



INTERNATIONAL ASSOCIATION
FOR IDENTIFICATION
NEW YORK DIVISION

Table of Contents

President's Letter 3

**Board Members and Contact
Information 7**

Conference Recap 8

**Featured Article – “*Cannot
Decide*”: *The Final Line between
Appropriate Inconclusive
Determinations Versus
Unjustifiably Deciding Not to
Decide (2018)* 10**

**Vendor Information & NYIAI
Sponsors 16**

**New Membership Information
and Renewal Application 24**

**December 2018 Newsletter
Volume 4, Issue 2**

Welcome Message

Welcome to the December 2018 NYS IAI Newsletter! In this issue, there is a recap of the successful October 2018 conference held on Long Island, a complete list of our business sponsors, and the updated 2019 list of Board Members and Officers.

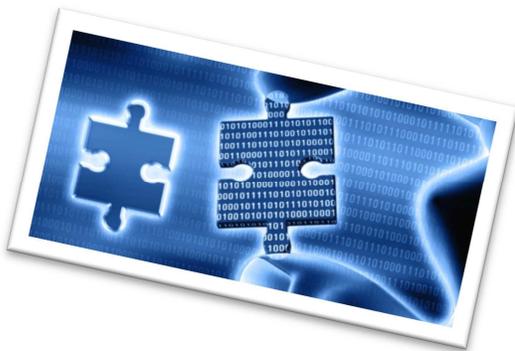
The President's Message discusses the success of the conference, information about upcoming conferences and opportunities, and recent board decisions regarding the direction of the Division. Also, included is a pertinent article from the Journal of Forensic Science and don't forget to renew your membership for the upcoming 2019 calendar year!

Become A Sponsor!

Want to Sponsor the NYS International Association for Identification in 2019?

Choose from Newsletter Sponsorships, to upcoming Conference Sponsorships!

Get your business noticed and share the latest technologies with key people in the industry



For more information, see the Sponsorship page later in the newsletter or email NYIAI's President, William Rathjen, with all inquiries: NYIAIPresident@gmail.com

PRESIDENT'S MESSAGE

Greetings everyone:

Over the last several months there have been many new and exciting developments within the Division.

First and foremost, we hosted our conference in early October at the Radisson Hotel on Long Island. Over 90 people attended the multi-day conference, including IAI members from Jefferson County Crime Lab in Colorado, the Providence Rhode Island Police Department, DuPage County Sheriff's Office from Illinois, the Union County Sheriff's Office, and Somerset County Prosecutor's Office in New Jersey. We also had three students attend from Mexico, currently studying at the Latin American Forensic Institute.

This conference would not have been a success without the commitment from our local New York agencies. I want to thank the Suffolk County Police Department's Identification and Crime Scene Sections, the New York City Police Department's Latent Print Unit, the New York City Crime Lab, and the Nassau County Medical Examiners Office for sending so many people.

Thank you to all of the presenters, their departments and companies, for sending representatives to share their expertise in so many forensic disciplines. Thank you to the vendors and sponsors for their support at the conference.

A very special thank you to three businesses in particular, **Gemalto**, **Foray** and **Evident**, for sponsoring the breakfast and lunches throughout the conference. These three companies paid extra for the sponsorships and it significantly assisted in the financial support needed to make the conference a success. **Gemalto** was also generous for donating backpacks to the attendees.

Also, every conference cannot be successful without having vendors from a variety of forensic supply companies. We had nine vendors that attended and they are listed on the recognition page in the newsletter. Foray, Lynn Peavey and Tri-Tech Forensics donated items that were raffled at the membership meeting.

The President and First Vice President of the New Jersey Division attended the conference and requested our partnership with them for next year's conference. The President of the Connecticut Division was also present. New York IAI has agreed to combine the conferences and join New Jersey IAI, for their conference in Atlantic City, to be held in October 2019. I will have more information in the coming months.

As required by our Division's By-Laws, elections and bylaw changes took place during the membership meeting on the last day of the conference. I will first report on the bylaw changes that were voted on and provide justification for each of them, as follows:

Article II, Section 7 (a)

To increase the membership dues from \$20.00, to \$25.00, annually.

The primary justification for the five dollar increase per membership was rooted in financial means to keep the Division running smoothly. Currently, we have 125 dues-paying members. If everyone pays dues this year at the previous rate, the treasurer will receive \$2500.00 total. The extra \$625 derived from the current dues increase is very important for the below listed reasons.

Primarily, the Division has never had federal or state tax-exempt status. We were previously covered under the parent IAI organization, but current tax statutes no longer allow the state divisions to be covered by such. Although we have non-profit status, we have hired an accountant firm to assist with the Division's compliance and to ensure that we are filing the proper tax information with the IRS, which has been difficult for the Division to navigate changing tax laws and exemptions on our own.

With the accounting firm's assistance, NY IAI submitted for federal tax-exempt status in February 2018 and we were approved this past September. The process was very involved with numerous steps, and the application fee alone was approximately \$600.00 under the new tax law. This now allows us to file for New York State tax exemption, which negates the Division's obligation from paying state and local taxes on supplies and services within New York State.

Since we were granted this status before the October conference, this status saved us hundreds of dollars in state and local taxes on the conference. Going forward, the Division will be submitting any and all required tax forms through the accounting firm to ensure compliance and that the Division is receiving any and all tax credits that we are entitled to.

Secondly, during my attendance at the IAI Conference in San Antonio, Texas, I met with the Parent Organization for the IAI and other state division representatives. I have been educated about the larger fiduciary responsibility that the State Divisions have been burdened with. It has come to my attention that our Division is no longer covered under the Parent IAI for all types of liability insurance that we once were benefited. Any non-profit organization, such as ours, should have liability insurance. This insurance can be quite costly. I have been sending out quotes to various companies that offer this insurance and anticipate that the increased dues rate will cover such necessary expenditures.

Finally, attendance at the annual International conference and other State Division conferences are essential and incur a cost. Representing the Division at the International conference gives our Division up to date information and our right to vote on changes that affect the Parent IAI and State Divisions. It has also advanced our exposure to the many state divisions, some who did not realize we even existed

anymore. Contacts made by the board members at these conferences have permitted the New York Division to collaborate with many other state divisions for much needed information, exposure, guidance, and support. **A vote was held and the aforementioned annual dues change in Article II, Section 7 (a) was passed without objections.**

Article V, Section 10

Elimination of Article V, Section 10.

The Parent IAI no longer requires, state divisions to have a Certification Committee. The Parent IAI has taken full control of Certification and coordinates the issuance of certification exams. The individual divisions no longer receive any application fees for member certification that we received in the past, thus **a vote was held and passed without objections to eliminate Article V, Section 10**, which pertains to such.

Article V, Section 14

Approval to add a new provision, Section 14, to have Regional Representatives.

The addition of Section 14 under Article V, creates a Regional Representative position within the NYS IAI.

There are 62 Counties in New York State. By having Regional Representatives, each representative can reach out to numerous agencies, labs and college populations surrounding the Counties in order to promote the Division. Regional Representatives are encouraged to publicize the various educational workshops and classes being offered, and forward that information to the Webmaster and Editor for publication on the website and newsletters. **The addition of this section under the article was voted on and passed without objections.**

As another matter of house-keeping, the following members were elected to the following positions beginning January 2019:

President	Bill Rathjen
1 st Vice President	John Kellman
2 nd Vice President	Elliot Perez
3 rd Vice President	Richard Howell
Secretary-Treasurer	Glenn Perigaut
Editor-Historian	LisaMarie Catapano
Webmaster	John Chiquitucto
Sergeant-at-Arms	Christopher Bernier
Recording Secretary	Tim Kelly

I want to thank everyone for their continued support. I was asked by a number of current board members and by the membership to accept the President position for 2019. I accepted and am honored to hold the position, but I do not want this organization to be governed by one person or persons. Every member should be

involved in the organization. Historically, over the Division's 40-year existence, board members have gained experience and moved up in positions. Past presidents, some who are now members of the Board of Directors, give invaluable guidance to incoming Presidents.

I am committed to the same, and to serve as President for the 2019 term. I, too, am looking forward to becoming one of Board of Directors in the coming years. I hope that everyone is pleased with the direction of the Division and everyone continues to remain as active members. That being said, renew your membership in a timely fashion. I know that the Treasurer will be extremely pleased with that.

Fraternally yours,

Bill Rathjen
President



**Science is a way of thinking
much more than it is a body
of knowledge.**

Carl Sagan

2019 NYIAI Board Members & Contact Information

President – Ret. Det. William Rathjen

NYIAIPresident@gmail.com

1st Vice President – Det. John Kellman

NYIAIFirstVP@gmail.com

2nd Vice President – Det. Elliot Perez

NYIAI2VP@gmail.com

3rd Vice President – Det. Richard Howell

NYIAI3VP@gmail.com

Secretary/Treasurer – Det. Glenn Perigaut

NYIAISec@gmail.com

Editor/Historian – P.O. LisaMarie Catapano

NYIAIEditor@gmail.com

Webmaster – Det. John Chiquitucto

NYIAIWebmaster@gmail.com

Sergeant-at-Arms – Forensic Scientist Christopher Bernier

NYIAISgt@gmail.com

Recording Secretary – Det. Tim Kelly

NYIAIrecsec@gmail.com

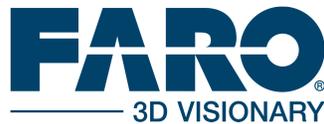
Chairman, Board of Directors – Cathryn Lahm, M.S.F.S.

BoardofDirectorNYIAI@gmail.com

2018 CONFERENCE SPONSORS



2018 CONFERENCE VENDORS



Thank you to all who attended the October 2018 NYS IAI Conference this year at the Radisson Hotel in Hauppauge, Long Island!



The Conference was a great success thanks to our sponsors, vendors, volunteers, and participants!



CRITICAL REVIEW

GENERAL

Itiel E. Dror,¹ Ph.D.; and Glenn Langenburg,² Ph.D.

“Cannot Decide”: The Fine Line Between Appropriate Inconclusive Determinations Versus Unjustifiably Deciding Not To Decide*

ABSTRACT: Inconclusive decisions, deciding not to decide, are decisions. We present a cognitive model which takes into account that decisions are an outcome of interactions and intersections between the actual data and human cognition. Using this model it is suggested under which circumstances inconclusive decisions are justified and even warranted (reflecting proper caution and meta-cognitive abilities in recognizing limited abilities), and, conversely, under what circumstances inconclusive decisions are unjustifiable and should not be permitted. The model further explores the limitations and problems in using categorical decision-making when the data are actually a continuum. Solutions are suggested within the forensic fingerprinting domain, but they can be applied to other forensic domains, and, with modifications, may also be applied to other expert domains.

KEYWORDS: forensic science, inconclusive determinations, forensic decision-making, human factors, decision models, deciding not to decide, cognitive forensics, fingerprint conclusions

In everyday life we have circumstances in which we “cannot decide” what to do. Such decisions may be very appropriate, for example, in situations where the available data are just insufficient for making a decision. However, in contrast, it may actually be a way to escape and avoid making a decision—although there are sufficient data to justify making a decision, we nevertheless “decide not to decide.” Think of a situation where you are considering whether or not to go and see the doctor. It is not clear-cut: You are not suffering or showing too many symptoms, but you are clearly not well and healthy. In some such cases, there are insufficient data to make a determination, and the correct decision is to wait and see. However, in other such cases, the decision to wait and see is not justifiable. In these cases, the data justify going to the doctor, but because you are busy, or it is too much effort (i.e., you are lazy), or other reasons, such as a nominal cost to see the doctor/co-pay, worrying the doctor will think you are a “complainer” or hypochondriac, etc., you make an unjustifiable decision to wait and see, rather than actually going to see the doctor.

That is, you “decide not to decide” whether or not to go to the doctor. To be clear, “*deciding not to decide*” is a decision. The question is whether it is a justifiable decision or not. A more basic and extreme way to avoid making a decision altogether would be to just delude oneself from acknowledging that

there is a decision to be made in the first place (e.g., not acknowledging the symptoms, or making excuses to dismiss them away as if they cannot be meaningful). Thus, denying that there is even something to decide (see Jean-Paul Sartre’s notion of self-deception [1]).

Often it is a fine line between those circumstances that merit the decision that there are actually insufficient data to make a determination (i.e., an inconclusive decision), and those circumstances that one is merely (and unjustifiably) just avoiding making a decision (i.e., deciding not to decide). Although it is sometimes difficult to distinguish between those two circumstances, they are drastically different and distinct from one another. The former inconclusive decision reflects a correct decision based on the actual data (which does not justify making a determination of action), whereas the latter decision not to decide does not reflect the data (which actually justifies making a decision).

Expert Inconclusive Decisions

Such situations are not limited to everyday life of laypeople, but also apply to expert decision-making. For example, once you decide to go to the doctor, the doctor may need to determine whether a complicated and dangerous medical procedure is required. In one situation, the doctor cannot decide whether to recommend the medical procedure because the medical examination does not provide sufficient data to make an informed decision. In another situation, the doctor does not decide whether to recommend the procedure not because there are not sufficient data, but because of other reasons, for example, they lack self-confidence, or are afraid of being sued.

The medical doctor may send you for some tests to help them reach a decision. But here too, for example, the radiologist,

¹University College London, London, UK.

²Elite Forensic Services, LLC, Saint Paul, MN.

Corresponding author: Itiel E. Dror, Ph.D. E-mail: i.dror@ucl.ac.uk

*The views and opinions expressed in this study are those of the authors alone and do not necessarily reflect any agency or expert working group whom the authors are part of.

Received 12 April 2018; and in revised form 7 June 2018; accepted 12 June 2018.

examining images may have the same decision-making quandary. It may be an easy case, where the images clearly show (or clearly not show) a clinical diagnostic finding. However, in the more complex cases, if the radiologist decides not to decide, will it be justifiable? That is, will they justifiably determine that the quantity and quality of the data in the image are insufficient to make a clinical determination one way or the other, or, in contrast, there are sufficient data, but the radiologist will make an unjustifiable decision not to decide (which can have disastrous effects such as a delay in the diagnosis of cancer and starting treatment earlier).

Forensic Fingerprint

To untangle these situations, consider their respective implications and offer solutions to the problems, we examine expert fingerprint decision-making within the domain of forensic science. Fingerprint experts commonly report the decision of comparing two fingerprints (one latent print from the crime scene, and one exemplar fingerprint from the suspect) as a categorical conclusion. If the fingerprint expert determines that there is a sufficiently high degree of corresponding discriminating features between the two fingerprints, then the expert decides that the fingerprints originate from the same source, that is, an “identification.” Conversely, if the expert determines that the discordances between the two fingerprints are sufficiently high, the expert decides that they originate from different sources, that is, an “exclusion.” If the expert can neither decide an identification nor an exclusion, then the resulting decision will be an “inconclusive.”

Deciding that one cannot reach an identification or an exclusion decision, and therefore deciding not to make a determination regarding the source (or nonsource) of a latent print, poses some intriguing challenges. The forensic community has given much attention to issues surrounding identifications, and lately to exclusion determinations (2). However, very little attention has been given to inconclusive determinations.

On the one hand, it is important to have the option, an alternative choice, to decide that something is inconclusive. Cognitive research has demonstrated the limited capacity of meta-cognition, that is, peoples’ ability to know what they know, and know what they do not know (e.g., Ref [3]; Socrates already made this point thousands of year ago [4]). Knowledge about knowledge, meta-cognition, is often imprecise, at best, and most often people (and experts in particular) overestimate their abilities and are overconfident (for a review, see Ref [5]). People are just not very good in self-assessment as to what they know (and what they do not know) as well as their accuracy. The correlation between confidence and accuracy is not very high (e.g., Ref [6]).

Therefore, the fact that forensic examiners, and fingerprint experts in particular, decide that something is “inconclusive” is very reassuring—it demonstrates a certain level of caution. In a case with doubt, it is better to lean toward caution and determine “inconclusive,” rather than making an incorrect “identification” or “exclusion” decision. By incorrectly deciding an “identification” the fingerprint expert makes a false-positive error (incorrect association). Conversely, by incorrectly deciding an “exclusion” the fingerprint expert makes a false-negative error (failure to associate the fingerprints to the same source).

However, on the other side, over-reliance on the option to decide “inconclusive” can be problematic too. The issues and challenges we raise in this article arise from the nature of fingerprint matching (which applies to other comparative forensic

domains, such as firearms, footwear, and handwriting; as well as to other expert domains). A categorical decision framework, while the weight of the evidence is actually a continuum, results in a loss of precision and can obfuscate the weight of the evidence.

Furthermore, the use of categorical decisions can cause experts to artificially distort continuous data to fit the discrete categories, what is known in cognitive psychology as “categorical perception” (7). This has been shown in a wide range of domains, from color perception (where the data—the light frequencies—are a continuum, but the psychological perception places them within categorical bins [8,9]) to sexing of chicks (10).

Categorical perception has also been demonstrated in forensic fingerprinting (11). When 16 minutiae (points of corresponding similarities) were the threshold for determining if a match was sufficient for court purposes in the UK, examiners’ perceptions were influenced by the bin category threshold. That is, given that 16 points were the threshold between categories, examiners tended not to observe and report 15 points of similarity. Thus, perception was influenced by the decision category, and gravitated away from the threshold. In other words, they psychologically contracted the continuous data toward the central categorical decision bins—a hallmark of categorical perception (7).

A Cognitive Perspective: Taking Into Account The Human Element

This illustrates the thinking and importance of our approach that takes into account the underpinning human cognitive process (see model in Fig. 1): “Assessments of forensic science have too often focused only on the data and the underlying science, as if they exist in isolation, without sufficiently addressing the process by which forensic experts evaluate and interpret the evidence. After all, it is the forensic expert who observes the data and makes interpretations, and therefore, forensic evidence is mediated by human and cognitive factors.” (12). Hence, taking into account the human element and considering the cognitive factors that impact forensic decision-making is a critical part in forensic science (13,14). The data and evidence do not exist in a vacuum. It is important to consider the underlying cognitive processes involved in human decision-making. Ignoring the human elements is a huge oversight, as forensic decision-making (as with other expert domains) lays at the intersection of the data and cognitive decision-making processes (12).

Human decision-making processes involve dynamically and sequentially sampling the data. This relates to a descriptive model and theory of the cognitive processes and mechanisms of how the human brain accumulates and considers data (these models are highly developed in cognitive science, and we refer the interested reader to decision field theory (15) sequential sampling models (16), and their applications (17). The human decision-making mechanism involves the fingerprint experts dynamically and sequentially comparing the fingerprints, accumulating evidence over time. If they deem the weight of the evidence to cross a threshold (which can be subjective or not), then a “winner takes all” categorical conclusion is reached. If such a threshold is not reached, the weight of the evidence is not deemed to cross a decision threshold, then the default decision is inconclusive (Fig. 1).

Please note that models of fingerprint decision-making which only describe the similarity between the prints, the “actual”

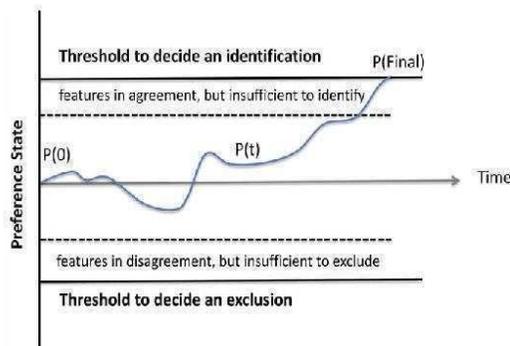


FIG. 1—The horizontal axis represents the time interval, starting with the initial presentation of the two fingerprints at $P(0)$. The vertical axis represents the expert's preference state. The evolution of the expert's state (the jagged curve in the figure) starts at $P(0)$, and over time, changes and moves up and down $P(t)$, as they compare the fingerprints, consider their similarities and differences, and determine the weight of the evidence. Once the comparison ends $P(\text{final})$, the decision of a match or an exclusion is determined by which threshold was exceeded; if no threshold has been crossed, then the expert is left with an inconclusive decision (the figure illustrates an identification decision).

data, are neglecting the dynamic nature of human decision-making that actually underpin the experts' conclusions (12). For example, decision field theory and sequential sampling models (15,16) stipulate that human decision-making does not involve examining all information before reaching a conclusion, after all the evidence is considered, but rather, that information is examined a piece at a time, each one adding to the overall weight of the evidence, until a threshold is reached (which may be long before all the information is considered). This is partially due to the fact that the human brain has limited capacity and resources, and people are not optimal decision makers. This has far-reaching implications to forensic decision-making, and therefore, models must take into account and reflect the role and nature of the cognitive processes behind forensic expert decision-making, and factors that impact them, such as stress (14) and bias (12).

A Cognitive Model For Forensic Decision-making

Figure 1, the cognitive decision model is based on decision field theory (15), dynamic decision-making (17), and sequential sampling models (16) acknowledges and takes into account the specific mechanisms and nature of the human decision-making processes. These processes are dynamic and influenced by time constraints, bias, and other factors beyond the actual "data." It represents the interactions and intersection between the data (e.g., the similarities between the fingerprints) and the human decision-making cognitive processes—it is this interaction that provides the resulting conclusions; not the data by itself, in isolation from the human decision maker (12).

The initial state (see $P(0)$ in Fig. 1) can be biased or neutral (neutral is reflected in Fig. 1, as the starting point, $P(0)$, is in the midpoint between the two conclusions of identification and exclusion). The threshold bounds do not need to be symmetrical (for instance, the decision to reach an identification can be further away than that for an exclusion decision, i.e., require more

evidentiary weight). The threshold bound can also change as a result of time pressure, and other factors.

Four Issues With Inconclusive Decisions

As discussed earlier, although inconclusive decisions can be appropriate and warranted in some instances, they can also be problematic and raise some serious questions and challenges: *First*, deciding inconclusive should *not* be regarded as "deciding not to decide," but it should be viewed as a decision with certainty that the quantity and quality of information are not sufficient to draw any conclusion regarding the source of the fingerprints. Hence, it is not a lack of certainty; inconclusive decisions should be very certain and a deliberate determination taken by the expert. As can be seen in Fig. 1 (excluding the areas of "features in agreement, but insufficient to identify" and "features in disagreement, but insufficient to exclude," discussed below), there is a clear area where the weight of the evidence is extremely limited, where the quantity and quality of information are far from the thresholds. In cases with such a low weight of the evidence, an inconclusive decision is not "deciding not to decide," but a very deliberate assignment to the categorical conclusion of "inconclusive." Thus, an inconclusive decision should be a reflection of the limited weight of evidence.

Second, an inconclusive determination may act as having an easy "way out" option. This is especially tempting given that many fingerprint experts may only regard incorrect identifications (or exclusions) as erroneous, whereas inconclusives are never considered erroneous decisions, but rather, are just differences in opinions (see Ref [18] for a discussion of the utility function wherein false positives and false negatives have negative utility, and inconclusive decisions have no utility).

This issue has implications on both the theoretical and the practical levels. On a theoretical level, if inconclusive decisions are regarded as neither false-positive errors nor false-negative errors, then inconclusive decisions cannot ever be erroneous (e.g., see SWGFAST (19) noting that inconclusive decisions are not false-positive nor false-negative errors). On a practical level, inconclusive decisions very rarely get to court and thus are not challenged, and most often not even verified (in contrast to fingerprint "identification" decisions that are required to be verified).

Therefore, inconclusive decisions may be tempting to make, as a way out of a conclusive decision, that will be scrutinized, perhaps challenged in court, and open to error. Indeed, and not surprising, data show that inconclusive decisions are not rare (20,21) and have been shown to include errors (22). In fact, approximately 10% of the time, an examiner viewing the same set of fingerprints twice (Level 5 in Dror, HEP expert decision hierarchy, [23]), will reach different conclusions (same examiner, same set of fingerprints), will waver between a conclusive determination and declaring that the comparison is inconclusive (24).

We must remember that inconclusive decisions have a net utility of zero, as they offer no actual practical information to the case (i.e., "Is it her fingerprint? I don't know"), but conversely are attractive options to the experts since there is supposedly no option (and therefore penalty) for error, because inconclusive decisions are not classified as false-positive or false-negative errors (e.g., Ref. [19]).

Third, some inconclusive decisions are near the decision threshold, but the data are not sufficient to make a determination. These inconclusive decisions do not represent sufficient weight of evidence to justify deciding an identification (or

exclusion) decision (see, in Fig. 1, the areas marked as “features in agreement, but insufficient to identify” and “features in disagreement, but insufficient to exclude”). In such cases, inconclusive decisions entail loss of valuable data. Because the decision is reported as “inconclusive,” the weight of the evidence is lost by the imprecision and breadth of the vague “inconclusive” category. Almost an “identification,” almost an “exclusion,” and a true “inconclusive” are all within the broad category of “inconclusive.” The inconclusive category is so broad that it does not properly convey the estimated weight of evidence (25,26). The magnitude of the weight of evidence is lost when “almost, but not quite an identification” is reported in the same manner and within the same categorical conclusion as “no correspondence, but cannot quite exclude.” Both positions are represented within the broad and imprecise “inconclusive” decision category.

Fourth, probably the most controversial stance made in this article is that if there are sufficient data and information in the evidence, then one can, and indeed must, make a decision regarding the source of the latent print (i.e., identification or exclusion)—put more bluntly, one cannot, and should not, make an inconclusive decision. Thus, the option to decide an alternative choice of inconclusive should not be available when there is sufficient information to make a decision. Imagine a situation whereby an examiner has two sets of clear and complete ten prints fingerprint exemplars, but then reports “inconclusive.” In this extreme case, the weight of the evidence is so overwhelming that the fingerprint expert should be able to make an “identification” or an “exclusion” decision. An inconclusive determination is an erroneous decision because the evidence does not support that decision. Hence, *we support developing criteria to determine situations where fingerprint examiners would not be allowed to decide “inconclusive” and will only have a binary decision choice: Either it is an identification or it is an exclusion.*

Proposed Solutions

The great challenge is in determining when inconclusive decisions can be considered an error and when they are justified. Transparency and accountability for inconclusive decisions is missing (at least, relative to identification and exclusion decisions) and is a first step. We suggest that when examiners make an inconclusive decision, they need to clearly document and justify their decision. This mere requirement may reduce the inconclusive decision as “an easy way out”: It needs to be justified, and it must be transparent and documented in detail. We further suggest that under certain circumstances, where there is sufficient information, examiners will not be allowed to make an inconclusive decision (see details above). Below we discuss a few further possibilities and propose additional solutions.

Point number one, we support recent efforts to develop and introduce technology into the fingerprint examination process. We support the use of validated statistical models for reporting friction ridge evidence (26–30). The ability to appropriately estimate the weight of the evidence and then communicate that to the triers of fact goes a long way toward the issue of imprecise categorical decisions. The vague, broad category of inconclusive will become a discarded artifact of the past if and when a proper and validated model is employed. However, the introduction of statistics will bring its own set of issues to manage and will not remove the need to deal with the human and cognitive factors.

We also support the use of clarity assessment models (31). These models automatically assess the clarity of the latent print image and produce a score for the overall quality of the latent print. This removes some of the subjectivity and biases (32) in having the fingerprint examiner decide whether a latent print has sufficient clear and discriminating features to warrant a comparison. If fewer no-value latent prints are retained and compared, one is less likely to encounter the option of an inconclusive outcome (as well as fewer comparable latent prints may be disregarded and not subjected to comparisons). Additionally, in disputed cases, quality metric scores may be further evidence to shed light on a reported decision. One would expect high-quality scores in cases of identification or exclusion, and low-quality scores in cases resulting in an inconclusive decision. If an expert attempted to decide an inconclusive decision with a very high-quality score, this may be a red flag that the inconclusive decision is inappropriate for the latent print in question (assuming complete and legible exemplars are available). In any case, LSU (Linear Sequential Unmasking) needs to be used, so latent prints are first examined and documented without exposure to the “target” suspect prints (33).

Point number two, until such models are in place, qualified conclusions help to parse out the broad category of inconclusive. For example, forensic document examiners have several categories of association between the extreme ends of the decision spectrum. Between the “inconclusive” and the “identification” decision categories, they can also determine “indications,” “probable,” and “highly probable” (34). In fingerprints, there has been support for the addition of two new categorical decisions: “lack of sufficiency for individualization” and “lack of sufficiency for exclusion” (35). These decision categories represent the instances described in Fig. 1 just below the thresholds for “identification” or “exclusion.”

However, as in any scale of conclusions, what is critical is that not only the categorical decision be clearly defined and communicated, but also that the relative magnitude of the categories must be communicated (36,37). In other words, the trier of fact must comprehend the entire scale, and appreciate where the reported category falls in the relationship to the other decision categories. Even though we cannot currently compute a statistic for the forensic document examiner category of “probable,” it is critical that the triers of fact understand that this category represents a higher weight of evidence than “inconclusive” and “indications,” but a lower weight of evidence than “highly probable” or “identification.” Understanding the unspecified, unquantified weight of the evidence happens only when we understand the relative magnitude and the ordinal scale of conclusions, but even when we can specify and quantify the weight of evidence, we need to consider how these are perceived by the fact finder (37). There are two cognitive issues regarding forensic evidence: One is the perception, interpretation, and conclusions reached by the forensic expert, and the other is how the fact finders (be it the detective, judge, or jury) interpret and understand the expert’s conclusion. We need to make sure that both take place in a manner that is circumscribed by what the evidence actually supports.

Point number three, to avoid overuse and abuse of “inconclusive” decisions and to reduce instances of “error” where the weight of the evidence is so great that an “inconclusive” is inappropriate, we support the use of a blind verification step. Fingerprint examiners are required to have all identifications verified by a second fingerprint examiner, but it is not practice (just recommended) for exclusion and inconclusive decisions. If the aim is to avoid errors, then it is important to have at least one other

expert blindly view the evidence to determine if inconclusive is appropriate.

Our recommendation is that at least one other examiner should blindly review the comparison and if disputed, the comparison should be given to multiple examiners to determine a consensus decision. The multiple examiners should first examine the fingerprints independently and blindly, and document their conclusions before being exposed to the other examiners' decisions or any group discussion. The need for review by additional examiners may be mitigated in cases where there are other latent prints that have been identified or excluded to the subject. Cases with singular conclusions to a subject resulting in inconclusive should be reviewed. Notably, the FBI engages in such practice (38). Langenburg, et al. (22) demonstrated that a surprising number of errors (unjustifiable inconclusive decisions) were found in inconclusive decisions in actual casework. This is further illustrated in the FBI black box study (24) that found that 10% of the time, the same expert will reach different conclusions on the same set of prints (see Level 5 in Dror HEP decision-making hierarchy [23]). This may be due to variability in the initial observation of the minutiae data (39,40), or the interpretation of these minutiae, two different and distinct sources for inconsistency in decision-making (23). Therefore, it makes sense to spend effort to properly review these decisions.

Ideally, these reviews should occur blindly, without context or knowledge of the original examiner's decision and other irrelevant contextual information (32,41,42). Because "inconclusive" decisions, by their definition, represent low-to-moderate weight of evidence, these cases will tend to bear marginal ridge detail and therefore are "complex." Previous research has shown the need for blinding techniques in complex cases (13).

Conclusions

Understanding forensic (and other expert) decision-making requires to understand the nature of the data, but also the human cognitive processes involved in decision-making. Examining the data in isolation, in a vacuum, without understanding the human element and their interactions is an oversight (12). The interaction between the expert and the data, see model in Fig. 1, underpins the decision.

We also make the point that the inconclusive decision is a broad and imprecise decision category for fingerprint examiners, encompassing the range of "almost an exclusion" all the way to "almost an identification." As such, the weight of the evidence may not be properly conveyed. However, it is an important decision option for analysts to utilize when they actually do not believe the weight of the evidence has surpassed a decision threshold into a definitive categorical decision (i.e., identification or exclusion; see Fig. 1).

Because inconclusive decisions are not regarded as error (they do not have the possibility of being false-positive or false-negative errors), an inconclusive decision may be a safe and easy decision choice. When used appropriately, it allows the examiner the option to avoid overcommitting to a definitive conclusion, but when overused and abused, it can be deemed an error when the weight of the evidence is incongruous with the inconclusive decision.

We proposed several solutions for managing inconclusive decisions. While some of the solutions require the continuing investment in future technology, we believe there are procedural controls that can be currently instituted in today's fingerprint forensic laboratories. The solutions are aimed to allow to make

inconclusive decisions when appropriate, that is, when there is insufficient information to make an identification or exclusion decision; but not allow, and try to minimize, using inconclusive decisions as a way to decide not to decide and avoid making a decision when one is warranted.

The solutions we offer focus on the discipline of forensic fingerprinting, but can be easily applied to other comparative forensic domains (such as firearms, tire marks, and handwriting). With some extensions and modifications, they may well be suited to other forensic domains, as well as other expert domains. Our solutions are not mutually exclusive or exhaustive. The cognitive model we present is not incompatible with other models and approaches, it brings to the forefront and explores the interface between the cognitive processes of the human examiner and the forensic data.

Our model (see Fig. 1) illustrated the importance of taking into account the underlying human cognitive processes involved in decision-making. Models that only focus on and reflect the "data" neglect to reflect that the decisions are an outcome of the interaction between the data and human cognitive processes. Human expert performance and how the human element plays a role in forensic science are critical to consider (12,13,23).

References

- Sartre J. Being and nothingness: a phenomenological essay on ontology. Translated by Hazel E. Barnes. New York, NY: Washington Square Press, 1956:55-6.
- Ulery BT, Hicklin AR, Roberts MA, Buscaglia J. Factors associated with latent fingerprint exclusion determinations. *Forensic Sci Int* 2017;275:65-75.
- Plous S. The psychology of judgment and decision-making. New York, NY: McGraw-Hill, 1993.
- Penner T. Socrates and the early dialogues. In: Kraut R, editor. The Cambridge companion to Plato. Cambridge, UK: Cambridge University Press, 1992:121-69.
- Lina SW, Bier VM. A study of expert overconfidence. *Reliab Eng Syst Safe* 2008;93(5):711-21.
- DePaulo BM, Charlton K, Cooper H, Lindsay JJ, Muhlenbruck L. The accuracy-confidence correlation in the detection of deception. *Pers Soc Psychol Rev* 1997;1(4):346-57.
- Harnad S, editor. Categorical perception: the groundwork of cognition. New York, NY: Cambridge University Press, 1987.
- Bornstein MH, Korda NO. Discrimination and matching within and between hues measured by reaction times: some implications for categorical perception and levels of processing. *Psychol Res* 1984;46(3):207-22.
- Roberson D, Davidoff J. The categorical perception of colors and facial expressions: the effect of verbal interference. *Mem Cognit* 2000;28:977-86.
- Biederman I, Shiffrar MM. Sexing day-old chicks: a case study and expert systems analysis of a difficult perceptual-learning task. *J Exp Psychol Learn Mem Cogn* 1987;13(4):640-5.
- Evelt IW, Williams RL. A review of the sixteen points fingerprint standard in England and Wales. *Fingerprint World* 1995;21(82):125-43.
- Dror IE. Biases in forensic experts. *Science* 2018;360(6386):243 DOI: 10.1126/science.aat8443.
- Dror IE. Cognitive neuroscience in forensic science: understanding and utilising the human element. *Philos Trans R Soc Lond B Biol Sci* 2015;370(1674):20140255.
- Jeanguenat AM, Dror IE. Human factors effecting forensic decision making: workplace stress and wellbeing. *J Forensic Sci* 2018;63(1):258-61.
- Busemeyer JR, Townsend JT. Decision field theory: a dynamic-cognitive approach to decision-making in an uncertain environment. *Psychol Rev* 1993;100(3):4323-459.
- Dror IE, Busemeyer JR, Basola B. Decision-making under time pressure: an independent test of sequential sampling models. *Mem Cognit* 1999;27(4):713-25.
- Gonzalez C, Fakhari P, Busemeyer J. Dynamic decision-making: learning processes and new research directions. *Hum Factors* 2017;59(5):713-21.

18. Biedermann A, Bozza S, Taroni F. Decision theoretic properties of forensic identification: underlying logic and argumentative implications. *Forensic Sci Int* 2008;177(2-3):120-32.
19. Scientific Working Group on Friction Ridge Analysis Study and Technology (SWGFAST). Document #15 standard for the definition and measurement of rates of errors and non-consensus decisions in friction ridge examination; 11/24/2012 ver 2.0, 2012; <http://www.swgfast.org/Documents.html> (accessed June 8, 2018).
20. Ulery BT, Hicklin RA, Buscaglia J, Roberts MA. Accuracy and reliability of forensic latent fingerprint decisions. *Proc Natl Acad Sci USA* 2011;108(19):7733-8.
21. Langenburg G, Champod C, Genessay T. Informing the judgments of fingerprint analysts using quality metric and statistical assessment tools. *Forensic Sci Int* 2012;219(1-3):183-98.
22. Langenburg G, Hall C, Rosemarie Q. Utilizing AFIS searching tools to reduce errors in fingerprint casework. *Forensic Sci Int* 2015;257:123-33.
23. Dror IE. A hierarchy of expert performance. *J Appl Res Mem Cogn* 2016;5(2):121-7.
24. Ulery BT, Hicklin RA, Buscaglia J, Roberts MA. Repeatability and reproducibility of decisions by latent fingerprint examiners. *PLoS ONE* 2012;7(3):e32800.
25. Champod C, Evett IW. A probabilistic approach to fingerprint evidence. *J Forensic Identif* 2001;51(2):101-22.
26. Neumann C, Evett IW, Skerrett J. Quantifying the weight of evidence from a forensic fingerprint comparison: a new paradigm. *J Royal Stat Soc* 2012;175(2):371-415.
27. Egli NM, Champod C, Margot P. Evidence evaluation in fingerprint comparison and automated fingerprint identification systems – modeling within finger variability. *Forensic Sci Int* 2007;167(2-3):189-95.
28. Abraham J, Champod C, Lennard C, Roux C. Spatial analysis of corresponding fingerprint features from match and close non-match populations. *Forensic Sci Int* 2013;230(1-3):87-98.
29. Leegwater AJ, Meuwly D, Sjerps M, Vergeer P, Alberink I. Performance study of a score-based likelihood ratio system for forensic fingerprint comparison. *J Forensic Sci* 2017;62(3):626-40.
30. Swofford HJ, Koertner AJ, Zemp F, Ausdemore M, Liu A, Salyards MJ. A method for the statistical interpretation of friction ridge skin impression evidence: method development and validation. *Forensic Sci Int* 2018;287:113-26.
31. Hicklin RA, Buscaglia J, Roberts MA. Assessing the clarity of friction ridge impressions. *Forensic Sci Int* 2013;226(1-3):106-17.
32. Earwaker H, Morgan RM, Harris AJ, Hall LA. Fingerprint submission decision-making within a UK fingerprint laboratory: do experts get the marks that they need? *Sci Justice* 2015;55(4):239-47.
33. Dror IE, Thompson WC, Meissner CA, Kornfield I, Krane D, Saks M, et al. Context management toolbox: a linear sequential unmasking (LSU) approach for minimizing cognitive bias in forensic decision making. *J Forensic Sci* 2015;60(4):1111-2.
34. ASTM. Standard E 1658-04: standard terminology for expressing conclusions of forensic document examiners. West Conshohocken, PA: ASTM, 2004.
35. Scientific Working Group on Friction Ridge Analysis Study and Technology (SWGFAST). Document #10 standards for examining friction ridge impressions and resulting conclusions, 04/27/13 ver. 2.1 Draft for Comment, 2013; <http://www.swgfast.org/Documents.html> (accessed June 8, 2018).
36. Evett IW, Jackson G, Lambert JA, McCrossan S. The impact of the principles of evidence interpretation on the structure and content of statements. *Sci Justice* 2000;40(4):233-9.
37. Thompson WC, Grady RH, Lai E, Stern HS. Perceived strength of forensic scientists' reporting statements about source conclusions. *Law Probab Risk* 2018. <https://doi.org/10.1093/lpr/mgy012>. Epub 2018 June 1.
38. Office of the Inspector General (OIG). A review of the FBI's progress in responding to the recommendations in the Office of the Inspector General Report on the fingerprint misidentification in the Brandon Mayfield case. Washington, DC: Office of the Inspector General (OIG), 2011.
39. Dror IE, Champod C, Langenburg G, Charlton D, Hunt H, Rosenthal R. Cognitive issues in fingerprint analysis: inter- and intra-expert consistency and the effect of a 'target' comparison. *Forensic Sci Int* 2011;208(1-3):10-7.
40. Ulery BT, Hicklin RA, Roberts MA, Buscaglia J. Interexaminer variation of minutia markup on latent fingerprints. *Forensic Sci Int* 2016;264:89-99.
41. National Commission on Forensic Science. Ensuring that forensic analysis is based upon task-relevant information, 2015; <https://www.justice.gov/ncfs/file/818196/download> (accessed June 8, 2018).
42. Forensic Science Regulator. Guidance: cognitive bias effects relevant to forensic science examinations. FSR-G-217, 2015; https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/510147/217_FSR-G-217_Cognitive_bias_appendix.pdf (accessed June 8, 2018).

RECOVER

Latent Fingerprint Technology

Revolutionary New Technology for the Development of 'Impossible' Fingerprints

Jointly developed by foster+freeman, the MoD Defence Science and Technology Laboratory (Dstl), the Home Office Centre for Applied Science and Technology (CAST), and Loughborough University, RECOVER LFT is a cutting-edge technique that uses an innovative chemical vapour fuming process to develop fingerprints on a range of difficult surfaces including those that have been exposed to extreme heat (discharged bullet casings for example) and items that have been washed 'clean' in an attempt to prevent identification.

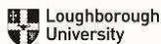
RECOVER LFT can reveal fingerprints even after they have been physically removed from an object, and has been demonstrated to consistently out-perform existing fingerprint development techniques on a range of 'difficult' surfaces.

Key Benefits

- Reveal fingerprints on metals exposed to extreme temperatures such as fired ammunition cases or vehicles that have been set on fire.
- Develop fingerprints on metal/alloy surfaces, including surfaces that have been wetted such as knives that have been thrown into rivers or canals, as well as surfaces that have been deliberately washed.
- Develop consistent fingermarks across different surfaces simultaneously such as the plastic and metal sections of a shotgun cartridge.

Collaborative Effort

Discovered at Loughborough University, developed with the backing and support of the UK Defence Science and Technology Laboratory (dstl), and now, refined by foster+freeman, RECOVER LFT fingerprint technology represents a fantastic example of collaborative working to achieve innovation that will help the police and security services to identify criminals and link them to their crimes.



Government/Industry/Academia collaboration

foster+freeman
Forensic Science Innovation

USA Sales Office
46030 Manekin Plaza | Suite 170 | Sterling | VA 20166 | USA
Tel: 888 445 5048 | usoffice@fosterfreeman.com



RECOVER LFT Bullet Casings

Notoriously difficult to retrieve 'usable' prints from, fired bullet cartridges treated with RECOVER LFT, can yield fingerprints of an incredibly high quality



RECOVER LFT IED Fragments

The original RECOVER LFT application; prints can be visualised on metals exposed to extreme heat, including Improvised Explosive Device fragments



RECOVER LFT Washed Items

Even when an item of evidence has been washed clean, or submerged for an extended period of time, RECOVER can *still* retrieve identifiable prints.

The other guys are just all wet.

Moisture. Humidity. Contaminants.

Killers for powder processing for latent print development. Problem solved.

Our new FiberDuster Elite™ and FeatherDuster Elite™ fingerprint brushes are now double-treated to **REPEL** all moisture and surface contaminants... and will at the same time **reduce friction** with all evidence surfaces... **by up to 45%!**



All the others? They're all wet.

View the demo at www.lynnpeavey.com.

The results are ***astounding***. The choice is clear whose brush you want to be using.

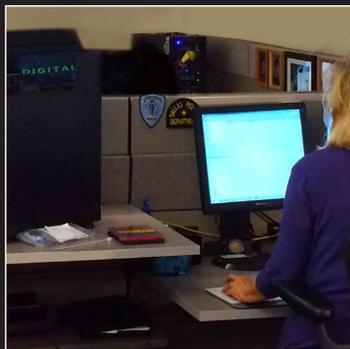
**US Patent Pending*



800-255-6499

www.lynnpeavey.com

NYEB8/17




DIGITAL
TRITECHFORENSICS

- Mobile Interview Kit
- Workstations & Storage Towers
- DataCenter Lab Solutions
- Cellebrite/ADF Bundles
- Wide Selection of Faraday Bags
- Customize Any Unit
- GSA Pricing Now Available

DIGITAL
tritechdf.com
 800-438-7884 x 7943




TRITECHFORENSICS

- Specimen Collection Kits
- Crime Scene Supplies
- Blood Stain & Fluid ID Kits
- Forensic Light Sources
- Personal Protection
- Laboratory Equipment
- Over 34 Years of Experience

INVESTIGATION
tritechforensics.com
 800-438-7884




TRAINING
TRITECHFORENSICS

- High Quality, In-depth Training
- Experienced Instructors
- Hands-on Exercises
- Over 50 Course Subjects
- New Courses Enrolling Monthly
- Custom Courses Available
- Cosponsored with the IAI

TRAINING
tritechtraining.com
 800-438-7884 x 7800



Tri-Tech Forensics is the Exclusive Training Partner of the
 International Association for Identification

8770 Trade St • Leland, NC 28451 • 910-457-6600 • 800-438-7884 • Fax 910-457-0094

foster+freeman



Crime-lite®

Alternate Light Sources

Shine a Light on the Evidence of Violence

for the detection of forensic evidence including:
Body Fluids | Blood | Bite Marks & Bruising etc.

Used by forensic examiners & crime scene investigators worldwide, Crime-lite alternate light sources can provide unrivalled assistance to Sexual Assault response teams, Forensic Nurses and Examiners involved with gathering or establishing evidence following an incident of violent sexual assault.

Available in a range of colours and with an optional camera module for immediate capture of evidence, Crime-lites can be used in combination with filtered viewing glasses to reveal fluorescent evidence that may be present on items of clothing or the victim such as semen, body fluids, pressure marks, bruising, puncture wounds, scratches or blood.

To find out more or request a demonstration, please contact:

usoffice@fosterfreeman.com

☎ 888 445 5048

www.fosterfreeman.com/forensic-lightsources



Bruising is revealed



Detecting Semen

foster+freeman **Improving the Quality of Forensic Evidence**

Foster + Freeman are innovators in the design and manufacture of systems for the examination of questioned documents, latent fingerprints, trace evidence and shoe prints.

Founded in 1978 the company's reputation has been built upon the development of leading edge forensic technology.

Foster + Freeman products are used by all major police forces and forensic science laboratories worldwide as well as government agencies, commercial and private organisations such as homeland security, immigration authorities, security printers, lottery companies, university departments and national libraries.

With offices in the UK and the USA, and a global network of agents and distributors, Foster + Freeman are able to provide customers with a high level of technical support, installation and training.

With the Crime-lite range of light sources Foster + Freeman have pioneered the use of high intensity LED illumination for the search, detection, and examination of forensic evidence.

Foster + Freeman Crime-lites offer many features that remain unmatched:

- Hand picked LEDs selected for peak performance at each wavelength
- Instantly recognisable quality of construction
- 100% light output throughout battery lifespan, no drop off
- Worldwide product support

Crime-lite Applications

Multi-wavelength illumination

The ability to select between the visible and the UV spectrum in the field provides an additional operational advantage for a range of applications of forensic science and safety.

It also provides a range of wavelengths for the detection of trace levels of trace evidence and safety applications.

Applications:

- Forensic: Green to Blue UV: 365nm to 405nm
- Forensic: Blue to Red: 405nm to 660nm
- Forensic: Red to Infrared: 660nm to 850nm
- Forensic: Infrared: 850nm to 940nm
- Forensic: Infrared: 940nm to 1060nm
- Forensic: Infrared: 1060nm to 1300nm
- Forensic: Infrared: 1300nm to 1550nm
- Forensic: Infrared: 1550nm to 1800nm
- Forensic: Infrared: 1800nm to 2000nm
- Forensic: Infrared: 2000nm to 2200nm
- Forensic: Infrared: 2200nm to 2400nm
- Forensic: Infrared: 2400nm to 2600nm
- Forensic: Infrared: 2600nm to 2800nm
- Forensic: Infrared: 2800nm to 3000nm
- Forensic: Infrared: 3000nm to 3200nm
- Forensic: Infrared: 3200nm to 3400nm
- Forensic: Infrared: 3400nm to 3600nm
- Forensic: Infrared: 3600nm to 3800nm
- Forensic: Infrared: 3800nm to 4000nm
- Forensic: Infrared: 4000nm to 4200nm
- Forensic: Infrared: 4200nm to 4400nm
- Forensic: Infrared: 4400nm to 4600nm
- Forensic: Infrared: 4600nm to 4800nm
- Forensic: Infrared: 4800nm to 5000nm
- Forensic: Infrared: 5000nm to 5200nm
- Forensic: Infrared: 5200nm to 5400nm
- Forensic: Infrared: 5400nm to 5600nm
- Forensic: Infrared: 5600nm to 5800nm
- Forensic: Infrared: 5800nm to 6000nm
- Forensic: Infrared: 6000nm to 6200nm
- Forensic: Infrared: 6200nm to 6400nm
- Forensic: Infrared: 6400nm to 6600nm
- Forensic: Infrared: 6600nm to 6800nm
- Forensic: Infrared: 6800nm to 7000nm
- Forensic: Infrared: 7000nm to 7200nm
- Forensic: Infrared: 7200nm to 7400nm
- Forensic: Infrared: 7400nm to 7600nm
- Forensic: Infrared: 7600nm to 7800nm
- Forensic: Infrared: 7800nm to 8000nm
- Forensic: Infrared: 8000nm to 8200nm
- Forensic: Infrared: 8200nm to 8400nm
- Forensic: Infrared: 8400nm to 8600nm
- Forensic: Infrared: 8600nm to 8800nm
- Forensic: Infrared: 8800nm to 9000nm
- Forensic: Infrared: 9000nm to 9200nm
- Forensic: Infrared: 9200nm to 9400nm
- Forensic: Infrared: 9400nm to 9600nm
- Forensic: Infrared: 9600nm to 9800nm
- Forensic: Infrared: 9800nm to 10000nm

Product Features

Handheld light sources

A Foster + Freeman handheld Crime-lite is available in a range of sizes and power outputs, and is available in a range of wavelengths and power outputs.

All Crime-lite handheld LED light sources are available in a range of power outputs and wavelengths.

Laboratory & Photographic light sources

The Crime-lite Series is available in a range of sizes and power outputs, and is available in a range of wavelengths and power outputs.

Crime-lite Series is available in a range of sizes and power outputs, and is available in a range of wavelengths and power outputs.

Anti-glare viewing goggles & camera filters

Crime-lite Series is available in a range of sizes and power outputs, and is available in a range of wavelengths and power outputs.

Model	Wavelength (nm)	Power (W)	Beam Diameter (mm)	Beam Length (m)	Beam Intensity (mW/cm²)	Beam Spread (mrad)	Beam Divergence (mrad)	Beam Angle (°)	Beam Diameter @ 1m (mm)	Beam Diameter @ 2m (mm)	Beam Diameter @ 3m (mm)	Beam Diameter @ 4m (mm)	Beam Diameter @ 5m (mm)	Beam Diameter @ 6m (mm)	Beam Diameter @ 7m (mm)	Beam Diameter @ 8m (mm)	Beam Diameter @ 9m (mm)	Beam Diameter @ 10m (mm)	
Crime-lite 2	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E1	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E2	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E3	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E4	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E5	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E6	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E7	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E8	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E9	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crime-lite 2E10	365	10	100	10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100



roundshot Metric

**The easiest-to-use
and most economical
fully automatic
Panoramic Crime Scene
Documentation System
on the market**

- Point clouds look like point clouds. High-definition panoramic images provide the trier of fact with a crystal-clear view of the scene. No explanations needed.
- Roundshot Metric is a fully automatic panoramic image capturing system built around a Nikon D750 coupled with Swiss-made housing and electronics.
- Automatic image stitching delivers perfect panoramas.
- Software to embed reports, fingerprints, close-ups, audio, video, Etc. affords the user an excellent tool to deliver all pertinent digital data to investigators, prosecutors, defense attorneys, and the trier of fact.

866-232-9590

info@roundshotamericas.com | www.roundshotamericas.com



FORAY™

TECHNOLOGIES

(619)858-1360
www.foray.com

Evidence Management Solutions for a Complete Chain of Custody

- Track & Manage Digital & Physical Evidence
- Locate & Retrieve Evidence
- Streamline Evidence Processing
- Process Digital Images
- Grant Secure Access to Digital Evidence
- Connect to Other Systems
- Comply With Accreditation Requirements



Thank You to All the Business that Continue to Support the NYS IAI!

For those businesses that are interested in advertising and supporting our local division, here is the following information and criteria:

Advertising with the NYIAI is a great opportunity for service providers, forensic suppliers, and training services to reach members of the Division.

An ad in the seasonal NYIAI Newsletters introduces your company to the readers and demonstrates your company's commitment to the advancement of the forensic science field, it also contributes to the continued progress of the New York Division.

Sizing and Pricing Options:

- Full Page Advertisement – inclusion in newsletter for \$125.00
- Half Page Advertisement – inclusion in newsletter for \$75.00
- Additionally, in appreciation for sponsorship and support, any business purchasing one of the aforementioned print ads will also have their logo included on the Division website under the “sponsors” link as well as promoted on the Division’s social media pages!

Submission Requirements:

- Color image in JPEG format, no larger than 600 ppi
- Submissions must be in image format (contact us if you need assistance with the formatting of your submission)
- All submissions should be emailed to NYIAI’s President, William Rathjen, for review and approval at: NYIAIPresident@gmail.com



*Like us on
Facebook & LinkedIn!
Get the latest news and info on
upcoming events! Get to know your
fellow IAI Division members too!*



Mail Completed Application to:

**NYS Division of the IAI
P.O. Box 761
Yaphank, NY 11980**

MEMBERSHIP APPLICATION

I hereby make application for ACTIVE ASSOCIATE MEMBERSHIP (see bottom of application) in the New York State Division of International Association for Identification, in accordance with its Constitution and By-Laws, and agree to be bound therewith.

\$25.00 Annual Dues with this Application

Application Date: _____

Last Name: _____ First Name: _____ MI: _____ Date of Birth: _____

Home Address: _____

Home Phone#: _____ Cell Phone# _____ E-Mail Address: _____

Rank or Title: _____

- | | | |
|---|--|--|
| <input type="checkbox"/> Fingerprint Identification | <input type="checkbox"/> Questioned Documents | <input type="checkbox"/> Crime Scene Investigation |
| <input type="checkbox"/> Forensic Photography | <input type="checkbox"/> Firearms & Tool mark | <input type="checkbox"/> Laboratory Analysis |
| <input type="checkbox"/> Forensic Art | <input type="checkbox"/> Forensic Science | <input type="checkbox"/> Tenprint Examiners |
| <input type="checkbox"/> Footwear / Tire Tracks | <input type="checkbox"/> Bloodstain Pattern Analysis | <input type="checkbox"/> Criminal Justice |

Business Name: _____

Business Address: _____

Business Phone: _____ Email: _____

Recommended by: _____
Member in good standing

ACTIVE MEMBERS. Sec. 2 The Active membership; of the Association shall consist of Superintendents, or Officer, in charge of Bureaus of Identification, Sheriffs, Chiefs of Police, and all other persons engaged in the science of identification and investigation, and who are bona fide employees of and receiving salaries wholly, or in part, from National, State, County or Municipal governments or sub divisions thereof. Any active member shall not lose his/her active status because of retirement or change of position so long as he maintains continuous membership.

Associate Members. Sec. 3 All reputable persons, wholly or partially engaged in any of the various phases of the science of identification or investigation, and who are not qualified for Active membership, are eligible to become Associate members. They shall in all respects be subject to the same rules, fees and charges, and entitled to the same rights and privileges, as Active members, except that they shall not be entitled to the office of Vice President or President.