

The History of Lie Detection

by Darcia Helle

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In ancient China, a portion of rice spit from a person's mouth revealed whether he or she was lying. Spitting out dry rice indicated the dry mouth of a liar.

In Europe, during the Middle Ages, torture was used as a means of forcing a person to tell the truth. Ken Adler's article *To Tell the Truth: The Polygraph Exam and The Marketing of American Enterprise* states that the practice of torture was rooted in the theory that "the body's agony would oblige the lying mind to croak out its secret."

Europe's tolerance for torture declined throughout the eighteenth century. In the early 1700s, Daniel DeFoe was the first to move away from torture by suggesting that deception could be evaluated by monitoring the heart rate. Cesare Beccaria, in 1764, wrote of torture, "By this method, the robust will escape, and the feeble be condemned. These are the inconveniences of this pretended test of truth."

In 1895, the *Father of Modern Criminology* Cesare Lombroso, became the first person to use science as a method of detecting deception. Lombroso used devices called the *plethysmograph* and the *sphygmograph*. The suspect wore an airtight volumetric glove that was attached to a rubber membrane. This activated a pen that rolled over the surface of a smoked drum. The speed of the pen varied with the suspect's blood flow. Lombroso believed that, when a person tells a lie, the stress of deception affects his or her heart rate and blood pressure. By observing the deviations traced by the pen, an investigator would see when and if the suspect was lying.

The next advance came in 1897, when B. Sticker developed a method of measuring the amount of sweat a suspect produced during interrogation. This was determined by the electrical conductivity of the suspect's skin.

The first "polygraph" machine was actually a copy machine invented in 1804. The name, derived from Greek, means "many writings". In the very early 1900s, James MacKenzie, an English doctor, invented what he called the "ink polygraph". This was used to monitor cardiovascular responses by measuring pulse and blood pressure.

In 1914, Vittorio Benussi used pneumatic tubing to study an individual's breathing rates. The device wrapped around the person's chest and measured depth and rate of breath. Eugene Levitt, in his article *The Scientific Evaluation of the Lie Detector*, noted that Benussi's discovery showed that the "ratio of inspiration and expiration was generally greater before truth telling than that before lying." This last discovery gave scientists the final piece of their puzzle; blood

pressure, pulse rates, sweat production, and breathing rates could all be linked to the act of deception.

*The polygraph is almost purely American phenomenon;
no other country makes appreciable use of the technique.*

~ Gordon D. Barland

William M. Marston (also known as Charles Marston), a psychologist born and raised in Massachusetts, invented the true early prototype for the lie detector machine. In 1915, Marston, with the help of his wife Elizabeth, first demonstrated a lie detection test that used a *sphygmomanometer* (blood pressure cuff) to measure systolic blood pressure as a means of determining whether a suspect was lying during an interrogation. Marston firmly believed that proper interrogation techniques must be used along with technology in order to acquire accurate lie detection results. (An interesting side note: Marston also created the comic book character *Wonder Woman*.)

John Larson, who followed Marston's work, was a University of California medical student and an employee of the Berkley police department. In 1921, Larson invented the first instrument capable of continuously recording blood pressure, respiration, and pulse rate. The machine, which he called a *cardio-pneumo-psychogram*, documented all this information on a drum of paper. To be used along with the machine, he also developed an interview technique called the R/I (Relevant/Irrelevant) procedure. His technique mixed questions relevant to the crime with questions that were irrelevant. This was based on the theory that an innocent person would have a similar physiological response to both types of questions, while a guilty person would react more intensely to the relevant questions that focused on the crime.

Despite the use of the lie detector test in police interrogation, the courts did not consider its results admissible. In 1923, a federal court upheld the murder conviction in Frye vs. United States, in which the defendant had appealed on the basis that testimony from an examiner regarding a lie detector test that Frye had passed was not accepted as evidence. The court ruled that expert evidence would only be admitted once it had gained general acceptance.

Leonarde Keeler was fascinated by John Larson's work. He spent much of the early 1920s working to understand and improve the science of lie detection. Keeler used Larson's machine as a starting point, eventually designing a new machine that he called the *emotograph*. Keller added a *kymograph*, which rotated the drum of paper at a regular speed beneath the pens. He also

improved the recording of the data from the pneumographic tubes that wrapped around the suspect's chest and abdomen in order to measure the rate and depth of breath. The biggest change Keeler installed was a *psychogalvanometer*, the same device that B. Sticker had experimented with in 1897, to measure the resistance of the skin to small electrical currents emitted through metal electrodes attached to two of the suspect's fingertips. This last addition is what credits Keller with creating the modern lie detector.

Sometime in 1924 or 1925, Keeler's handmade *emotograph* was destroyed in a fire. August Vollmer, an acquaintance and chief of police at the Berkley Police Department, soon brought Keeler to William Scherer of the Western Electro Mechanical Company. Following Keeler's written plans and instructions, Scherer developed a mechanical metal bellow, a motor drive, a pneumograph to go around the chest, and a mechanical indicator to mark the graph when a question was asked. This new polygraph machine was then encased in a mahogany traveling case.

Leonarde Keeler's and William Scherer's machine was the first mass produced lie detector / polygraph. In the first three months, they sold between 60 and 80 of these new polygraphs to police departments all over the U.S.

Keeler's polygraph machine was featured in a 1938 ad for Gillette razors to show a man's positive reaction to using the razor.

Leonarde Keeler's patent ran out in the late 1930s, after which time the government and private businesses took over in further advancing the technology. The basic technology has remained the same, though the equipment is now computerized and more sensitive.

The use of the polygraph remains controversial. Physiological changes caused by emotional factors (guilt, fear, anxiety) can be remarkably similar to those of deception. Also, poorly phrased questions can be misleading and confusing for the person being tested. For the most part, lie detector tests remain legally inadmissible.

Leonarde Keeler opened the Keeler Institute, which was the first polygraph school. He worked as a private polygraph consultant until his death in 1949.