations were intended to identify the images of dorsum of the hands from the surveillance cameras of ATMs. The author does not know cases of their use for this purpose, instead, these methodical recommendations were applied in practice in 2012 during a series of portrait examinations of videos from the Internet. Then specialists identified several people based on images of their faces, partially recorded, and images of their hands. Scientific and methodological support of forensic examination of dorsum of the hand was continued in 2019 in the textbook: *Forensic examinations in procedural law of Ukraine*, which addresses this issue in subsection 2.1.3 *Examination of traces of the dorsum of the hand* ¹ (which does not contain illustrations and much smaller in volume than the methodical recommendations *Identification of a person by photographic images of the hands*; instead, it more clearly spells out certain methodological provisions). In general, the mentioned subsection contains: data on expert tasks and objects of examination (main objects, materials of pre-trial investigation, samples of the dorsum of the hands); typical questions that specialists solve during the examination of the dorsum of the hand; features of examination appointment.

As of today, the Ukrainian Research Institute of Special Equipment and Forensic Science of the Security Service of Ukraine is developing a manual on forensic examination of images of the dorsum of the hands. This manual plans not only to combine the best features of the works described above, but also to update the illustrative material.

¹ Судові експертизи в процесуальному праві України : навч. посіб. ; за заг. ред. О. Г. Рувіна. Київ, 2019. Р. 150—152.

Despite the gradual progress in the development of scientific and methodological support for forensic examination of images of the dorsum of the hand, some problematic issues remain to this day. One of them is to determine the affiliation of this type of research to a particular expert specialization.

Currently, there are several points of view on determining whether the study of the images of the dorsum of the hand belongs to a certain expert specialization: it is trace evidence analysis, forensic phototechnical and portrait examination; and there are arguments in favor of each of these specializations.

Thus, in accordance with paragraph 5.1 Section I of Scientific and methodological recommendations on the preparation and appointment of forensic examinations and expert studies (hereinafter referred as the *Recommendations*), the main tasks of trace evidence analysis are *identification or determination of the generic (group) affiliation of individually identified objects on materially fixed traces — reflections of their trace-forming surfaces; diagnostics (establishment of properties, states) of objects; situational tasks (establishment of the mechanism of trace formation, etc.)*¹.

In paragraph 5.4 of the same section was defined that *the following main subtypes of trace evidence analysis are distinguished: examination of human handprints, examination of human footprints, shoes, socks, stockings; examination of traces of gloves, human clothing, traces of damage to objects, traces of layers on objects; examination of footprints (paws) of the animal; examination of tools, cold steel and traces left by them, identification of the whole in parts, examination of traces of tools and instruments; examination of traces of vehicle; examination of locking and control means; examination of traces of division of the whole into parts; examination of relief traces on metal, plastic and other materials; examination of knots and loops.*

The possibility of conducting trace evidence analysis based on traces of other trace-forming objects, in particular teeth (other parts of the human or animal body), various objects of mass production, etc., is not excluded. <...>.

For example, a trace of the dorsum of the hand on a certain surface, detected with fingerprint powder and removed on fingerprint film, is the subject of trace evidence analysis. There is no doubt about it. However, the reflection of the dorsum of the hand in photographs or videos is, in fact, a kind of handprints, where the carrier of the traces is not a fingerprint film, but such photo or video images. That is, the difference is only in the carrier.

Thus, the arguments in favor of determining the affiliation of the study of the images of the dorsum of the hand to the trace evidence analysis, namely to

¹ Науково-методичні рекомендації з питань підготовки та призначення судових експертиз та експертних досліджень : затв. наказом Мін'юсту України від 08.10.1998 р. № 53/5 (as amended and supplemented). URL: <https://zakon.rada.gov.ua/laws/show/z0705-98#Text> (date accessed: 25.02.2021).

the expert specialization 4.1 *Study of human and animal footprints*¹, are quite strong. That is why the subsection 2.1.3 *Examination of traces of the dorsum of the hand* in the textbook *Forensic examinations in procedural law of Ukraine* is given in the section of trace evidence analysis.

At the same time, a careful study of the provisions of paragraph 6 *Examination of handprints (dactyloscopic examination)* Section I of the above-mentioned Recommendations show that the main task of dactyloscopic examination is to identify a person by traces of his hands left at the scene. Examination of handprints solves a number of non-identification problems related to the definition of the trace formation mechanism, the peculiarities of the structure of the hand that left a trace, some other characteristics of the trace-forming object.

An indicative list of issues to be addressed by dactyloscopic examination is as follows:

- *Are there handprints on the object?*
- *Are the given traces suitable for identification?*
- *Are handprints left by a specific (one) person?*
- *Are handprints left by one person removed in different places?*
- *Are there handprints on the given item and, if so, are they suitable for identification?*
- *With which hand and which fingers are traces left?*
- *What are the features of the hands of a person who has left traces (no fingers, presence of scars, etc.)?*
- *What areas of the palm surface left traces?*
- *As a result of what action is left a trace (capture, touch, etc.)?*
- *Were there traces of a specific object on the surface before removal?*
- *Are there signs of transferring the removed traces from one surface to another?*².

As you can see, the provisions of the Recommendations are formulated so that the study of the dorsum of the hand can be considered as a part of the dactyloscopic examination (namely the expert specialization 4.6 *Dactyloscopic examination*).

In favor of phototechnical examination is evidenced by the provisions of paragraph 17.1.4 Section I of the Recommendations, according to which one of the main tasks of photographic examination is the identification of objects, premises and areas reflected in the photos (negatives) and videos. Accordingly, one of the typical issues to be addressed by the photographic examination is:

¹ Додаток 5 до Положення про Центральну експертно-кваліфікаційну комісію при Міністерстві юстиції України та атестацію судових експертів : затв. наказом Мін'юсту України від 03.03.2015 р. № 301/5 (as amended and supplemented). URL: <https://zakon.rada.gov.ua/laws/show/z0249-15#Text> (date accessed: 25.02.2021).

² Науково-методичні рекомендації ... URL: <https://zakon.rada.gov.ua/laws/show/z0705-98#Text> (date accessed: 25.02.2021).

The same or another object (room, area, etc.) is recorded on these photographs (movies, videos) provided for the examination?

So, if while trace evidence analysis there is a reference to the object (handprints), then in this case we have a reference to the carrier (photo and video image). In accordance with paragraph 18.1 of the Recommendations, the main task of the portrait examination is the identification of the person (corpse) by a photograph (photographic negative) and video.

Paragraph 18.3 and 18.4 of the recommendation stipulates that *the comparative materials for the identification of a person by a photograph may be authentic photographs and video recordings of this person (amateur, professional, as well as experimental). It is advisable that among the comparative samples were images close to the time studied and the angle of the image, and identification of the corpse is carried out by comparing a photograph of the corpse with in-vivo images. Photographs of the corpse itself should be taken not only in the face, profile, but also in several other angles, because among the life photos may not be samples in which the person is depicted in the face or profile.*

As we can see, the face is mentioned only in the regulation of photographing the corpse, and the profile and several other angles are mentioned separately. Thus, it is quite possible to assume that in this case the identification of a person occurs not only by the image of the face. This is also confirmed by the name of the expert specialization 6.2: *Identification of a person by appearance on the basis of material images*: i.e., it is a question of identification of the person on features of appearance, thus the circle of these features is not limited to the person: it can be, in particular, the dorsum of a hand.

Conclusions. Thus, the study of images of the dorsum of the hand formally corresponds to several expert specializations. At the same time, there are strong arguments in favor of each expert specialization. On the one hand, according to the author, this allows experts of different specialties to study the image of the dorsum of the hand and provide a reasonable and objective conclusion. On the other hand, such a number of expert specializations in this type of study to some extent indicates the imperfection of the current system of expert specializations in Ukraine.

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Ю. Ю. Нізовцев

**Окремі проблемні питання методичного
забезпечення судово-експертних досліджень
зображень тильної сторони кистей рук**

Із розповсюдженням систем відеонагляду дедалі більшого значення набуває ідентифікація підозрюваних осіб за такими відеозаписами. Зважаючи на носіння масок, не завжди можна ідентифікувати особу за зображенням обличчя. Іще одним елементом зовнішності, який зазвичай не прикрито одягом, є тильна сторона кистей рук. Водночас методичне забезпечення експертного дослідження зображень кистей рук має певні прогалини. Метою статті є виявити та висвітлити наявні проблемні питання методичного забезпечення судово-експертного дослідження зображень тильної сторони кистей рук. Зазначено сучасні наукові напрацювання у цій галузі. Проведено аналіз експертних спеціальностей на предмет їх відповідності розглянутому виду досліджень. За результатом аналізу зроблено висновок, що дослідження зображень тильної сторони кистей рук наразі відповідає водночас декільком експертним спеціальностям. Також висловлено думку про недосконалість сучасної системи експертних спеціальностей в Україні.

Ключові слова: криміналістика, судова експертиза, дослідження зображень рук, експертна спеціальність, методичне забезпечення.

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**Отдельные проблемные вопросы методического обеспечения
судебно-экспертных исследований
изображений тыльной стороны кистей рук**

С распространением систем видеонаблюдения и повышением их качества всё большее значение приобретает идентификация подозреваемых по таким видеозаписям. Учитывая необходимость ношения защитных масок, обусловленную требованиями карантина, не всегда можно провести идентификацию по изображениям лиц. Другим элементом внешности, обычно

не прикрытым одеждой, являются кисти рук, а именно их тыльная сторона. Вместе с тем в методическом обеспечении экспертного исследования изображений кистей рук имеются некоторые пробелы. в статье рассмотрены отдельные проблемные вопросы научно-методического обеспечения судебно-экспертного исследования изображений тыльной стороны кистей рук. Упоминаются современные научные наработки в указанной области, а именно методические рекомендации «Идентификация личности по фотографическим изображениям кистей рук», подраздел 2.1.3 «Экспертиза следов тыльной стороны кисти руки» из учебного пособия «Судебные экспертизы в процессуальном праве Украины», а также методическое пособие, которое в настоящее время разрабатывает Украинский научно-исследовательский институт специальной техники и судебных экспертиз Службы безопасности Украины. Проведён анализ экспертных специальностей на предмет соответствия их рассматриваемому виду исследований. По результатам анализа сделан вывод, что исследование изображений тыльной стороны кистей рук в настоящее время одновременно соответствует нескольким экспертным специальностям. Также высказано мнение о несовершенстве современной системы экспертных специальностей в Украине.

Ключевые слова: криминалистика, судебная экспертиза, исследование изображений рук, экспертная специальность, методическое обеспечение.

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Contributor

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