Applying the Criminalistic Methods in Research of Historical Documents

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Abstract: The relevance of the problem stated in the article is due to the fact that often the establishment of the content of many historical documents requires the use of scientific and technical means and methods developed in forensic science. More often such sources are written documents, but there are also those that contain images of the external appearance of people whose role in historical events is considered crucial, but the authenticity of the image itself is questionable. The purpose of the article is to try to solve the problem of identification research of persons depicted in pictorial portraits, engraving images that are important for the history of a nation, state, on the basis of scientific achievements in the field of forensics and analysis of expert practice of portrait examination. The main importance in the study is given to the method of system analysis, which allows to systematize scientific knowledge about certain laws of the subject of theoretical foundations of expert research of various kinds of historical documents, to penetrate the essence of the investigated object, to more fully determine its properties, connections, structure. To conduct the study, the authors used methods of formal logic (analysis, synthesis, deduction, induction, analogy), as well as individual special forensic methods. The materials in this article may be useful for museum workers, historians, forensic experts and art historians, researchers focused on conducting research on pictorial portraits.

Keywords: portrait, identification, appearance, portrait research, forensic methods.

INTRODUCTION

From the end of the 20th century to the beginning of the 21st century, forensic scientists and practitioners quite reasonably raise the question of the emergence of new concepts of its subject and object, the expansion of its scientific interests and the practical application of forensic research. The problem of its significance is widely discussed, not only for collecting legally relevant information. Today, in connection with the development of forensic science, its scientific boundaries, spheres of influence are

changing, new directions and theories are emerging (Shepitko, 2002). This process is logical and it can be argued without reservation that modern forensics has become a unique and unified scientific entity through which the natural science and technical achievements of world society are transformed and used to establish facts that are significant from the point of view of jurisprudence in a wide variety of branches of science and practice. Forensic science has long and consistently gone beyond the framework of the fight against offenses and has been expanding substantively into the sphere of public relations. Forensics is not just a channel through which the achievements of science and technology are introduced into the investigative, judicial, advocate, notarial, archaeological, art history and other practices. This scientific and technical knowledge, attracted by forensics, interacting with each other and legal elements is gradually transformed into a system of knowledge with new integrative qualities (Goncharenko, 2004). The introduction into the research process of the achievements of modern science and technology, new forensic developments, the use of the extremely wide capabilities of computer technology provide forensics with perfect professional tools and opens up new opportunities for researching a wide variety of objects, in particular those that are important to fill existing gaps in history of country and people.

Nowadays, experts are contacted with art historians, archaeologists, historians, literary critics with a request for assistance in establishing facts relevant to resolving issues regarding authorship of literary and visual works, the time and place of creation of certain objects, and restoration of damaged images. Experts help establish the authenticity of works of art, autographs and manuscripts of famous personalities, authorship of historical texts and even musical manuscripts. In particular, it was the forensic experts who managed to solve the mystery of the first textbook on elementary geometry, namely, to establish that the author was the great mathematician Leonhard Euler. The authors of this article argue that forensic investigators do not undertake to carry out the identification of a person in the interests of criminal proceedings by his artistic image. This is due to the possibility of the author of the studied art portrait introducing his own perception of the appearance of the person he depicts, embellishing the individual features of the artist or concealing defects in the appearance to please the customer of the portrait, displaying the hidden meaning in the created image. During the pre-trial investigation and in the trial, where clear and unambiguous conclusions are needed, on the basis of which legal decisions are made, the expert's opinion should clearly and unequivocally reveal the issue of the identity of the person depicted and meet all the requirements for the sources of evidence. History also operates with evidence, but completely different demands are made on it. However, there is hardly any reason for historians to abandon the possibilities of forensic research. A study of the literature on the problems of portrait research allows us to state that the specifics of working with portraits – works of art – is the need, first of all, to clarify the essential characteristics of objects of study. This is the definition of the type of portrait, the skill level of the artist, the creative task that he solved by creating a portrait. Such data are not within the competence of a specialist in the field of forensic portrait examination, but they are necessary for the subsequent assessment of the completeness and reliability of the display of signs of appearance in a portrait and determine the possibility of solving the problem. This information is available to art historians studying the work of a certain artist, if the authorship of the portrait is known, or of the time when the portrait was created and the school to which the artist could belong. It is

also advisable to know the opinion of an experienced portrait painter on the skill level of the performer of the portrait being studied.

The scientific works of N.P. Kornyshev (2015) and D.O. Tsypkin (2013) were devoted to considering the possibilities of modern forensic methods and techniques, as well as presenting the results of specific expert studies in solving problems of studying historical documents. The issues of technical and technological expertise of archaeological sites and museum objects were devoted to the scientific works of V.B. Bessonov et al. (2016), I.A. Grigorieva et al. (2013) as well as I.A. Saprykina, L.A. Pelgunova (2015). The problem of identifying individuals by signs of appearance were studied by: I.F. Vinnichenko (Snetkov et al., 1984), V.V. Vorontsova (Zinin, Vorontsova, 2019), A.M. Zinin (2013), I.N. Podvolotskii (Zinin, Podvolotskii, 2014). The problems of expert, restoration and source study of documents and photo portraits, as well as the theory and practice of identifying persons depicted in portraits, are devoted to the work of A.M. Zinin (2010a; 2010b; 2010c; 2012; 2014; 2015), E.M. Shepilova, Yu.O. Yesaulenko (2014). At the same time, questions of establishing historical characters from graphic images and artistic portraits are not often considered, and the personification of one of the figures of the historical past of Ukraine – hetman Ivan Mazepa was not made at all and such an attempt was made for the first time.

Methods

In the research process, the following methods were used: theoretical (analysis; synthesis; deduction; induction; analogies; modeling); empirical (content analysis); experimental (ascertaining, formative); special forensic methods (visual comparison of signs; measurement by superimposing a coordinate grid on the image; comparison of relative values – dimensional ratios); methods of mathematical statistics. The experimental base of the research was the Department of Criminalistics of the National Academy of the Security Service of Ukraine. During conducting a study of photographic reproductions of 6 portraits and one engraving provided by customers, we solved two groups of problems related to each other: diagnostic and identification. Since the goal of our study was to establish the identity of a person (according to the customer of the study, presumably the historical character of hetman Ivan Mazepa), depicted on different media, we took into account the technological features of obtaining each of the images, which can affect the ability to solve the identification problem. This task was complicated by the fact that we had to request additional materials, in particular, the available verbal descriptions of the appearance of Ivan Mazepa, preserved in various written historical documents. At the same time, we conducted a diagnostic study, where an independent question was the establishment of the age group of the persons depicted in the portraits and the determination of the anthropological type. Such recognition made it possible to determine the approximate framework of one of the main racial types as the Europid and the age category of the depicted person. The carriers of portrait information, the establishment of the conditions for the transfer of portrait information through a specific medium, were also subjected to diagnostic research. Such diagnostic studies of portrait information media were combined with studies aimed at determining the suitability of each of the information media on the signs of Ivan Mazepa's appearance for subsequent identification. During solving the second identification problem, the study of the problem was carried out in three stages.

At the first stage, the conditions for displaying signs of appearance on the presented photographic reproductions of 6 portraits and engravings were studied, the suitability of objects for identification was determined, objects were prepared for this process, and research methods were selected on this basis. At this stage, we carefully studied the portraits of men depicted in the presented 6 portraits and one engraving, determined their anthropological type, age, etc. At the same time, it was taken into account that the painted portraits of men presented for comparison and engraving cannot be considered a completely objective source of information. The very form of these works, the tasks that the authors set themselves, the level of their preparedness for creating a portrait significantly affected the reliability of the display of signs of a particular person. Since portraits depicted men of different ages, we took into account that so-called age signs may be associated with portraits of older men, which are primarily associated with changes in the soft tissues of the face and skin, namely, the appearance of wrinkles, increased severity of skin folds and etc. At the second stage – the stage of a separate study, the mapping of individual appearance elements on each of the images was studied, the signs of these elements and their quality were established, the identification value of the revealed signs was evaluated. In accordance with the technique of portrait identification developed in forensics, when comparing the features of the elements of the appearance of the depicted persons, it is recommended to use methods and techniques that make this process objective. These are methods such as:

– overlaying images to determine their correspondence to each other;

– the study of the proportions of the face and the relative sizes of its elements using a coordinate grid, which is printed on reproductions of a photographic portrait;

– matching parts of images; a method of studying biological asymmetry, in which the signs of the individual elements of the right and left halves of the head and face are compared.

However, in our study, these methods were not used, since the portraits of the faces depicted on them had different angles. For this reason, the study was conducted by visual image matching. We alternately compared the signs of each of the elements of appearance. The identification significance of the individual elements and their characteristics, the expressiveness of the display in each portrait, the relationship with other elements and the influence of individual characteristics on the general content were taken into account. In fact, we used the verbal portrait technique developed in forensics and widely used in practice. At the third stage, the experimental work was completed, the theoretical and practical conclusions were clarified, and the results obtained were generalized and systematized. This made it possible to formulate a general conclusion throughout the study.

Results and discussion

To conduct expert research in the study of historical documents, the appearance of a person can be represented in the form of works of fine art and photographic portraits. Portraits as works of fine art are sources that provide a fuller picture of both momentary events in the life of peoples and participants in events, those whose external appearance reflects past tenses. In the study of portraits as historical documents, the tasks of their attribution are solved. Such attribution requires a qualified specialist to

conduct a study with the definition of the following basic parameters of a painting: establishing the authenticity of the work; determination of time, place of creation; indication of the author and work technique; determination of belonging to one or another style, direction in art (Enfenjyan, 2015). Most of the portraits stored in museums and art galleries are attributed – their authors and the names of the depicted people are identified, but there are also those that are accompanied by the inscription "portrait of the unknown". However, in complex and controversial cases, museum workers turn to forensic scientists to confirm or deny their version of the depicted character. In such situations, it is advisable to use the forensic technique of identifying a person by signs of appearance, designed to solve these problems in the study of portrait images. It should be borne in mind that this technique was developed for situations of identification of a person imprinted on an identification photograph. Therefore, forensic scientists draw attention to the fact that the application of such a technique in situations of studying portraits as types of historical documents, especially works of fine art, needs adjustments, and sometimes quite significant ones (Zinin, 2010a).

Knowing the laws of changing the appearance of a person, the relative stability of many signs of appearance over a certain period of time allows forensics to carry out identification of the person. Forensics has methods for studying the external appearance developed by the sciences of anthropology, genetics, normal and plastic anatomy, and mathematical statistics. In addition, special techniques based on the use of methods of photography, optics, and geometry have been developed to study the displays of the human appearance. To date, the scientific basis of forensic identification based on appearance has been developed, which makes it possible to establish a person's identity with the help of expert studies, where the objects are photographic images of individuals. However, the use of this technique for painted portraits, sculptural images is very difficult. Such portraits, despite the fact that they are designed to capture the image of a person, have fundamental differences from photographic portraits. The completeness and reliability of the display of signs of appearance on portraits-works of fine art is determined by: type of portrait – sketch, sketch, completed work; level of skill of the artist; artist's creative task. Along with portraits that convey to a greater or lesser degree of accuracy the individuality of the model, portraits are created in which the appearance of a particular person is used to prepare an image of a certain type. When creating such portraits, the artist uses, among the signs of the appearance of the model, those that are dominant in the appearance of a given person as a model and correspond to the artist's idea of the type being created. This characteristic of the essence of portraits-works of fine art, as carriers of information about the signs of appearance, leads to the problem of determining the content of the totality of signs that allows you to solve the identification problem to establish a specific person. Very indicative in this regard are the studies conducted in Lviv of the original portrait of a man (presumably by M.S. Schepkin), written by T.H. Shevchenko. Examination of the portrait in ultraviolet and infrared rays revealed neither the author's signature, nor the date the portrait was completed. Conducted art research, an unequivocal conclusion was obtained that this was the work of T.H. Shevchenko. When conducting studies by art critics, attention was paid to the accuracy of reproducing the signs of the appearance of the persons depicted in the portraits, which was characteristic of the later works of T.H. Shevchenko. One of the tasks associated with the identification of the face depicted in the portrait was to compare it with the other 14 portraits of M.S. Schepkin and their reproductions obtained from various museums, as well as with the "verbal portrait" of M.S. Schepkin from the

memoirs of his contemporaries. In addition, a photograph taken in the 1950s was chosen as a comparative material, in which the image of the head was as close as possible to that of the man's head in a pictorial portrait. In the process of researching a pictorial portrait and photograph, criminalistic methods such as overlaying, combining images were used, which made it possible to compare the proportions of the face, the interposition of their basic elements. As a result of the study, it was found that the pictorial portrait, made by T.H. Shevchenko, depicts exactly M.S. Schepkin (Zinin, 2012).

Forensic scientists using the appropriate methods of portrait examinations investigated the sculptural images of the head of the statue of the Egyptian pharaoh Khafren (the builder of the second pyramid of Giza) and the Egyptian sphinx. The research carried out by scientists made it possible to identify factors affecting the reliability of expert conclusions. In particular, it is proved that the facial part of a person is asymmetric, i.e. signs of paired elements, the arrangement of elements of the right and left halves is different. This mismatch has a different severity – from minor to significant. A similar feature plays an important role in the production of portrait forensic research. In the research process, forensic methods were used: determination of biological symmetry by compiling an image from the right and left halves of the face (one of the halves is mirrored), a method of comparative analysis of anthropometric points; a method for applying a translucent positive image to an opaque positive; the method of combining profile translucent images among themselves, etc. As a result of a forensic portrait research, it was possible to refute the conclusion of historians regarding the similarity of the face of the sphinx with the face of the pharaoh (Pichuhin, 2013). Ukrainian forensic investigators do not stand aside from these processes, which as experts are also addressed by various scholars of the historical heritage of our country. The authors of this article also managed to carry out several such, essentially criminalistic, but not related to the investigation of crimes, studies of portrait images. Historical facts are studied using various historical documents. At the same time, great attention is paid not only to events, but also to the identities of their participants. From historical sources it is known that by order of the Russian Tsar Peter the Great, all intravital images of the Ukrainian hetman Ivan Mazepa, who in autocratic Russia was considered a traitor to the interests of the Russian State, were destroyed. In this way, they tried to erase from the pages of history any information about a rather contradictory, ambiguously perceived by many, but having a certain value for the history of Ukraine personality. Only fragmentary written sketches in scattered literary sources that describe the appearance of Ivan Mazepa and several portraits of this military commander and politician have survived. Images on existing portraits contain significant differences and at the same time, none of them has the proper personification, and therefore can be considered controversial. At the request of historians, a forensic identification study of seven male portraits was carried out with the likely depiction of hetman Ivan Mazepa on them, stored in different collections.

Like any other expert study, we carried this one out in a certain order. The first (preparatory) stage was devoted to studying the conditions for displaying signs of appearance on the presented photographic reproductions of 6 portraits and engravings, determining the suitability of objects for identification, preparing objects for this process, and choosing research methods on this basis. Controversial portraits suitable for research have such characteristics. Portrait No 1, taken from the collection of V. Butovich, depicts a man of solid build, looking 40-55 years old, Caucasian, whose face is turned left in the portrait, his right ear is half open. Portrait No 2, taken from Samiil

Velichko's annals, depicts a thin-bodied man aged 50-65, a Caucasian race, whose face is turned left in the portrait, his ears are not displayed, and the outline of the hairline is covered with a hat. The details of this portrait do not have a clear image, the face is small due to the long-range plan, in some fragments the contour elements do not have clear boundaries. In portrait No 3, the so-called "Lavra Portrait of Ivan Mazepa" according to many historians as the most likely image of a hetman, a man of medium build, 35-45 years old, is Caucasian. The face in the portrait is turned to the left, the right ear is completely open, the contour of the hairline is covered with a hat. Portrait No 4, an engraving of Iohannes Mazeppa from the magazine "Die Europaische Fama" by Martin Bernangrotg, depicts a thin-bodied man aged 50-65 years, a Caucasian race. The face in the portrait is turned left, the right ear is fully open.

Portrait No 5 depicts a man in iron armor with the St. Andrew's ribbon, aged 35-45 years, of the Caucasian race. The face in the portrait is turned left, the right ear is fully open. Portrait No 6, kept at the Academy of Arts and titled "Nikitsky" or "Portrait of a floor hetman", depicts a man of medium build, 55–65 years old, Caucasian. The face in the portrait is turned to the right, the left ear is fully open. Portrait No 7 by Ivan Zemlyukov depicts a man of medium build, 30-35 years old, Caucasian, the face in the portrait is turned to the right, the left ear is fully open. The images presented for the study were photographic copies of hand-drawn portraits and prints made on 10cm x 15cm photo paper and brought to about one large-scale image in terms of face size. Portraits No 1, 5, 6, 7 are colored, and No 2, 3, 4 are black and white (Figure 1). The study was carried out with the aim of establishing the identity of the persons depicted in these portraits. Since it has not been reliably established which of the portraits depicts the hetman Ivan Mazepa, then raising the question of the image in certain portraits of a specific historical person would be incorrect and go beyond the scope of forensic research. Therefore, the question was asked: one or different faces are depicted in six portraits submitted for research, and one engraving image. At the second stage (separate study), each portrait was studied separately. It was necessary to make an idea of: how much this type of display of appearance reliably reproduces it; whether the individual signs of appearance that are individualized for a given person form the portrait, that is, to assess the completeness of the display of signs of appearance; to identify among them those that individualize a person, how stable are the differences revealed by comparing the faces depicted in the portraits, and what is the origin of these differences. Guidelines for the portrait identification examination recommended the use of: visual comparison of signs; the use of measurements by superimposing a coordinate grid on the image; comparison of relative values – dimensional ratios; combination of images in order to study the biological asymmetry of faces; overlapping images on top of each other; probabilistic-statistical method. As a rule, specialists strive to use all of the above methods, while a number of them can be used only if the head position of the persons depicted in the portraits is the same. The complexity of our study was that all the objects are hand-drawn portraits or engraving made with right (portraits No 6-7) and left (portraits No 1-5) head rotation. The use of a method that allows one to check the biological asymmetry of the face of all portraits depicted in the portraits was impractical, since this method is used when face images are strictly full face and provided that a relatively short period of time elapses between capturing faces in the portraits being compared, during which there were no significant age-related changes in signs of appearance. It was also impractical to conduct research using the method of

masks, the probabilistic-statistical mathematical method and the method of developing algorithms (Hora, Kolesnyk, 2014).

The current practice of attribution of persons depicted in portraits, prints, drawings shows that the same signs of appearance are examined and a conclusion is made about their coincidence or difference. Formally, this is to some extent similar to the procedure of expert identification research. In forensics, such a comparison should be preceded by a study of these properties of a person's appearance and its reflection in a particular case. This should be the identification of a set of features, including group characteristics of a certain type of appearance, then a set of dominant features. These two groups of signs make it possible to talk about the possibility of recognition in the portrait of a specific person who served as a model for the artist. If it is also possible to identify signs that individualize a particular person, then a solution to the identification problem can be considered real. Moreover, the absence in this group of signs of everything that is possible in this display, as if it were photographic, characterizing the structure of the small features of the face elements, and the presence of only part of them does not seem to impede the conclusion about the identity. Considering the features of distinguishing a complex of signs, we can talk about an analogy with identifying a person by signs of appearance on the basis of a mental image formed in the memory of an eyewitness. In it are found signs that dominate the external appearance of a person, as well as individualizing, without which recognition is impossible. Moreover, the totality of individual characteristics is never completely complete. It includes signs that are distinguished by clarity and the ability to be displayed in a mental image. Among the individual features that must be reflected in the portrait as a work of art include those that meet the criterion of visibility, i.e. the ability to noticeably distinguish a given person from other people like him (Zinin, 2010b).

The image analysis method is the first step in the study, but sometimes a situation is possible when image analysis is the basic method of research. Starting to analyze the signs of the persons depicted in the presented portraits and engravings, we tried to identify the signs that dominate the appearance of each of these faces: characterizing the internal proportions of the head and face; correlation of elements of appearance with each other; signs that differ from their average values. After identifying the dominant aggregate, we identified features that belong to the category of features and meet the criterion of visibility. A visual comparison established the coincidence of individual signs of the elements of the appearance of the faces depicted in portraits No 1, No 4, No 5. Matches were established by: the shape, size and configuration of the eyebrows; the size and shape of the nose; the width and shape of the tip of the nose; contour of the border of the lower lip; height and shape of the chin; the shape and thickness of the earlobe; size and contour of the auricle; the shape, size of the palpebral fissure and the degree of overhang of the upper eyelid; shape and end point of eyebrows. The analysis ended with the identification of the differing features that always occur when studying portraits as works of art. In particular, a difference was established in the expressiveness of the transverse groove on the chin of the persons depicted in portraits No 1 and No 5. Such a difference in the image of the face is not significant and may have a subjective character, due to the personal perception of the artist, or it may be associated with a significant the time difference of the image of a certain person in different portraits, with age-related changes in appearance.

Portrait No 1

Portrait No 2

Portrait No 3

Portrait No 4

Portrait No 5

Portrait No 6

Portrait No 7

Figure 1. Visually compared portraits No 1, No 4, No 5

The complexity of our study consisted in the fact that the study was presented not the original portraits, but their photocopies. The objective possibilities of the cognitive essence of the specialist during the study are significantly reduced. A

photographic image can generally distort the actual appearance of an object due to the low technological capabilities of shooting, inaccuracies in color reproduction, shooting angle, subject illumination, etc. In fact, in this case, the specialist does not examine the object itself with respect to which the question is posed, but its documentary copy. The description of the portrait presented for research is also of certain importance. When describing the Portrait No 1, the museum staff provided information that it had undergone changes and there were traces of layering of paints on the original surface. Therefore, we raised the question of conducting art studies, in particular, technical and technological research. In such cases, in the expert opinion, it is necessary to provide convincing evidence that can be obtained at present only with the help of technical and analytical types of research. The latter include the analysis of the texture of the painting layer, its study in infrared and ultraviolet radiation (identification of late interventions in the structure of the work), X-ray examination (detection of hidden restorations and fakes) and with a microscope. In the process of microscopic examination, it is possible to identify areas of different times, corrections, traces of records, restoration and natural damage, etc. The primer, its composition and method of application are separately studied; the painting layer, its pigment composition and individual layers, subsequent restoration layers, as well as a sketch if it is present under the painting. X-ray and fluoroscopic methods will make it possible to obtain x-ray images of this portrait, as well as to see the actual image under a paint layer, if it is preserved. Certainly, the study we conducted at the request of historical journalists did not claim to be a full-fledged expert study. It must be carried out comprehensively together with experts in the field of art criticism expertise, which is what we drew the attention of “customers”.

Conclusions

Our and similar researches carried out by other forensic investigators should be comprehensive. It has been established that mechanical borrowing of the method of photo portrait identification of persons by signs of appearance, developed in forensics, into the methods of identification of persons by portrait, engraving, sculptural images leads to the subjectivity of the study. The identification complex of signs formed by specialists in the field of forensic research of a person’s appearance, used to justify the identity of the compared persons according to pictorial portraits, engraving and other artistic images, does not have sufficient identification significance, since the included signs, as a rule, belong to group ones. In addition, for a number of features, the studied portraits that are not comparable can be compared. In our opinion, only a mutual complement of knowledge in the field of forensic portrait identification on the basis of appearance with knowledge in the field of fine art will ensure the reliability of conclusions based on research results. Such a study should be comprehensive in nature, since it is necessary to assess the influence of the features of the portrait technique on the display of signs of the appearance of a person imprinted on it. In this case, it will be advisable to develop special guidelines on the possibilities of using the techniques of forensic portrait identification for the attribution of works of fine art. A separate role in such studies can be assigned to historians, whose information may be important for the formation of expert conclusions. Issues of a comprehensive study of portraits – works of fine art are becoming relevant and resolved today within the same expert organization. The materials in this article may be useful for museum workers, historians, forensic experts and art historians, researchers focused on conducting expert research on

portraits – works of fine art. In the research process, new questions and problems arose that needed to be addressed. It is necessary to continue research on the development of forensic portrait identification techniques for the attribution of works of fine art and the solution of the problem of identification studies of persons depicted in pictorial portraits, engraving.

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