

## Genetic Witness: Through the Lens of a Social Scientist

One of us was recently asked if we really met for lunch to discuss the ideas leading to these columns. The idea for these musings did actually grow out of informal lunchtime discussions that we have had throughout the years (running into decades). Formal publications are all very well, but the time lag imposed for an article to be peer-reviewed and appear in a print journal necessarily hinders its currency. We use this column as a vehicle to expeditiously share our current thoughts on topics of interest to the forensic science community. It is neither the last nor the only word on any particular issue, just a snapshot of our thoughts about some current topic that is currently being discussed around water-coolers and in break-rooms around the world.

But back to the lunch part, while we still make a point of meeting for lunch as often as we can, these days we are lucky to be on the same continent at the same time. Today, lunch consists of a burrito out of a Styrofoam container in the conference room of a lab where we both accidentally happen to be observing some analysis on behalf of co-defendants. It was a good burrito, but lacking the accompaniment of the requisite Corona. Most of this discussion is taking place in a car on the 205 over coffee in travel cups. But, heck, we have a whole 45 minutes with no phone interruptions – wait whose cell is that ringing?

Regarding the topic at hand, we recently became aware of a book on the history of forensic DNA and agreed to review it for this column. *Genetic Witness: Science, Law, and Controversy in the Making of DNA Profiling*, by Jay D. Aronson, [Aronson, 2007] documents the introduction of forensic DNA analysis into the legal system. The title, which takes its cue from an early government publication on the potential forensic uses of DNA [US Congress, 1990], and the cover, taken from Cellmark's early marketing material, are perhaps talismanic of Dr. Aronson's approach to the subject matter. He performs a detailed review of forensic DNA history from its inception in the mid-1980's to the late 1990's. By definition, then, his review concentrates on the now obsolete RFLP technology, making the discussion feel dated rather than historical. In some sense, this challenge colors the entire work. The "history" of DNA profile is so recent that we do not yet have the benefit of a generational perspective, such as Simon Cole provides in his definitive work on fingerprint comparison, *Suspect Identities*. [Cole, 2001] The field is still rapidly evolving, from both a scientific and legal, as well as a social, perspective.

Dr. Aronson performs a heroic job of documenting the first decade of court battles and challenges to the then-novel application of DNA typing to human identification. This careful work will almost certainly provide immeasurable benefit to future historians, but relatively little synthesis can be offered when discussing such recent history. Through no fault of the author, the volume is more compendium than historical perspective.

What perspective exists, however, is most definitely viewed through the lens of Dr. Aronson's mentors, for the most part early academic critics of forensic DNA profiling. While it is incontestable that those challenges were key toward propelling forensic DNA to the gold standard status it enjoys today, the work is clearly skewed toward a particular point of view. This will unfortunately allow many in the current forensic DNA community, the overwhelming majority of whom work for law enforcement, to conveniently dismiss many of the important points that Dr. Aronson illustrates. If the goal was to present an objective treatment, Dr. Aronson should have made a more aggressive attempt to solicit a variety of alternate viewpoints; however if the goal was to present the microcosm of history from a particular perspective, then the goal has been achieved. Each reader must discern the authors' intent for themselves.

A good story requires heroes and villains and this one is no exception. However, Dr. Aronson has accepted, perhaps a bit too readily, some of the dogmatic representations presumably made by his sources. One mantra that is repeated throughout the book, and undeniably sets the tone, is first proffered on page 6 of the book, in the last paragraph of the first chapter:

*What is even more alarming is that none of these mistakes were discovered by forensic scientists themselves or by the numerous layers of quality control and quality assurance that the public is told guarantees valid and reliable results. Instead, they were discovered by journalists, crusading defense lawyers, or advocates of civil liberties.*

Having (as forensic scientists working in the trenches) found an error or two ourselves, we feel that this apparent foundational cornerstone of the book does a great disservice to the forensic community. It is unnecessarily sensationalist and fundamentally incorrect. While it is true that the bright spotlight of the media is too often required to force systemic change, most of the high profile errors mentioned were initially discovered by DNA analysts, either during internal review, or by independent scientists working for the defense. We can't think of one that was actually discovered by a journalist or "civil liberties advocate," although one particularly egregious situation was brought to light mostly through the efforts of a defense attorney well-educated in DNA. Some of the errors, and the analysts making them, certainly persisted for far too long, due, in fact, to the culture of social trust and scientific authority that Dr. Aronson explains and laments. However, minimizing the role that scientists have played in detecting error and fraud misrepresents reality. Further, countless errors, of which Dr. Aronson could not possibly be aware, precisely because they were detected and corrected internally, by definition do not make headlines.

It is unclear why Dr. Aronson considers STR analysis "the nail in the coffin." He eloquently and correctly determines that current and future issues stem more from the "competence of the system" rather than the "reliability of the technology," meaning that the human decision making process that comes into play at every point, from deciding which piece of evidence to analyze, to which alleles to call, to how to testify to one's results in a courtroom. And he clearly outlines issues (some of which we agree with, others with which we disagree) that he considers unresolved. One rather odd comment, that "... [Barry] Scheck and [Peter] Neufeld's decision to champion DNA evidence as the gold standard of forensic science certainly set back the defense's cause when it comes to challenging DNA evidence," seems to imply that no other competent defense attorneys exist. While Scheck and Neufeld have left an indelible mark on the litigation of DNA issues, the discussion has moved far beyond their initial challenges. The O.J. Simpson trial is well over a decade behind us, and dozens, perhaps hundreds, of defense attorneys specializing in forensic science and forensic DNA, continue to labor, sometimes even successfully, on behalf of their clients.

Many forensic DNA analysts, whether employed in public laboratories, private laboratories, or in private practice, will take offense at the rather thinly-veiled infomercial, found on page 200, for one particular group of defense experts. With all due respect to our friends and colleagues who comprise this group, they are hardly the only game in town, as Dr. Aronson would seem to suggest. And unfortunately, almost all the specific technical information in that particular paragraph is either misleading or blatantly incorrect.

However, the most significant gap in Dr. Aronson's work entails his failure to consider forensic DNA analysis within the context of the practice of criminalistics and forensic science. Forensic DNA analysis exploded onto a centuries-old landscape littered with both the monuments and detritus of numerous and diverse forensic disciplines. Because of its strong academic roots, and the scrutiny to which it was subjected before finally enjoying (more or less) general acceptance, DNA profiling rapidly displaced dermal ridge prints as the new gold standard. Dr. Aronson describes this phenomenon as an "inversion of credibility." As a result of this emergence, all of the other forensic disciplines have had to suddenly confront higher standards, increased scrutiny, and in most cases, reduced budgets. The other side of that coin is that, especially in its most recent iterations of exquisitely sensitive megaplex typing kits, and low copy number analysis, forensic DNA is now confronting the very issues with which trace evidence analysts have struggled for decades. In the end, DNA is just another form of trace evidence, and, sophisticated technology aside, the fundamental concepts of forensic science cannot be ignored.

In taking on this work, Dr. Aronson has accepted certain challenges, only some of which are within his control. We presume that he will continue to follow forensic DNA and that future projects will emerge. We hope that he will take our comments in the spirit in which they are intended, as critical, but friendly commentary from two individuals who not only survived, but actively participated in the early development

of forensic DNA profiling. This volume is a credible start, but only just that. Analysts who did not live through the early days of RFLP will find the history a valuable context for current challenges. Social scientists will, at the very least, appreciate the detailed documentation of the first decade of forensic DNA profiling. More time is required to determine how this early history of a revolutionary application of science will be viewed by future generations.

Our more modest and immediate goal is to figure out which time zone we are currently inhabiting.

## **References**

Genetic Witness: Science, Law, and Controversy in the Making of DNA Profiling. Jay D. Aronson. Rutgers University Press, 2007

U.S. Congress, Office of Technology Assessment, Genetic Witness: Forensic Uses of DNA Tests, OTA-BA-438 (Washington, DC: U.S. Government Printing Office, July 1990).

Suspect Identities: A History of Fingerprinting and Criminal Identification. By Simon A. Cole. Cambridge: Harvard University Press, 2001.