Introduction

Forensic science, any discipline of forensic science, exists to serve the people through the legal system by educating those who try the facts and those who advocate. The Forensic Scientist’s responsibility is to the truth, and his burden to support that truth by the utilization of science. The message is delivered through verbal testimonial opinion. It is that simple. However, what is not simple is establishing the manner in which science is utilized and/or manipulated by the scientist. As such, a sworn oath is seemingly insufficient to establish the validity of the science, the qualifications of the scientist and/or the methods used by the scientist to derive the data upon which his/her testimony will be based. Thus, the system must qualify the degree of “truth” purported by the Forensic Scientist before those responsible for assessing a matter use such testimony in the decision making process.

In 1923, the issue of Frye v. United States established a foundational standard for the admissibility of scientific expert testimony which required the proponent of a theory or technique to demonstrate that the theory or technique utilized as a foundation for expert opinion was accepted by the relevant scientific community. This standard or “test” became known as the Frye Standard and was used as the primary determinant of scientific validity in theory and technique until 1993 when the U. S. Supreme Court decided, in the case of Daubert v. Merrell Dow Chemical 1 that the Frye Test was no

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longer viable in Federal Court and that other significant factors were necessary to allow scientific evidence to reach the trier of fact. The questions to be answered included:

- Whether the theory can be (and has been) tested.
- Whether the theory or technique has been subjected to peer review and publication.
- The known or potential error rate of a particular theory or technique.
- Whether the theory or technique has been accepted by the relevant scientific community.
- Whether the expert testimony is based on research conducted by the expert and independent of the litigation.

In 1997, a decision in *General Electric v. Joiner*\(^2\) reaffirmed the *Daubert* standard and clarified the gate keeping obligation of the judge to establish not only the qualifications of the expert but the validity and admissibility of the scientific evidence. *Kumho Tire v. Carmichael*\(^3\) extended the obligation of the judge as gatekeeper to all expert testimony not just that based in scientific or engineering sciences. In addition, *Kumho Tire* brought forth the intellectual rigor test, establishing that the expert must “employ in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relative field.” The adaptation of these standards to the Federal Rules of Evidence, specifically 702, ended a long-standing conflict between the *Daubert* standard and the Federal Rules of Evidence. Created was a new standard, which far exceeded the basic *Frye* standard that stood and held for over 70 years.

The *Daubert* sword swung wide and cut deep. Sciences that stood undisturbed by *Frye* now fell. Combined with a lack of understanding and/or misapplication of the *Daubert* standards, sciences as well founded as fingerprint analysis were/are subject to challenge. Those sciences that suggested that their foundational methodologies included

not only scientific theory but, to some degree, “art” were the hardest hit. Of these, the investigative practice of fire origin and cause determination, often referred to as more of an art than a science, was forced to reinvent itself by clutching on to the scientific method and codifying the scattered methodologies utilized by the various factions performing investigative fire analysis. The first steps to codification were to identify an industry recognized treatise that would to some degree represent the educational foundation of those already practicing in the field.

Fire Investigation by Dr. Paul L. Kirk was published in 1969 and represented the first textbook on fire investigation authored by a scientist, not a field investigator. This book became a standard reference in the fire investigation field. Thirty years later, the text, now titled Kirk’s Fire Investigation is in its 5th edition and authored by John D. DeHaan, PhD. In the preface to the 5th edition, Dr. DeHaan recognizes that “a professional must demonstrate that what he or she is doing follows the knowledge base of the relevant professional community. That knowledge and practice is based on texts such as DeHaan's and NFPA 921.” Dr. DeHaan goes on to discuss his participation in and support of the National Fire Protection Association’s Guide for Fire and Explosion Investigations.

The National Fire Protection Association originated in March 1895 with a small group of men representing sprinkler and fire insurance interests hoping to establish a single standard for piping sizes and sprinkler spacing. Nine radically different standards were utilized in the Boston area alone. NFPA 13 was published in 1896 and became the first of hundreds of standards associated with the fire protection industry.

In 1904 the rules of membership opened the NFPA, increasing its membership from an initial 20 original organizations to over 68,000 present day members. The mission today of the NFPA is accomplished “by advocating scientifically based consensus codes and standards, research, and education for the fire and related safety issues.”

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4 John D. DeHaan, PhD Kirk’s Fire Investigation Prentice Hall, New Jersey, 2002.
5 www.NFPA.org History of the NFPA Codes and Standards-Making System
NFPA 921: Guide for Fire and Explosion Investigations was developed by the Technical Committee on Fire Investigation with the intent of codifying the investigative process and establishing a scientific knowledge base. The first edition of NFPA 921 was issued in 1992 and began to shift the procedure of fire investigation from a matter of “art” to a matter of science.

NFPA 1033 Standard for Professional Qualifications for Fire Investigator, like 921, is approved as an American National Standard. It is the product of NFPA’s Technical Committee on Fire Investigator Professional Qualifications, which reviewed and revised previous documents set forth by The National Professional Qualifications Board, a creation of the Joint Council of Fire Service Organizations. Although the text is limited to about 9 pages of specifications and recommendations, it has developed broad industry acceptance. The purpose of NPFA 1033 is “to specify the minimum job performance requirements for service as a fire investigator in both the private and public sectors.” As such it defines the terms to be utilized in the document and sets forth with both general and specific statements on the requisite knowledge and skills necessary to perform the job as a fire investigator.

**Standards, Codes and Guides**

Webster’s New Universal Unabridged Dictionary defines a code as, “Any set of standards set forth and enforced by a local government agency for the protection of the public safety.” “A systematically arranged collection or compendium of laws, rules and regulations.” Webster’s goes on to define a standard as, “Something considered by an authority or by general consent as a basis of comparison; an approved model.” A guide is defined as “A book, pamphlet, etc., giving information, instructions, or advice.” The NFPA defines a code as “A standard that is an extensive compilation of provisions covering broad subject matter or that is suitable for adoption into law independently of other codes and standards.” Although the NFPA doesn’t specifically offer their definition.

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7 NFPA 1033 Standard for Professional Qualifications for Fire Investigator 2003 Edition
8 Ibid, pp. 1033-6
of a “guide,” by any interpretation a document identified as a “guide” suggests that its use is not obligatory and its direction non-binding. A “standard” by comparison, is defined by the NFPA as “A document the main text of which contains only mandatory provisions using the word “shall” to indicate requirement and which is in the form generally suitable for mandatory reference by another standard or code or for adoption into law. Non mandatory provisions shall be located in the appendix footnote or fine-print note and are not to be considered a part of the requirements of a standard.” 9 It is clear, however, that the definition of a “standard” by anyone’s interpretation suggests a codified rule with broad applicability, acceptance and obligation. Just such an issue was raised in American Family Insurance Group v. JVC Americas Corp.10 during which plaintiff and defendant debated whether NFPA 921 is a “standard” or merely a “guide”.

An issue not identified during research is the addition of a descriptor to the terms “codes and standards” such as “engineering”, implying that a subset code or standard must also be met. When specifying a code or standard as an “engineering” standard, it suggests that the purported document or opinion has somehow been recognized by a specific community and as such has to meet a standard of academic or procedural acceptance.

The documents discussed in this work are the National Fire Protection Association 921: Guide for Fire and Explosion Investigations, and National Fire Protection Association 1033: Standard for Professional Qualifications for Fire Investigator. Clearly, the NFPA considers 1033 a “standard” as described in the title. Although unspecified in its title, NFPA 921, 2004 edition has been approved as an American National Standard as has NFPA 1033. However, the NFPA 921 is specified as a “guide” to “assist in improving the fire investigative process and the quality of information on fire resulting from the investigative process.” 11 The International Association of Arson Investigators, the nations leading association of those in the fire

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9 www.NFPA.org
investigation community in recognizing NFPA 921 and 1033 clearly defines both as “Guides to assist investigators in the field of fire and arson investigation.” 12

As discussed previously, an organization describing its publication as a “standard” or “code” must meet the burdens of not only Webster’s Unabridged Dictionary, but that of the relevant scientific community and its sub-communities. Once it has been recognized by that level, the standard or code then is subjected to additional tests associated with the standards set forth in the Federal Rule of Evidence and/or State courts when such a document is to be used for admission of scientific testimonial evidence. The question to the legal community then becomes, is the standard or code recognized by the relevant scientific community acceptable under the standards set forth in the Federal Rules of Evidence 702 and Daubert components contained within? In addition, is a document, specified as a “guide” given the same stature by the courts as another specified as a “code” or “standard?” Similarly, one must question the impact on the forensic scientist to acknowledge or dismiss a document to which there is no binding responsibility.

When considering those questions and the applicability of a specific document or procedure contained within that document to a legal proceeding, ones interest may not be in the validity of the procedures or suggestions contained within, but whether those procedures have met the standards of law. This is not to suggest that invalid or inappropriate procedures should be acceptable under any scenario. It is, however, suggesting that the concerns of the forensic system are that of the standards set forth by the Federal Rules of Evidence and the cases upon which it is built. It is clear that the Federal Rules of Evidence leave the responsibility as to the validity of the procedures and practices to the relevant scientific community; its applicability to a specific matter to the Judge. The standards imposed by the Federal Rules of Evidence are those of methodology not of content. This suggests that if the proper methodology is utilized by the appropriately trained people, the data which result will be valid and worthy of testimony.

12 Fire and Arson Investigator Magazine, June 1997.
General Acceptance

The *National Fire Protection Association* “standards” are developed by technical committees intended to represent the relevant scientific community along with the parties who may have related interests such as law enforcement and the insurance community. Review of the opening pages of NFPA 921 and 1033 list the members of the technical committees and their alternates. The members of the committees for both 921 and 1033 include representatives of private fire investigative practices, the insurance industry, various government entities including the State of New York (NFPA 921), local fire fighters, and regional prosecutors. Alternates for NFPA 921 include members of the U.S. Department of Treasury, State Fire Marshall Office officials, and independent fire and engineering investigative entities. Although the list of technical committee members for both documents appears to be broad, there is an apparent absence of academic support, such as liaisons from colleges or universities or those specifically involved in the development of curriculum associated with fire science and safety engineering. However, research has shown that NFPA 921 and 1033 are listed as topics of discussion in related programs in various colleges around the country.

The content of the documents in discussion are well organized into chapters and sub-chapters which are supported by diagram, graphs, statistics and calculations where appropriate. The first of the chapters of NFPA 921 established the guidelines for application of the document. The chapters continue with referenced publications needed to meeting the criteria of the Federal Rules of Evidence and develop credibility for the procedures and practices suggested within. The references include not only other NFPA documents, but those of other organizations including *American National Standards Institute* (ANSI), *American Petroleum Institute* (API) and the *American Society for Testing and Materials* (ASTM) along with publications from *Underwriters Laboratories*, the *U.S. Fire Administration* and the *U.S. Government Printing Office*.

NFPA 921 as titled is an investigative guide outlining procedures and practices and offering consensus data needed to perform those procedures and practices. Research revealed little or no opposition to NFPA 921 or 1033 by professional associations to
which a fire investigator may belong. These include the National Association of Fire Investigators and the aforementioned International Association of Arson Investigators, both of which acknowledge, support and promote their use. Smaller professional organizations whose members may utilize or perform fire investigation as part of a larger investigation have directed their membership to utilize the guidelines of these two documents. In fact, NFPA 1033 Technical Committee is chaired by a member of the U.S. Consumer Product Safety Commission.

Letters to the National Fire Academy students prepared by the U.S. Department of Homeland Security for acceptance into the U.S. Fire Administration’s National Fire Academy’s Volunteer Incentive Program, Fire Cause and Origin Determination for Company Officers R811 Course, states that in preparation the applicants should, “Review the following: NFPA 921 Guide for Fire and Explosion Investigations, 2004 edition and NFPA 1033 Standards for Professional Qualifications for Fire Investigations.” The coursework for the fire investigative courses from the same association include recommended reading and reference to NFPA 921 and 1033. Research has shown that of the organizations involved, including affiliate organizations such as the International Association of Arson Investigators and the National Association of Fire Investigators all recognize support and promote NFPA 921 and 1033.

**NFPA 921, NFPA 1033 and the Law**

Prior to the Daubert decision, fire investigators often referred to the practice of fire investigation as an “art.” Such a statement today, especially in the forensic arena, is considered by some suicidal. The suggestion that an opinion is in any part based on anything other than the guidelines established in the Federal Rules of Evidence or those of the local, city or state governments opens the door for easy and successful challenge. By nature and fact the process of fire investigation and the opinions generated there from are heavily based on experience and practice. However, since the majority of these resulting opinions are utilized in the forensic forum the fire investigative community has emphasized the scientific methodology as a significant component of the investigative practice, de-emphasizing the “art” of fire investigation and over-emphasizing the
importance of *Daubert* factors (if that is possible). As such, NFPA 921 includes many references to scientific methodology. In addition, under the chapter “Legal Considerations” the Federal Rules of Evidence components are stated specifically as are the relevant issues associated with the *Daubert* standard. NFPA 921 in Section 11.5.2.3.6 (c) states, “The potential witness can use this document (921) as well as others to establish that the methodology used in reaching the opinion was reliable.”

The references to *National Fire Protection Association* and its standards and codes in legal citations are numerous. The number of codes and the breadth of the subject matter are sufficient to permeate all fire related subject matter from investigation to product development, manufacture and installation. The work of the *National Fire Protection Association* had been recognized by numerous local and state governments and adopted it into local ordinances. *State of NY v. Shore Realty Corporation* deems specific standards of the *National Fire Protection Association* as “Incorporated and shall be deemed part of this (Nassau County Fire Prevention) ordinance.”

Numerous references to the *National Fire Protection Association* suggest recognition by the courts as a reliable source of codes and standards. However, and in comparison, NFPA 1033 and 921 have limited references and citation. Of those available and reviewed, none appear to challenge the stature or reliability of NFPA 921 and/or 1033 nor do questions appear that the data contained within is unreliable by any reasonable standard. In actuality, these documents seem to have been embraced by the system, and a welcome relief offering structure where none was available before.

In those cases where fire investigators, their methods and/or their opinions were in question, FRE 702 and *Daubert* are standards by which the expert’s results are judged. However, without the assistance of recognized industry standard, it is the responsibility of the Judge to determine the validity of the expert, his methods and opinions. This is not an easy task for one unfamiliar with an entire branch of Forensic Science, armed only with the decisions that came before him and the arguments of advocates from either side.
Cases of interest include *Ficic v. State Farm Fire and Casualty Company* 13 and *Truck Insurance Exchange v. Magnaetek, Inc.* 14 In both cases NFPA 921 as a document went undisputed in its authority. Similarly, a reference to NFPA 921 was found in proceedings from *United States of America v. Terry Lynn Nichols.*

In *Traveler’s Indemnity Company of America v. Canon, USA* the court recognized that NFPA 921 as it relates to *Daubert* standards “Qualifies as a reliable method endorsed by a professional organization.” 15 In this case, the plaintiff’s expert purportedly followed the standards set forth in NFPA 921. However, the court concluded that “[The experts] did not apply this standard reliably to the facts of the case.”

*McCoy v. Whirlpool Corp* 16 references and discusses both NFPA 921 and 1033 of which neither was opposed by plaintiff or defense. The Judge indicated that “The parties agree, [NFPA 921] represents the national standard with regard to appropriate methodology for investigation by fire science experts.” Interestingly, the plaintiffs complained that the absence of reference to NFPA 921 in the experts indicates that it must be “mere subjective belief and speculation.” He goes on to call NFPA 921 “The gold standard for fire investigations.”

**Discussion**

NFPA 921 and 1033, regardless of their classification have had seemingly broad and unchallenged acceptance in the relevant scientific community and courts of law. However, at no time does the NFPA suggest that 921 is a “standard” or “code” but is identified specifically as a guide. Although the technical committee members appear to represent the varied interests, there is a distinct and apparent absence of academic participation. Clearly, this has not been a factor to those utilizing these documents on either side of the legal fence. The question then arises, in the eyes of the courts, is the

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13 *Ficic v. State Farm Fire and Casualty Company.* 2005 Slip Op 25153  
14 *Truck Insurance Exchange v. Magnaetek, Inc.* 360 F3d 1206 (10th Cir. 2004)  
15 *Traveler’s Indemnity Company of America v. Canon, USA,* 394 F.3d 1054 (8th Cir. 2005)  
absence of objection sufficient to establish validity? If so, doesn’t such a test pave the way for broad misuse of a standard?

The emphasis on scientific methodology and ever-present *Daubert* overtones suggest that NFPA 921 and 1033 are written in direct response to FRE702. Does the welcome reception by Judges suggest that these documents are, for their relevant scientific community, the treasure map to successfully overcoming the challenges set forth by FRE702 and the *Daubert* components within? If so, should we now look to the NFPA process of standards and code development as a model for other disciplines of the Forensic Sciences? Or are Judges simply glad that there is a document both sides agree upon?