Guest Editorial

Class Characteristics and "Could Be" Results

Recently I was asked by a firearm and toolmark examiner why latent print examiners do not report conclusions which state a latent print could have been made by a specific person. As a latent print examiner, I responded by explaining that since the ridge unit arrangement on every section of friction ridge skin is both permanent and unique, any recovered latent print, by definition, is the product of a single source, and could not have been deposited by a variety of sources. As long as latent print examiners firmly believe the ridge arrangement for each individual is permanent and unique, there should never be a "could have been made by this person" result, even when qualified by a statement that the latent print in question could also have been made by someone else.

Various administrators as well as forensic examiners, including some who conduct fingerprint examinations, have suggested that latent print examiners should use "possible" or "could be" identification results because other forensic disciplines have such findings. Examples are usually provided. A footwear examiner's report might be as follows: The impression in item 1 was not identified as having been made by the right shoe in item 2; however, similar class characteristics indicate the impression could have been made by the right shoe in item 2. A firearms examination might conclude as follows: The bullet in item 1 was not identified as having been fired in the firearm in item 2; however, similar class characteristics indicate the bullet in item 1 could have been fired in the firearm in item 2. Corresponding wording might appear in other forensic discipline reports. The basis for "could be" results is due to the significance of class characteristics.

What, then, are class characteristics? In certain types of examinations, class characteristics are defined as "an intentional or unavoidable characteristic that repeats during the manufacturing process and is shared by one or more other shoes" [1], "features common to one specific tire design or mold" [2], "in footwear these would be size, shape, style and pattern design. Predetermined nail holes and flaws in the mold repeated in every sole or heel in the same place are also considered class characteristics" [3], or "measurable features of a

specimen which indicate a restricted group source. They result from design factors, and are, therefore, determined prior to manufacture" [4].

Simply put, class characteristics are those characteristics that are, or can be, repeated. The mold that produces shoe soles should produce soles with the same tread arrangements. The design factors in manufacturing the bores of firearms should produce bores with the same land and groove widths, numbers, and direction of twist. Knowing that manufactured class characteristics can be repeated is the reason certain forensic examiners have the option of using "possible" or "could be" results.

Often fingerprints are described as possessing certain class characteristics. This concept of commonality is based upon the general pattern types used in fingerprint classification – whorls, loops, and arches. Since each pattern type has a specific definition to distinguish it from the others, this mechanism which can segregate patterns according to a type appears to create a foundation for utilizing class characteristics.

I disagree with any such use of the term "class characteristics", in this connotation, for fingerprints. The pattern types employed in fingerprint classification are convenience labels which have been attached to a permanent and unique arrangement of ridge units for the sole purpose of filing and retrieving record cards. As stated by David Ashbaugh, "Some forensic identification specialists have incorrectly assumed that the ten print classification rule also applies to the identification process." Further, he observed, " There is a fundamental difference in the mandate of the classification process and the identification process. The classification process solicits conformity of the medium. Rules or standards are created to ensure all fingerprints in the system are addressed equally and consistently. Incipient ridges appear erratically and are therefore ruled out of the formula. The identification process solicits and is based on variables and uniqueness. Conformity has little value. The main thrust of the identification process is to find configurations that make one print different from all other prints." [5]

The labels bifurcation, ending ridge, and dot are also part of the terminology that describe permanent and unique arrangements of ridge units along a given ridge. As noted by David Grieve, "The presence of such recognizable landmarks as dots, ridge endings and bifurcations are necessary to the mechanism of identity, but have produced a detrimental consequence to the identification process. Unknown impressions tend to be viewed as mere summaries of their landmarks, expressed in

shallow descriptions according to the number of named formations they contain. By reducing an impression to a collection of specific areas that lend themselves to nomenclature, the totality of the mark is shattered into a myopic concern over the quantity of the parts. An impression which exists as an unique entity is transformed during observation into a series of formations that must be rebuilt into something individual. This dismantling of ridge structure into a quantification of selected characteristics, or Galton points, may facilitate verbal descriptions or written standards, but does so at an enormous sacrifice to the remaining information in the impression." [6] By remembering that the ridge unit arrangement is permanent and unique, the examiner must realize that it is in a "class by itself" and is not a repeatable arrangement, regardless of what terminology is attached to it.

Robert D. Olsen, Sr., wrote, "Some latent print examiners have accepted the concept that friction ridge characteristics are synonyms [*sic*] with the points of identity used to establish the positive identification of a latent print. These examiners hold the view that one friction ridge characteristic, regardless of its configuration and complexity, constitutes only one point of identity. This is an erroneous concept. Friction ridge characteristics and points of identity are two distinct and separate concepts involving the same physical data. There are only three basic friction ridge characteristic types used as points of identity: ridge ending, bifurcation, and dot. There are many other types of characteristics and some may be of sufficient rarity to merit an examiner's special consideration when making a comparison. The other ridge characteristics, however, involve a combination of three basic types." Later he noted, "To date, no justification has been established for using any friction ridge characteristic other than the three basic types, ridge ending, bifurcation, and dot, as points of identity." In the same article, Olsen also stated, "Latent print examiners should recognize friction ridge characteristics and points of identity as two distinct and separate concepts of the same physical phenomenon and firmly establish the distinction in our terminology." [7] The treatise, "Ridgeology" [8], has provided the explanation and justification for the physical phenomenon of the uniqueness of ridge unit arrangements without the need to label each and every unique part.

The more we, as examiners, attempt to describe something that is inherently unique, the more it will appear like something else, and, therefore, seem to lose its uniqueness. By confining our description of either latent or inked prints to labels such as whorls, loops, arches, bifurcations, ending ridges, and dots, we can easily lose track of the

uniqueness of the ridge unit arrangements that comprise all the ridge structure. Uniqueness must not be compromised for the convenience of labels.

Some latent print examiners are encouraging the use of non-definite conclusions for a number of reasons, including the desire to be more like other forensic examiners. I believe latent print examiners already do function in a similar manner; we can individualize through a random and unique arrangement of characteristics. The difference is some other forensic disciplines have class characteristics that can be repeated, enabling "possible" or "could be" results. In latent prints, if terminology and labels are assigned their proper perspective, each ridge unit arrangement has to be in a "class by itself" because it is a unique arrangement.

Other forensic examiners use accidental or random characteristics to positively determine identity. These accidental or random characteristics are not necessarily permanent. If there is enough randomness in the manufacturing process, then the manufactured random arrangement can be used to individualize, such as in the random texture formed on the surface of natural crepe rubber soles of shoes. It must be remembered that the surface texture of natural crepe rubber is not permanent. It can wear away and the permanency is not regenerated. Latent print examiners utilize permanent random arrangement of characteristics to individualize.

David Ashbaugh commented, "The details examined during the comparison will be either a class characteristic, which may be common to others of the same strain, or a unique or randomly placed characteristic, which is unique to the single person or thing. At times class characteristics, when encountered in the aggregate, can create a unique formation.

"The source of the class and unique characteristics can be either biological or manufactured. Class characteristics found in the friction skin are the result of genetic programming while the class characteristics of metal are man-made. Unique characteristics of friction skin are created due to the random growth of the friction ridges, while unique characteristics of metal, during a physical match, are the results of an accidental break or damage. In either case, the presence of unique characteristics or formations is a requirement for the comparison to result in individualization." He also remarked, "There are hundreds of ridge units in a small area of friction skin. The number of ridge units

present can be identified by the number of pores. Each unit is approximately as long as it is wide. All ridge units have been subject to genetic and physical pressures while growing. The plethora of genetic and physical variances during friction ridge formation is the reason why no two areas of friction skin will ever be found to be the same, even in a small area. The variables involved are far too great." [8]

The key to individuality is that the volar ridge or ridge unit arrangement is randomly and uniquely constructed, and formed during the growth development of the individual, thus creating unique class that is not repeated from a human manufacturer's mold or design. Since fingerprint class characteristics are the biologically "manufactured" arrangements of the volar ridges or ridge units, which are inherently random, permanent, and unique, there is no justification to have "possible" or "could be" comparison results. If the latent or inked print reveals insufficient unique class to individualize, then it should be so reported.

Although the International Association for Identification attempted to address this issue by adopting Resolution VII in 1979, the adoption of Resolution V the following year has inadvertently confused the issue. Resolution V, I feel, is a compromise that doesn't make sense. Resolution VII of 1979 states, in part, "Whereas the delegates of the International Association for Identification, assembled in their 64th annual conference in Phoenix, Arizona, August 2, 1979, state unanimously that friction ridge identifications are positive, and officially oppose any testimony or reporting of possible, probable or likely friction ridge identification." [9] The resolution continues with sanctions and procedures the IAI would follow if someone violated Resolution VII.

After a year of protracted debate, Resolution V was approved in 1980 as a substitution for Resolution VII. Resolution V states, in part, "Now therefore be it resolved that any member, officer or certified latent print examiner who initiates or volunteers oral or written reports or testimony of possible, probable or likely friction ridge identification, or who, when required in a judicial proceeding to provide such reports or testimony, does not qualify it with a statement that the print in question could be that of someone else, shall be deemed to be engaged in conduct unbecoming such member,...." [10].

I fail to understand this concept of "possible" identification, even with the addition of the qualified statement that the print in question

"could be" that of someone else. If, just moments before and in the same court, I had given my opinion as to the individualization of a latent print because of the permanent and unique arrangement of ridges or ridge units, then I cannot further state something which violates the basis for any fingerprint identification. The questioned latent print, no matter the quality and quantity of the visible detail, could have been made by only one person because of the uniqueness of nature. There often is not sufficient quality and quantity of visible detail in a latent print to determine who that one person is, but, regardless, only one person, and not a variety of people, is capable of having made any specific latent. My admission is that I am unable to determine the one person who made the latent print, not that more than one person could be the source.

Arguments presented which inspired the compromise in Resolution V stressed the required opinion that might occur in judicial proceedings, and therefore demanded the statement of qualification. I am not aware of any judge who would order me to agree with a statement that does not make sense to me. However, I can imagine a judge requiring clarification if I appear unsure of either the application of class characteristics or the fundamentals of the identification process. If a possible identification with the prescribed qualification disclaimer in Resolution V is not acceptable for an initial report, how can it be acceptable during testimony?

The current revival of support for "possible" or "could be" identifications may stem from both a misunderstanding of class characteristics in fingerprints and the contradiction to the identification process contained in Resolution V. I cannot support possible latent print identifications, nor can I support Resolution V, which is still in force by the IAI. As long as nature is never reproduced exactly, only one person is capable of being the source of one latent print, no matter how smudged or fragmented the latent print may be. If I do not know who the one person is who made the questioned print, the inability to individualize is mine. Inferring that more than one person could have made the print is not the answer.

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