

The Art of Forensic Detection and Sherlock Holmes


By Robert Ing, DSc, FAPSc

The fictional consulting detective Sherlock Holmes first appeared in 1887; the work of author Sir Arthur Ignatius Conan Doyle. Doyle had based Holmes on Professor Joseph Bell, whom he had studied under during his tenure at the University of Edinburgh Medical School. In 1885 Doyle received his doctor of medicine degree and later specialized in ophthalmology. From 1887 to 1927, Arthur Conan Doyle would write fifty-six short stories and four novels featuring the great detective and in each one of them apply his knowledge and vision of science and medicine as an integral part of Sherlock Holmes.

In many ways it is the art; the ability to conceive a concept and then make it a reality by utilizing the means available that leads to innovation. As well, many will no doubt agree things that were science fiction decades ago are now science fact. Sherlock Holmes and his art of forensic detection has, and still is an inspiration to those who practice this as modern day science. Consider a world where the art of detection was based on individual wits, creativity and very basic science alone. Computers in forensic work would not be used until 1975 in Canada (for fingerprint analysis), DNA would not be discovered in England until 1984. The art of detection in 19th century England, specifically during the time period of 1880 to 1914 when Sherlock Holmes practised as a consulting detective required the practitioner to be well versed in many subjects but creative enough to integrate them to do his bidding.

Throughout the works that feature Sherlock Holmes, up to and including the 2009 Movie Sherlock Holmes the character clearly demonstrates his knowledge in chemistry, bloodstain identification, botany, geology, anatomy, law, cryptanalysis, fingerprinting, document examination, ballistics, psychological profiling and forensic medicine. In the 19th century, scientific instruments although not as advanced as today were made with mechanical precision. Based on historical research of the period and references in the fictional works of Conan Doyle, it could be concluded that Holmes used a 10 power silver and chrome magnifying glass, a brass tripod base monocular optical microscope probably manufactured by Powell & Lealand, (these specific items being the items du jour for the period) and had a small chemical laboratory. Compared to today's forensic incident team investigators, Holmes' with only two instruments on hand; a magnifying glass and monocular microscope would seem ill-equipped!

During the height of Sherlock Holmes' consulting detective practice, Scotland Yard had barely seen its 60th year as it had been founded in 1829.



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By comparison the Canadian North West Mounted Police (now RCMP) had been founded in 1873 with the RCMP Crime Laboratory decades later in 1937 and it would not have been until 1905 that the U.S. Federal Bureau of Investigation (FBI) would be founded, nor the internationally famous FBI Forensic Laboratory in 1932.

In several adventures (The Adventure of the Resident Patient, The Hound of the Baskervilles, A Study in Scarlet, 2009 Movie Sherlock Holmes) Holmes demonstrates his knowledge of chemistry to analyze and identify various chemicals and unidentified substances from tobacco ash and blood to botanical compounds. While during Holmes' time blood stain analysis had been established in 1813, toxicology determination for arsenic established in 1836, vegetable toxins in 1851 and presumptive blood testing in 1863 it wasn't until 1901 in Austria that Karl Landsteiner developed a blood group classification system and not until 1920 that Georg Popp pioneered forensic botanical identification. In this regard, Holmes was a man of the future.

In The Adventure of the Blue Carbuncle, Holmes demonstrates his knowledge of Craniology, a pseudo-science that had gained popularity around 1836 claiming character, personality, intelligence and criminality could be determined by the mapping of the shape and size of the skull. Later in 1882, Alphonse Bertillon a French police constable devised a system of anthropometry known as "The Bertillon System" or "Bertillonage" which was used to identify criminals using detailed measurements of the head and body, and the cataloguing of personal identifying marks such as scars, tattoos and deformities. In 1884 "The Bertillon System" was formally adopted by Scotland Yard but empirically proved to be flawed over the course of twenty-one years. Bertillon was recognized in his time for his research in anthropometry and as a questioned document examiner. Today, he is considered one of the early pioneers in biometrics. Interestingly, in The Hound of the Baskervilles, Holmes' client refers to Holmes as ". . . the second highest expert in Europe," after Bertillon. In The Naval Treaty, Holmes expresses his respect and admiration for Alphonse Bertillon.

Latent print identification has played a major role in the art of detection. Latent prints include fingerprints, footprints, handprints, animal prints, etc. Holmes in his adventures has drawn his magnifying glass on a few occasions to inspect a print or two. In 1877 the idea that no two fingerprints were alike and that they could be used for identification purposes was considered feasible but it wasn't until 1880 in a Tokyo court that fingerprint evidence was presented for the first time to indict an alleged burglar. In 1892 the first fingerprint classification system was developed by Sir Francis Galton.



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The “Galton System” as it was referred to, was the first step in establishing the science of fingerprinting. Later in 1896, Sir Edward Richard Henry developed a second-generation fingerprint classification system, known as the “Henry System” which became the basis of 21st century fingerprint classification. In 1901, Scotland Yard formally adopted the “Henry System” of fingerprint classification for identification of persons and replaced the “Bertillon System” which relied upon measurements of the human body.

In *A Case of Identity*, Holmes demonstrates his ability of document examination and analysis. Systematic document examination procedures had been established in 1609 by Francois Demelle of France, and the analysis and comparison of ink on a questioned document had been established in 1810 by German scientists. In *The Adventure of the Reigate Squire* and *The Adventure of the Empty House*, Holmes uses his knowledge of ballistics to help solve the crime. In 1784 the first documented case of physically matching pistol wadding was conducted in England followed by the first comparative analysis of bullets in 1835 at Scotland Yard. However, it wasn't until 1889 that French scientists developed a system to match the bullets to the barrels of the firearms that they originated from.

With Holmes' vast knowledge of anatomy (thanks to his creator) and concept of crime scene management, forensic medicine is an area that he always excelled at. While in 1598 forensic medicine was practiced formally in Italy, it did not become a recognized branch of medicine in England until the early 19th century. Holmes throughout his adventures would constantly make reference to how crime scenes were easily contaminated and he always emphasized how maintaining the integrity of the scene was of the utmost importance. A mantra of many current crime scene responders. However, it wasn't until 1918, years after Holmes, that Edmond Locard a French scientist and considered one of the father's of forensic science would establish a system of rules for evidence collection, and his famous “Locard's Exchange Principle” which is the basis of all 21st century trace evidence collection.

One interesting observation, obvious by its absence in all of the traditional Sherlock Holmes adventures is despite the presence of the many facets of forensics presented, photography is the one that is not present. During the period of Holmes' adventures in England, dry plate photography which had been introduced in 1854 was used throughout the late 19th century in the photographing of criminals, victims and most importantly crime scenes. However, it would appear that despite its popularity Holmes preferred not to trouble himself with it.



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The greatest single attribute that most think of when they think of Sherlock Holmes is his ability of observation and deduction. Holmes can merely look at, or have a brief interchange with a person he has never met, yet be able to tell them so much about themselves. This ability demonstrated by Holmes in all of his classic adventures up to, and including the 2009 Movie Sherlock Holmes is actually a combination of elements from psychological profiling, psychological communication to cold reading.

Psychological profiling uses a benchmark of established statistical behaviour characteristics that are compared against a subject's behaviour characteristics in order to "fill-in" the blanks in order to establish a behavioural profile. For instance, a statistical benchmark establishes that 8 out of 10 people who wear red shirts, like chocolate ice cream and wear blue underwear when they eat ice cream. Therefore, one might look at a subject in a red shirt eating chocolate ice cream and profile them as wearing blue underwear at the time, based on this information. In 1890, the first case of psychological profiling was documented by Dr. Thomas Bond who profiled Jack the Ripper for Scotland Yard. Psychological communication is simply being able to read body language. Cold reading relies on a process of subjective validation where general statements are made about a person but in such a way that the individual finds them accurate and personally meaningful, so much so that they themselves may reveal further personal information which may be incorporated into additional statements. Cold reading has been used by mentalists, astrologers, mediums, palm, crystal ball and tarot readers for decades. Common cold reading statements may be found in many syndicated daily horoscope columns.

Holmes methods of "sizing a person up" has attracted the interest of not only mystery aficionados but also readers of divers interests. As a result of the characters' popularity in this skill, his name has been used to identify specific elements of cold reading and psychological communication. Holmesian Deduction is a method of intellectual detection based on deductive reasoning whose benchmark is based on modus ponens. The Sherlock Strategy is an element in cold reading that refers to obtaining information about a person you have never met by observing physical characteristics of that person from their manner of dress, posture, general demeanour, and any tell tale traces of where they have been or what they have done.

There is no doubt that Sherlock Holmes through his adventures has inspired generations of readers to consider pursuing a career in detection, science, or at the very least writing.


About the Author

Dr. Robert Ing is a forensic intelligence specialist and has appeared on North American news networks on the issues of technology crime, computer security, privacy and identity theft. As part of the Warner Home Entertainment release of Sherlock Holmes (the 2009 movie) on DVD and BlueRay on 30 March 2010, Dr. Ing was selected to host media events leading up to the release.

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