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Establishment Of The Fact Of Executing Handwritten Manuscripts And Notes With Unusual (Left) Hand

Abstract: The research paper outlines principle issues arising in solution of identification and diagnostic tasks of forensic handwriting examination when performing handwritten manuscripts with left hand. De-automation of the writer's writing skills is considered. Attention is drawn to factors that affect change in handwriting. On the basis of specialized literature and thorough analysis of forensic experts' conclusions, common and individual features of handwriting and signatures inherent in left-hand writing have been singled out.

Emphasis have been made on main tasks of forensic expert at the stages of research, in particular while preliminary research on manuscripts executed in unusual conditions. Peculiarities of evaluation of the set of identified features and formulation of conclusions with a different specificity level given overall decrease in the degree of proficiency in handwritings among population are emphasized.

Key words: unusual conditions, change in handwriting, left-hand writing skills, diagnostic tasks.

Research Problem Formulation. Within criminal and civil proceedings, in which documents are viewed as primary evidence, there is a necessity in ordering forensic examinations, in particular forensic handwriting examination, where diagnostic tasks are of paramount importance.

As is known, diagnostic tasks in forensic handwriting examination include establishment of external circumstances and conditions of execution of manuscripts (signatures) and determination of the executor's¹ inner state. In the course of expert research, certain features are identified which cannot be established while identification tasks solution. Thus, it is essential for a forensic expert to determine factors affecting the writing process, perform research in the availability of specific samples or in their lack. At the same time, typical tasks addressed to a forensic expert are associated with the influence of confounding factors in execution of manuscript, unusual state of a writing person, execution of handwritten manuscript with deliberately distorted handwriting. One of the types of intentional change by the

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Contributors

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Declaration of Competing Interest

The author declare that they have no conflict of interest.

¹ Винберг Л.А., Шванкова М.В. Почерковедческая экспертиза: учебник для факультетов и отделений подготовки экспертов-криминалистов вузов МВД СССР / под ред. Р.С. Белкина. Волгоград: Научно-исслед. и редакционно-издат. отдел, 1997. 208 с.

executor of their handwriting is execution of handwritten manuscript (notes, signatures) with unusual (left) hand.

Change in a handwriting regardless of whether it is deliberate or not is always connected with the change in writing skills already acquired by a person. Execution of notes usually relates to de-automation in writing skill developed in a writer. Depending on factors affecting change in handwriting (deliberate distortion of their handwriting, imitation of another person's handwriting, etc.), writing skills change to a greater or lesser extent. The degree of features distortion depends on both consistency and variability of the executor's handwriting and the nature of conditions influencing change in skills. However, features that have not undergone change are usually inherent in notes, since full re-development of stereotypical movements system does not take place.

Analysis of publications where this problem solution is initiated.

The issue of ordering and conducting forensic examinations has been repeatedly emphasized in research papers of scientists-criminalists, such as: L.Iu. Arotsker, R.S. Bielkin, A.I. Vinberh, V.H. Honcharenko, Z.I. Kirsanova, N.I. Klymenko, A.I. Kolonutova, A.A. Kupriianova, V.V. Lipovskyi, V.K. Lysychenko, A.I. Mantsvietova, A.I. Melnykova, Z.S. Milenevska, A.P. Moisieiev, V.F. Orlova, M.V. Salteviskyi, N.H. Sakharova, M.Ia. Sehai, I.Ia. Fridman, O.R. Shliakhov, S.A. Tsypeniuk, etc. Issues of forensic science as one of the forms of using specific expertise have been studied in doctoral dissertations by O.M. Moisieiev, I.A. Petrova, I.V. Pyroh, M.H. Shcherbakovskyi, E.B. Simakova-Yefremian, S.V. Yevdokimenko. Undoubtedly, these scientists have made a substantial contribution in research development and methodology of forensic handwriting examination. However, practice indicates a complicated process of diagnostic research that oftentimes ends up in impossibility of formulating a conclusion as a categorical one. It necessitates further outline in research papers.

The Article aim is to establish and evaluate a set of features inherent in the process of writing with another (unusual) hand, in particular, with left hand.

Main Content Presentation. The writing process with a change in usual writing hand is distinguished by a performer's controlled movements devoid of automation. In order to execute notes with left hand, a person should develop motor skills of such a writing independently, that is to create a new variant of their handwriting.



Signatures executed with unusual left hand (on the left); usual right hand (on the right).

When executing notes with left hand, there is a significant change in common features: proficiency, movements coordination, pace, form, size, handwriting distance, placement, tilt, connectivity, pressure. As a rule, they become inconsistent. Practice of studying expert conclusions shows that

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ВСТАНОВЛЕННЯ ФАКТУ ВИКОНАННЯ РУКОПИСНИХ ТЕКСТІВ ТА ПІДПИСІВ НЕЗВИЧНОЮ ДЛЯ ПИСЬМА (ЛІВООЮ) РУКОЮ

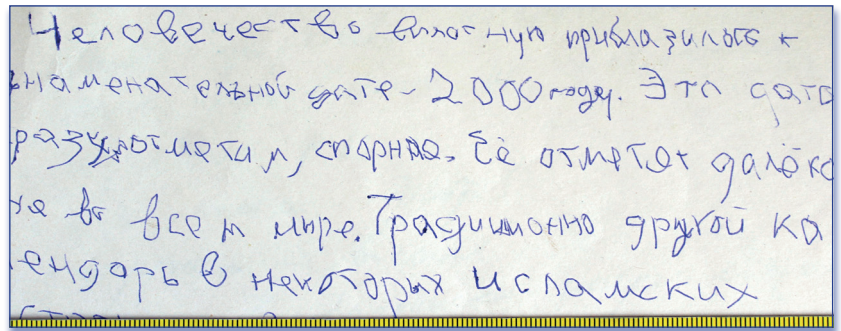
Аннотація: В науковій статті розглянуто основні проблеми, які виникають під час вирішення ідентифікаційних та діагностичних завдань почеркознавчої експертизи при виконанні рукописів незвичною для письма (лівою) рукою. Розглянуто деавтоматизацію сформованої у пишучої особи навички письма. Привернуто увагу до факторів, які впливають на зміну почерку. На підставі вивчення спеціалізованої літератури та ґрунтовному аналізі висновків судових експертів було виокремлено загальні та окремі ознаки почерку та підписів, які притаманні ліворучному письму.

Висвітлено основні задачі експерта на різних стадіях, зокрема, на попередньому дослідженні рукописів, виконаних в незвичних умовах. Акцентовано на поділі ознак почерку та відмінностях тих, що характеризують почерк незвичної лівої руки, від тих, що притаманні маловиробленому почерку і почеркам осіб похилого та старечого віку, хворим особам, а також від ознак, які відображені в результаті навмисного зниження ступеню виробленості почерку. Для більшої наочності проілюстровано дзеркальність, викривлення в штрихах письмових знаків, різноманітну будову одноіменних знаків, їх наближення до типових прописів, спрощення або ускладнення, відсутність зв'язності між літерами та елементами літер тощо. Зазначено особливості оцінки комплексу встановлених ознак та формування висновків різного ступеню конкретизації, враховуючи загальне зниження ступеня виробленості почерків населення.

Ключові слова: незвичні умови, зміна почерку, навички ліворучного письма, діагностичні завдання.

change in such features as tilt, size, handwriting distance, connectivity of writing characters is relatively monotonous among all executors. Similarly, common features of written characters are altered.

Earlier scientists also classified specific features of the left-hand writing: movements non-coordination that manifests itself in oval and joining elements of letters; slow writing pace; mirroring (direction opposite to the given), inherent in distortion of both letters and their elements; increase in the length of horizontal movements when executing final parts of letter elements; letters structure (simplified, in block letters); type of joining letters: lacking or condensed; winding form of line, etc.². However, in conditions of rapid spread of electronic documents, against the background of overall decrease in the degree of proficiency in citizens' handwriting, the indicated above features are most prominently observed.



Piece of the left-hand writing

Manuscripts executed with unusual left-handed handwriting resemble manuscripts executed with not sufficiently developed right-hand handwriting or with a deliberately reduced degree of its proficiency, as well as ataxic handwriting, that is, handwriting that has been altered due to age-related changes (elderly and old age) or morbid changes in the body.

When researching manuscripts executed with unusual (left) hand, researchers reasonably suggest taking into account what differs from them:

- in insufficiently developed handwriting, highly pronounced curvature and angularity of strokes are not reflected or absent at all. Along with simple structure letters, complex structure letters are joined in a simplified or fanciful way;
- there is no "mirroring" in handwriting executed with impaired movement coordination, a relatively consistent connection of letters can be traced throughout a text;
- in handwritings changed in another way, i.e. when handwriting is deliberately altered (cursive masking of one's own handwriting; imitation of a printed font; imitation of another person's handwriting), execution of the text with well-developed and automated movements³ is observed.

To establish an act of executing notes and signatures with unusual (left) hand, it is vital to identify a set of features characterizing handwriting executed with unusual (left) hand.

² Бідняк Г.С. Теорія і практика використання спеціальних знань при розслідуванні шахрайств: монографія. Дніпро: Дніпропетровський державний університет внутрішніх справ, 2019. 170 с.

³ Ковальчук З. А., Липовский В. В., Меленевская З. С. Образцы экспертных заключений. Судебное почерковедение. Киев-1995 МВД Украины Экспертно-криминалистическое управление. 164 с.



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**ESTABLISHMENT OF THE
FACT OF EXECUTING
HANDWRITTEN
MANUSCRIPTS AND NOTES
WITH UNUSUAL (LEFT) HAND**

Abstract. The research paper outlines principle issues that arise in solution of identification and diagnostic tasks of forensic handwriting examination when executing handwritten manuscripts with unusual (left) hand. De-automation of the writer's writing skills is considered. Factors that influence change in handwriting are outlined. Based on the study of specialized literature and a thorough analysis of conclusions of forensic experts, common and individual features in handwriting and signatures have been identified, which are characteristic only of left-handed writing.

Emphasis have been made on main tasks of forensic expert at the stages of research, in particular while preliminary research on manuscripts executed in unusual conditions. Attention is drawn to separation and difference of handwriting features that characterize handwriting of unusual (left) hand from features inherent in underdeveloped handwriting and handwriting of the elderly and old, sick people, as well as from features reflected as a result deliberate decrease in the degree of handwriting proficiency. For greater clarity, the authors illustrated «mirroring», distortion in strokes of written characters, different structure of the same characters, their approximation to typical cursive, simplification and complication, lack of connectivity between letters and their elements, etc. Peculiarities of evaluation of the set of established features and development of conclusions with a different specificity level given overall decrease in the degree of proficiency in handwritings among population are emphasized.

Key words: unusual conditions, change in handwriting, left-hand writing skills, diagnostic tasks.

During preliminary research on manuscripts executed in unusual conditions, the forensic expert's task is to separate features of handwriting that characterize handwriting with unusual left-handed writing from features inherent in insufficiently developed handwriting and handwriting of the elderly and old age, sick persons, as well as from features reflected as a result of a deliberate decrease in the degree of handwriting proficiency.

In the course of thorough research on external examination of handwritten manuscript as a whole and of all written characters individually and analysis of features characterizing the system of movements, emphasis should be made on such separate features that characterize unusual (left) hand:

- mirroring in elements of written characters, a change in direction of movements from the given to the opposite while executing the whole element or any part of it. Most frequently, during execution of letters «а», «б», «в», «д», «о» and numbers, mirroring is observed in whole or in part when executing initial and final parts of elements; in change of movements when executing superscript elements (as a rule, below the line), additional strokes (from right to left in the letters «т», «п», «й»). Final strokes of letters and punctuation marks in left-handed handwriting are significantly longer in length (final elements are elongated; the dot takes the form of the comma) of movements compared to ordinary handwriting. Commas are written from left to right;

- distortion of strokes in letters manifested in the winding and curvature of oval and rectilinear elements, angularity in places of change in movements direction. These elements occur in all cases of unusual left-handed handwriting and are one of the basic and most characteristic features of left-handed handwriting.

However, attention should be drawn to inconsistency in some common features:

- inequality in size of letters or numbers, which have been executed with a different movement length vertically (from medium to large or small), and in specific cases inequality in size of words. With training and thorough execution, the height of written characters does not always increase in handwritten manuscripts; it vice versa sometimes decreases; tilt inconsistency reflected in different inclination angles of written characters or individual elements. With overall predominance of the left-tilted direction of movements of the longitudinal axes in written characters, also individual letters (numbers) or their elements with vertical or right-tilted longitudinal axes are observed in notes. Left-handed handwriting becomes more vertical in contrast to ordinary right-handed handwriting;

- irregularity of placement and distance of written characters and their placement in relation to each other (placement close to each, decrease in horizontal length, placement: narrow or at a long distance, increase in horizontal length, placement: wide), distance: from large to medium or small;

- decrease and irregularity in connectivity, very connected writing (type of connection) of many elements in written characters is replaced by condensed writing (type of connection). The majority of letters or their elements are executed independently of the preceding and following ones, but with a generally low degree of connectivity in written characters, there are words or parts of words (3 and more characters, 4-9 letters can be linked in individual words) written with uninterrupted movements;

- winding of a line in a handwritten manuscript, many lines in the manuscript possess a wavy, irregular shape;

- a change in movements structure, their full deformation takes place, joining strokes are also altered. New versions of letters appear, predominately block letters or similar to cursive, as well as due to complication or simplification of variants, the letters «г» and «ч» are executed in the form of the Latin letter “z”, the period is written as the comma;



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**CONSTATATION DU FAIT
D'EXÉCUTION DE TEXTES
ET DE SIGNATURES
MANUSCRITES AVEC
UNE MAIN D'ÉCRITURE
INHABITUELLE (GAUCHE)**

Résumé : L'auteur de l'article scientifique examine les principaux problèmes qui se posent lors de la résolution des tâches d'identification et de diagnostic de l'examen de l'écriture manuscrite lors de la rédaction de manuscrits avec une main inhabituelle (gauche) pour l'écriture. La désautomatisation de la compétence d'écriture formée par un écrivain est considérée. L'attention est attirée sur les facteurs qui influencent le changement d'écriture. Sur la base de l'étude de la littérature spécialisée et d'une analyse approfondie des conclusions des experts judiciaires, les signes généraux et individuels de l'écriture manuscrite et des signatures, caractéristiques de l'écriture de la main gauche ont été distingués.

Les principales tâches d'expert judiciaire à différentes étapes sont mises en évidence, en particulier, la recherche préliminaire de manuscrits effectuée dans des conditions inhabituelles. L'accent est mis sur la division des traits d'écriture et les différences entre ceux qui caractérisent l'écriture d'une main gauche, de ceux qui sont caractéristiques d'une écriture peu développée et l'écriture des personnes âgées, malades, ainsi que des caractéristiques qui se reflètent à la suite d'une diminution délibérée du degré de développement de l'écriture manuscrite. Pour plus de clarté, la réfection, distorsion dans les traits des signes écrits, diverses structures des signes du même nom, leur rapprochement avec des orthographes typiques, simplification ou la complication, le manque de lien entre les lettres et les éléments de lettres, etc., sont illustrés. Les particularités d'évaluation du complexe de signes établis et la formation de conclusions de divers degrés de spécification sont indiquées, compte tenu de la diminution générale du degré de production d'écriture manuscrite de la population.

Mots-clés : conditions inhabituelles, changement d'écriture, compétences en écriture gauchère, tâches de diagnostic.

– change in the width of the main and joining strokes due to increased pressure. When writing with the left hand, the pressure on the writing instrument increases, and therefore the width of strokes in written characters increases as well. The width of the main and joining strokes in almost all characters, as a rule, becomes the same;

– the pace of writing slows down, however, the pace of executing individual elements or their parts may remain fast⁴.

Certain features of handwritten notes (texts or signatures) executed with left hand stress the availability of particular features inherent in this type of writing. Analyzing expert conclusions and scientific literature, we determined that when changing the writing hand, variants of written characters executed in normal handwriting as well as new variants which in their configuration are more often similar to typical cursive are manifested in handwritten manuscripts. Graphic writing of written characters and their relative position undergo substantial changes. Multi-element letters are executed in a simplified variant, in some cases there are variants of new letters executed through imitation of block letters («а», «б», «т», «н», «п», «и», «х» etc.).

When executing initial and final parts of letters in the form of ovals, semi-ovals, loops, triangles, ellipses, form of movements due to change in movements direction that resulted from the lack of left-handed writing skills, becomes broken or winding. At the same time, the main basic form is preserved.

Direction of movements while execution of written characters and their elements largely remains unchanged in oval, semi-oval and loop elements of letters. However, individual parts of elements are executed in the opposite direction from the given one (mirroring), that is, changes in direction of movements which can be fully or partially mirrored. With diligent execution, when the executor follows the execution of written characters, mirroring is almost non-existent; and, on the contrary, with weakening of visual control and careless execution, mirroring increases.

The connection type of written characters and elements in unusual left-handed writing with uninterrupted movement during execution of letters and their elements is manifested in individual abrupt movements.

There is change in position of movements and their length when executing initial and final elements, as well as in position of the starting and ending points of movements in relation to line respectively.

Placement of starting and ending points of movements remains relatively consistent when executing letters and elements, excluding those elements that are partially or fully mirrored. If there are changes in this feature, it is most frequently reflected in the relative position of the starting and ending points of movements in relation to row line. Execution of oval or arc elements in letters (in the lack of mirroring) almost does not change in left-handed writing. On the contrary, position of the connection point of movements when executing written characters and elements while change in the writing hand relative to row line (excluding oval elements), which is associated with strokes^{5, 6, 7} size, is subject to substantial changes.

Having established a set of features, a forensic expert must evaluate them and draw a certain conclusion. In previous research papers, we wrote that in each specific case a forensic expert evaluates the volume and design of

⁴ Колонутова А.И. Исследование измененных почерков (письмо левой рукой) М., 1975. Библиотечка эксперта МВД СССР Всесоюзный научно-исследовательский институт, 31 с.

⁵ Винберг Л.А., Шванкова М.В. Почерковедческая экспертиза: учебник для факультетов и отделений подготовки экспертов-криминалистов вузов МВД СССР / под ред. Р.С. Белкина. Волгоград: Научно-исслед. и редакционно-издат. отдел, 1997. 208 с.

⁶ Колонутова А.И. Исследование измененных почерков (письмо левой рукой) М. 1975 Библиотечка эксперта МВД СССР Всесоюзный научно-исследовательский институт, 31 с.

⁷ Меленевська З. С., Свобода Є. Ю., Шаботенко А. І. Судово-почеркознавча експертиза. МВС України ДНДЕКЦ, КНУВС, Київ, 2007. 280 с.





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**FESTSTELLUNG DER
TATSACHE DER AUSFÜHRUNG
HANDSCHRIFTLICHER
MANUSKRIPTE UND NOTIZEN
MIT UNGEWÖHNLICHER
(LINKER) HAND**

Abstrakt. Die Forschungsarbeit skizziert prinzipielle Probleme, die sich bei der Lösung von Identifizierungs- und Diagnoseaufgaben der forensischen Handschriftprüfung bei der Ausführung handschriftlicher Manuskripte mit ungewöhnlicher (linker) Hand ergeben. Eine Deautomatisierung der Schreibfähigkeiten des Autors wird in Betracht gezogen. Faktoren, die die Veränderung der Handschrift beeinflussen, werden skizziert. Basierend auf dem Studium der Fachliteratur und einer gründlichen Analyse der Schlussfolgerungen von forensischen Experten wurden gemeinsame und individuelle Merkmale in Handschrift und Signatur identifiziert, die nur für linkshändiges Schreiben charakteristisch sind.

Der Schwerpunkt wurde auf die Hauptaufgaben des forensischen Sachverständigen in den Phasen der Recherche gelegt, insbesondere während der Vorrecherche von Manuskripten, die unter ungewöhnlichen Bedingungen erstellt wurden. Es wird auf die Trennung und den Unterschied von Handschriftmerkmalen hingewiesen, die die Handschrift einer ungewöhnlichen (linken) Hand charakterisieren, von Merkmalen, die der unterentwickelten Handschrift und der Handschrift älterer und alter, kranker Menschen eigen sind, sowie von Merkmalen, die sich als Ergebnis einer absichtlichen Verringerung des Grades widerspiegeln der Handschriftkompetenz. Zur besseren Verdeutlichung illustrierten die Autoren „Spiegelung“, Verzerrung in Strichen geschriebener Zeichen, unterschiedliche Struktur derselben Zeichen, ihre Annäherung an die typische Schreibschrift, Vereinfachung und Komplikation, fehlende Konnektivität zwischen Buchstaben und ihren Elementen usw. Besonderheiten der Bewertung von Hervorgehoben werden die Reihe etablierter Merkmale und die Entwicklung von Schlussfolgerungen mit einem anderen Spezifikationsniveau angesichts des allgemeinen Rückgangs des Grades der Beherrschung der Handschriften in der Bevölkerung.

Schlüsselwörter: ungewöhnliche Bedingungen, Veränderung der Handschrift, linkshändiges Schreiben, diagnostische Aufgaben.

graphic material they are working⁸ with. Conclusion is developed on the basis of a set of consistent individual features that coincide or differ, sufficient for compiling a specific conclusion, but not on the basis of features obviousness. It is impossible to foresee what conclusion will be when studying signatures depending on the method of their forgery (with imitation of another person's signature, on behalf of a fictitious person, execution from memory, etc.). Considering all the above factors, a conclusion may be either categorical (positive or negative) or probable, or completely exclude the possibility of identification⁹.

Conclusions. On the basis of scientists' research, relying on analysis of forensic expert practice, an attempt was made to single out a set of features inherent in left-handed writing, which include: mirroring, curvature and angularity in strokes of written characters, a varied structure of the same characters similar to typical cursive (however, with simplified and complicated variants of writing), lack of connectivity between letters and elements of letters, etc. In current conditions, against the background of overall decrease in citizens' writing-motor skills, identified features are more pronounced enabling to establish the fact of executing handwritten manuscript with change of the usual writing hand and identifying writer's personality.

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⁸ Бідняк Г.С. Особливості організаційно-підготовчих заходів до проведення почеркознавчого дослідження. Науковий вісник Дніпропетровського державного університету внутрішніх справ: збірник наукових праць. 2014. № 2 (71). С. 275-283.

⁹ Методика вирішення судово-почеркознавчих діагностичних завдань.укл.: Меленевська З.С., Шпакович Н.Г. ДНЕКЦ МВС України. К., 2017. 45 с.