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INVESTIGATION REPORT – FINGERPRINT EXAMINATION

Client: Theresa Franks, CEO
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Retention Date: December 20, 2006

Purpose: Review and offer comment and advice on a fingerprint analysis contained in the report “TERI’S FIND - A Forensic Study In Authentication” published by Peter Paul Biró, 2001-2006.

1. Overview of the Investigation

I found the report, “TERI’S FIND”, on the internet¹, and available in the public domain. The report is attributed to Peter Paul Biró and is dated 2001-2006. The document is Mr. Biró’s report on the forensic investigation he conducted to determine whether or not a painting known as “Teri’s Find” was created by Jackson Pollock.

There are many aspects to Mr. Biró’s investigation, one small part of which involves fingerprint analysis. My investigation makes no attempt to identify the person who painted “Teri’s Find”, nor offer any evidence for or contrary to Mr. Biró’s conclusion that the painting is a work of Jackson Pollock. This investigation is limited solely to the issue of the fingerprint analysis in that report.

In the “Teri’s Find” report, two images are referenced as fingerprints². They are labeled Fingerprint A and Fingerprint B.

Fingerprint A is cited in the report as being an image of a fingerprint from a known Pollock painting entitled “Red Painting Number 4”. Fingerprint B is cited as an image of a fingerprint on the verso of the painting known as “Teri’s Find”.

¹ <http://www.birofineartrestoration.com/Pollock/Pollock.htm>

² “Teri’s Find”, Part I, Section 6, pages 10-12

The images³ are placed side by side with numbered lines charting 12 characteristics of each image to demonstrate what Mr. Biró refers to as a match between both images.

The image of Fingerprint A is a monochrome black and white image, portraying a white image on a black or very dark background. The image of Fingerprint B is a color image, portraying a yellowish image on a green background, however, in an image in a prior figure in the report⁴, the color rendition is different and less contrasting than in the “chart”.

I have not reproduced the images or Mr. Biró’s charts in this report. The images, though in the public domain, are proprietary in nature and I do not have permission to reproduce them for this report. They are, however, available for viewing in his published report “Teri’s Find”.

Another section of the report⁵ refers to a fingerprint found on a paint can in the Pollock Krasner house. In his report, Mr. Biró reports that he made a match between this fingerprint and Fingerprint B from “Teri’s Find”.⁶ The report does not contain an image of the fingerprint or a chart demonstrating the match. In his report, Mr. Biró, notes that his identification work was verified by a Mr. Andre Turcotte. The report identifies Mr. Turcotte as an expert fingerprint examiner of “some thirty years service with the Royal Canadian Mounted Police”⁷

On December 26, 2006, I sent a letter to Mr. Biró explaining that I was retained by the Global Fine Art Registry (FAR) to review the fingerprint analysis Mr. Biró reported in “Teri’s Find”. I submitted a copy of the retention letter from FAR as well as a summary of my qualifications and experience in the field of fingerprint identification. In the letter I asked for access to original materials and to meet with him and Mr. Andre Turcotte to review the identification process.

On January 7, 2007, I received an electronic message from Mr. Biró (followed by a postal mail message) stating that “FAR is requesting access to privately held material and such matters reside with the owner”⁸ Mr. Biró referred me to Teri Horton, the owner of the painting “Teri’s Find”. He did not address the issue of reviewing his work or meeting with him or Mr. Turcotte.

On January 22, I sent an electronic message to Teri Horton providing my background and my reason for contact, requesting access to the painting “Teri’s Find”.

³ “Teri’s Find”, Part I, Section 6, Page 11, Figure 10

⁴ “Teri’s Find”, Part I, Section 6, page 11, Figure 9

⁵ “Teri’s Find”, Part II, pages 16 and 17

⁶ “Teri’s Find”, Part II, page 17 under the heading “The second fingerprint comparison – a match”

⁷ “Teri’s Find”, Part IV, “Fingerprint Comparison”

⁸ E-Mail Message from Peter Paul Biró to Thomas Hanley, January 7, 2007

Ms. Horton responded that she would not provide access except to a buyer of the painting.

My examination, therefore, was limited to materials published in the public domain, that being the fingerprint images published in the report "Teri's Find A Forensic Study In Authentication".

2. Background – Fingerprint Examination

Basics of Fingerprint Identification

On the palmer surfaces of the hands and fingers, and planter surfaces of the toes and feet, is skin texture unlike any other on the body. This skin texture consists of raised areas, called ridges. This textured skin creates friction and aids in gripping while less susceptible to abrasion injury than smooth skin. These ridges are generally referred to as "friction ridges".

The ridges themselves are not continuous lines, but are broken into a variety of characteristics referred to as "Galton Details," named after an early scientist in the study of fingerprint identification. The array of these characteristics - ending ridges, ridges that split or 'fork' (bifurcations), "dots", ridges that tend to split and rejoin (islands), short ridges - form patterns that are unique not only to the individual, but also to the specific area of the palmer or planter surface.

The area between the ridges is referred to as "furrows". Furrows are generally narrower in appearance than ridges, and their use in the identification process is confined to spacing between friction ridge detail.

Positive identification of fingerprints, palm prints, toe prints and footprints is dependent upon the individual *ridge* characteristics in the print, their relative position to each other, *and whether or not there are any dissimilar characteristics that cannot be explained*⁹ [emphasis is mine].

Another matter for the examiner to consider are the general patterns created by the flow of the friction ridges. Ridge flow creates a series of class characteristics that have been broken down into three pattern types. These patterns in and of themselves are not unique enough to form the basis for an identification, but can be helpful to the examiner in "orienting" a print, or even in excluding a print from an identification.

Briefly, the pattern types are loops, whorls, and arches, with sub-types of each. In the loop, the ridges flow from the edge of a finger toward the center, then tend to recurve and flow back toward the edge from whence they originated. In the arch, the ridges tend to flow in from one side and tend to flow out the other without any recurve. In some arches the flow is wave-like, in others, they form an upthrust without any recurve. In whorls, the ridge flow tends to be

⁹ "Scott's Fingerprint Mechanics" Rbt D. Olsen, Sr., Thomas Publishing 1978 pg 9

circular. One sub-type of whorl tends to be a catch-all for patterns not conforming to the three basic types,. This pattern is named an Accidental Whorl, and may be a combination of 2 or more other patterns, or a type of ridge flow that cannot be classified as any of the others¹⁰

The pattern areas generally fall in the center area of the first joint of the finger (that being at the tip of the finger) and are surrounded by ridges that flow from one edge to the other. The center of the pattern area is known as the “core”.

Friction ridge detail in the second and third finger joints and in the extreme tip of the finger, above the pattern area, generally lack the pattern types and detail of the first joint. These ridges are similar to arches, or are flat, wavy, or slanted, or any combination.¹¹

Every area of friction ridge skin “bears its own individual and distinctive trademark in its ridge pattern and characteristics. The basis for this fact may be found in the principle of biological variation, proposed by Charles Darwin, that no two living things are ever exactly alike. This principle is supported by science and theories of probability”.¹² Friction ridge skin is accidental in development and is not dependent on genes or other genetic properties. It develops during gestation, around the fourth month, and remains the same until decomposition after death, unless scarred or mutilated.

This scientific theory has been debated and renewed in recent court decisions such as what is known as the Daubert¹³ decision, which requires examiners to prove the uniqueness of the print through an established process.

Fingerprint Comparison

Generally, in fingerprint comparison, the examiner is presented with a print of unknown origin, referred to as the “questioned print,” along with fingerprints from a known source referred to as the “known” prints. The examiner examines ridge detail in the unknown print, then searches the known print for any similarities. Finding similarities, the examiner notes the characteristics (ridge details) in the questioned print and compares them with characteristics in the known print. Finding characteristics in both the known and unknown print that are in the same unit relationship to one another, can lead to the examiner’s conclusion that the questioned print and the known print were made by the specific area of the finger (or palm, toe, foot) by one and the same person to the exclusion of all others.

Part of the comparison process is not only examining characteristics in the same unit relationship, but in noting significant differences and dissimilar characteristics. In the course of human endeavor, scarring and mutilation can alter the ridge detail. Depositing fingerprints is dependent on the substrate, physical conditions, manner of transfer, and other issues, which can likewise

¹⁰ “The Science of Fingerprints” Ch. II, FBI, Rev. 12-84

¹¹ “Demystifying Palm Prints” Ron Smith, 1995

¹² “Scott’s Fingerprint Mechanics” Robert D Olsen, Thomas Publishing, 1978,Pg 11

¹³ Daubert V Merrell Dow Pharmecueticals 509 U.S. 579 (1993)

alter the appearance of a print, and provide anomalies in the image. Examiners must rely on their training and experience to decipher these anomalies. If the examiner cannot explain significant differences and dissimilar characteristics, then the examiner cannot render a conclusion that the print is identified to a particular source to the exclusion of all others.

In fingerprint identification, there are no probabilities, there are no “percentage of the population” conclusions as there are in DNA results. The comparison must be made in a vacuum, relying only on the friction ridge samples before the examiner, and not on any other supporting evidence that may be present.

The number of similar characteristics, or “points”, required to conclude an identification is not precisely established, and is dependent on the examiner and the prints. In some cases, a questioned print may contain as few as 7 or 8 very clear characteristics, that includes not only the Galton Details as mentioned earlier, but the ridge flow, and ridge thickness. In the absence of unexplained differences, an examiner could render an identification.

In any event, the “points” must not only be in the same relative position, but must be traceable with no interruptions between the points. In other words, the examiner must be able to follow point by point across and along ridges so that a sufficient number of points can be determined, without a doubt, to be in the same relative position. Small numbers of relative points in isolation, which cannot be connected, will not result in an identification. One must be able to “connect the dots” as it were.

Generally, however, identifications are based on more “points”. Regardless, if the examiner finds significant differences that the examiner cannot explain, no identification will be made.

The Conclusion

Several conclusions can be made following a comparison:

#1. Prints of No Value For Identification. In this case, the examiner has concluded that a print, questioned, known or both, has an insufficient number of points in any quantity or unit relationship to be able to identify the source. There are no probabilities, as in “This could be so and so’s print...” There could be a number of points, but they can’t be traced due to areas of obliteration in the print.

#2. Inconclusive/Non-Identification. In this case, the examiner compares the two prints in so far as possible, and cannot make an identification. This could be because the area of the friction ridge skin in one print has not been recorded in the other. For example, this occurs on occasion when a set of impressions of the fingertips is submitted for comparison with a questioned print that turns out is from a lower finger joint, an extreme tip of a finger, or a palm. In this case the examiner concludes that the questioned print is not identified, but he can’t rule out the contributor of the known print, or anyone else for that matter,

simply because he did not receive an exemplar to compare with the relevant portion of the friction ridge skin on the questioned print.

#3. Non Identification/Non-Ident. In this case, the questioned print is of such good quality that the examiner can tell what portion of the finger, palm, foot, or toe, the print was made by. The examiner can compare this questioned print with the relevant section of the known print and concludes that the questioned print was not made by one and the same person who made the known print.

#4. Identification or Ident. The examiner determines a questioned print is of value for identification, and finds a relative section of friction ridge skin on another print (or known print) that has sufficient characteristics in the same unit relationship between both prints, with no unexplained significant differences or dissimilar characteristics. The examiner will conclude that both prints were made by the same area of the same friction ridge skin to the exclusion of all others.

Questioned Prints

There are two types of fingerprints, the “latent” print and the “patent” print. These words derive from the Latin meaning invisible and visible.

Across the surface of the friction ridges are minute pores that, in 90% of the population, are constantly secreting oils, amino acids, and other compounds. When the friction ridges come in contact with a surface these materials are transferred to the surface leaving an impression of the friction ridge detail on the surface. These impressions are trace in nature and are generally not visible to the eye. The latent print may also be deposited via foreign materials or liquids that have adhered to the friction ridges, that are likewise deposited on contact with another surface.

The “latent” print must be located and made visible by the application of chemicals, vapors, powders, lighting techniques, or alternate light sources. Once located the print can be preserved through photography or by a method to transfer the image to another surface (such as fingerprint lifting tape).

The “patent” print comes in many forms, and some of these are described in detail in Mr. Biró’s report “Teri’s Find”¹⁴ The print may be transferred to a surface due to foreign matter on the friction ridges, as in the instant case, paint. The print may also be impressed into a soft surface, much like a shoe print in mud.

The examiner must be careful to recognize the method of impression in order to capture the print and identify what is ridge detail and what are furrows. For example, when a print is deposited due to foreign matter on the fingers, the “raised” areas on the substrate (background or surface) will be the ridge detail

¹⁴ “Teri’s Find” Part II pg. 16

and will be composed of whatever the material on the surface of the skin was, in addition to any material on the substrate. In the impressed print, the furrows will actually be the raised area and the ridges will be impressed.

There are a number of techniques for preserving a latent print, but the predominant method is photography. To help enhance the print, the examiner strives to remove background clutter to isolate the ridge detail to make it clearer.

In years past removal of background clutter was done by the use of lighting, filters, film, and darkroom techniques. The modern process is far simpler using digital photography and image enhancement software. When using enhancement techniques, there is no attempt to alter a print, the effort is simply intended to improve contrast and remove material that interferes with the examination of the print.

3. The Fingerprint Examination

My examination of Fingerprint A and Fingerprint B was limited to the images published in Mr. Biró's report.

Presumptive Identification

In his report, Mr. Biró made what can be best classified as a "presumptive" identification – that is, he does not have an exemplar, such as inked fingerprints, from Jackson Pollock. He builds his case for identification on the theory that prints from a variety of sources known to have been handled by Jackson Pollock, in their totality, provide sufficient support that the questioned print, Fingerprint B, *is probably* a print of Jackson Pollock as he has matched it with prints that he has reason to believe are Pollock's. He supports this with an investigative analysis¹⁵

Presumptive identification has been a common technique in the identification of unknown deceased, especially in traumatic events such as aircraft accidents.

Prior to the advent of DNA, fingerprints were the most reliable means of identifying deceased when visual identification was not possible. If no known, inked fingerprint recordings of the deceased were on file, the investigator would search for objects that the deceased was known to have handled recently, such as a checkbook, documents, or other personal items. The investigator would attempt to develop fingerprints on these items, and compare any prints recovered with the fingerprints obtained from the deceased.

If an identification was made, it supported the identification of the deceased in addition to other evidence so that the remains could be returned to the family.

¹⁵ "Teri's Find" Part II and Epilogue

In the Pollock case, Mr. Biró speculates that fingerprints found in the Pollock Krasner house must be those of Jackson Pollock. The prints from the Pollock Krasner house and identification charts are not published in the public domain and are not made available for independent peer review or scrutiny.

In mass casualty/trauma examples where presumptive identification is used, we have at least 1 absolute known – the body and fingerprints of the deceased. This in an event where it is highly unlikely that any of the other casualties ever had access to the personal effects of the deceased from which fingerprints for comparison were developed, and therefore, presumptive identification is based on the fact that:

- The deceased was known to have boarded the aircraft
- None of the other deceased had access to personal effects in the deceased's home
- Fingerprints taken from the body of the deceased match fingerprints taken from the deceased personal effects, to the exclusion of all others.

In the Pollock case, the presumptive identification is somewhat less reliable, as there are no absolute “knowns”. Recordings of the actual fingers of Mr. Pollock are not available. One can only speculate, though with some degree of certainty, that prints from the Pollock Krasner home are actually those of Jackson Pollock to the exclusion of all others.

If the print on the verso of “Teri’s Find” (Fingerprint B) could be identified as being made by one and the same person (to the exclusion of all others) who left prints on a surface in the Pollock Krasner House, the examiner could conclude no more than that. Based on the comparison alone, the examiner could not offer any proof that the prints were Pollock’s. That conclusion would be left to others to build a presumptive identification based on a totality of other facts and information. The person considering whether or not the prints could be Pollock’s would be left to evaluate the information and come to their own conclusion, but there would always be room for some level of doubt.

In his report, Mr. Biró supports his presumptive identification with other information from his investigation to render a conclusion.

In a criminal matter, this type of identification would be subjected to judicial and adversarial scrutiny. But this is not a criminal case, and the weight of this identification is in the eyes of the beholder, who can choose to accept it or not.

The Fingerprint Examination- Fingerprints A and B

I concur with Mr. Biró’s conclusion that Fingerprint B was deposited on the surface of the verso of “Teri’s Find” by a finger that had wet paint on it.¹⁶ The

¹⁶ “Teri’s Find” Part I, Sec. 6 (b)

impression of the fingerprint being transferred and deposited on the verso by contact of the wet finger with the surface.

This is not then, an impressed fingerprint, and the friction ridge detail stands on the surface, in the color of the paint that was transferred. The furrows are generally the color of the substrate (the verso)¹⁷

I examined this image in so far as possible. The friction ridge detail has been obliterated and merged, perhaps by the wet paint running together and perhaps affected by the texture of the substrate. There are significant areas of this image where the detail and characteristics cannot be accurately related to one another or put into any kind of unit relationship because of obliteration between the ridges.

Because of this, this image is of no value for identification purposes. It is not an issue of an examiners opinion of too few points – the points that do exist, as stated above, simply cannot be put into unit relationships due to the lack of continuity of detail.

Looking at the overall image, it is apparent that the area of the print appears to be that of the upper part of a core area up to and above the core – that is, the ridges flow from one side of the pattern and tend to recurve toward the joint.

Fingerprint A is an image in which the ridge detail is white and the substrate and furrows are dark. This image is likewise of no value for identification. There are simply an insufficient number of points to render this identifiable.

There are dissimilarities between Fingerprint A and Fingerprint B. In Fingerprint A, the ridge flow tends to flow from the left side of the image, in a “wavy” pattern, but then instead of tending to recurve as in Fingerprint B, the ridges actually tend to flow in an upward direction at the edge of the image.

In the charts, the “points” are not at all in a unit relationship with one another. Some of the “points” that are charted are not points at all, and the markings on the chart seem to mark some furrows as points and some other parts of the ridge flow as points, and this is inconsistent with rendering an identification. Some of the points charted are not Galton Details at all, but simply defects in the ridge detail as transferred to the surface.

Fingerprints from the Pollock Krasner House

Mr. Biró writes that he has found the same print on a number of surfaces in the Pollock Krasner house. None of these prints are available for review and are not published in the report.¹⁸

¹⁷ “Teri’s Find” Part I, Figures 9 and 10

¹⁸ “Teri’s Find” Part II “The Fingerprints” and “The second Fingerprint Comparison- a match”

These other prints notwithstanding, Fingerprint B is not identifiable.

Peer Review

In any adversarial proceeding, both sides would have access to any identification material and process for the purpose of peer review. The person rendering a conclusion would be subject to examination by both adversaries and a judge for their credibility and qualifications to provide testimony accepted by the court as “expert”. And even in these cases, their testimony and conclusions are subject to exploration and examination in open court.

In the end, the finders of fact¹⁹ would have the opportunity to consider the testimony and assign it appropriate weight in a probative setting.

Both Mr. Biró and Ms. Horton have declined my independent examination of original materials and processes, and this is certainly within their purview to do so.

Unlike an adversarial or judicial proceeding, there is no requirement that the conclusions drawn over the fingerprint examination in “Teri’s Find” be proved or tested. The “finder of fact” in this case, and the one who assigns any probative value to the fingerprint conclusion, is the person(s) who may have a financial interest in the artwork. They can review the reports and make any determinations on their own.

Independent Examination

I submitted the charts of Fingerprints A and B to three other fingerprint examiners who are members of the International Association for Identification and who are currently employed by their state/local agencies as fingerprint examiners.

I forwarded the charts without explanation of their source and asked them to render any opinion. I did not provide them with my conclusions. In all three cases, the examiners returned a conclusion that this was not an identification and that neither print was of any value for identification.

4. Conclusion

The image of Fingerprint A is of no value for identification.

The image of Fingerprint B is of no value for identification.

¹⁹ In a criminal or civil case, the jury and/or the judge or magistrate

There are significant dissimilarities in the ridge flow and characteristics between both images of Fingerprint A and Fingerprint B, they are not from the correlating area of friction ridge skin.

What CANNOT be concluded is the issue of whose fingerprints these are or whose they are not. I cannot conclude that these prints (either one of them) is a fingerprint of Pollock's. I can say that they *cannot be identified* as one of Pollock's prints. This does NOT exclude Jackson Pollock as the contributor of these prints, but neither does it answer the question as to who the contributor is.

5. Recommendation

This concludes my review of the fingerprint examination from the painting "Teri's Find".

I could reopen the review if I was provided access to original material, to ensure that detail was not reduced during the process of photographing, reproducing, and replicating the images of Fingerprints A and B.

The critical image in this review is that of the print on the verso of "Teri's Find", Fingerprint B. It would be pointless to pursue fingerprints from other sources, such as those from the Pollock Krasner House and Red Painting Number 4, until such time as the quality of Fingerprint B could be ascertained in its finality by an examination of the original specimen.



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