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## Chicago: Birthplace of Modern Polygraphy<sup>1</sup>

Чикаго: место рождения современного полиграфа

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The city of Chicago apparently got its name from the Miami-Illinois Indian word “shikaakwa,” meaning ‘smelly leek (garlic/onion)’. The leeks were prevalent along the river that flowed through the area (now the city of Chicago) and the Indian name for them also referred to the ‘striped skunk’, a smelly critter. That bit of history has no real relevance here other than to note that what happened in Chicago produced an exotic aroma that still today hangs in the air and continues to influence what is known about and what is done in the field of Polygraphy. Smelly? Well, maybe to critics. Not to those who know and understand Polygraphy.

From our point of view what happened in Chicago in the early days of Polygraphy was instrumental in moving the field forward, in modernizing it and establishing a basis

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for scientific assessment. The early practitioners in Chicago gave direction to what we accept today as ‘standard practices,’ often without recognition of the genesis of those practices. We’ll discuss this point later but first let us relate to you, the reader, our view of noteworthy contributions made in the formative years of modern Polygraphy.

## Written Reports of Value

We start here by introducing two written documents that were authored by Chicagoans and which, for those who wish to gain an historical background in ‘lie detection, contribute noteworthy information. The first of these is a paper prepared by Paul V. Trovillo, a seminal publication entitled “A history of lie detection.” (Trovillo, 1939, 1940). In this two-part paper Trovillo traces the historical antecedents of ‘lie detection’ with a focus on instrumentation and physiology. He also provides an overview of early testing processes and some of the psychological basis thought to be relevant to ‘lie detection.” Trovillo’s paper is well known and, in our view, ought to be read by all who have an interest in this field.

Our second recommendation is a more recent publication written by a noted Chicago-based historian, Kenneth Alder (Alder, 2007). Alder clearly does not hold a favorable view of ‘lie detection’ and in his work he attempts to show how many of the early pioneers working in Chicago, especially Leonarde Keeler, engaged in work that was highly suspect and without scientific grounding. Nevertheless, Alder’s account contains many historical details of early polygraph examiners, their personalities and their work. He provides the reader with an account of that period, mostly in the 1930’s to the 1950’s, that is not otherwise easily gotten. Reviews of Alder’s work are readily available (Horvath, 2008, 2008a) but we believe that readers interested in the field, in general, and in Keeler’s background in particular, will gain from what Alder has written, even though there will be disappointment in his perspective.

## Leading Practitioners

Chicago was home to two of the early, leading practitioners in the world, John E. Reid and the person Alder focused on, Leonarde Keeler. Both were affiliated with Northwestern University’s Scientific Crime Detection Laboratory, the first one established in the United States. Interestingly, that laboratory, which eventually was taken over by the Chicago Police Department, was directed by Fred E. Inbau, JD. He was a polygraph practitioner, a close friend of John E. Reid, and author of many books and articles on Polygraphy. More than that, he was also an internationally recognized authority on

criminal law and held the prestigious position of the John Henry Wigmore Professor of Law at Northwestern University until his passing in 1998.

Aside from Reid, Keeler and Inbau, there were other polygraph practitioners who were active in Chicago in those early years. These included Dr. John Larson, Charles Wilson and his wife, Jane DeArmond Wilson, the first female polygraph examiner in the United States, likely also in the world. As a point of interest, not directly related to Polygraphy, we note here that John Larson was also the first policeman in the United States to hold a doctorate degree. Today, that is still an uncommon, but accepted, educational credential in law enforcement, one that has led to greater interest in the application of scientific findings to guide practices in policing. Reliance on science was also one of the central points of contention between Larson and Keeler. Though Larson was an active practitioner who worked directly with Keeler, they were often at odds over the best approach to Polygraphy. Larson advocated a more science-based process; Keeler favored a more individualistic and personality-dependent testing procedure.

## Chicago-based Training Programs

After their departure from the crime laboratory, Keeler and Reid led two of the most acclaimed polygraph training programs in the world. Some of the names closely associated with the Keeler school included Leonard Harrelson, Lynn Marcy, who in the coming years became a strong advocate of what is now known as the Comparison-Question Technique (CQT), in his instance the eponymous Marcy CQT Technique. And there were others such as Walter Atwood and Raymond Weir, examiners who worked in federal government agencies and were actively involved in the creation of the American Polygraph Association. Some of those who were trained by Reid and went on to independent practices include George Harmon (California), Richard O. Arther (New York), and Charles McInerny (Pennsylvania). Though he didn't develop his own training program, another well-known person associated with Reid was Paul V. Trovillo. He was a practicing examiner and a forensic psychologist working at the Chicago Police Scientific Crime Detection Laboratory. He authored the important early work on history which we have already mentioned.

It is of interest to note that the commercial polygraph testing businesses and training schools established by Reid and Keeler were only a few miles apart from each other in central Chicago. But, they, Reid and Keeler, didn't have much contact with each other, disagreeing on a number of important, fundamental issues regarding testing 'techniques.' Keeler practiced, and his training program was focused on, what we now refer to as the Relevant/Irrelevant Technique (RIT). [Though some have credited Keeler

with creating that approach, it is not clear that he did; but he was a strong proponent of its use (Horvath, 2008a).] Reid, on the other hand, was dedicated to the procedure he developed and which he thought was, and history has shown to be, superior in many ways. He originally referred to his testing procedure alteration as incorporating a “comparative response question” (Reid, 1947) within a basic RIT approach. That process evolved over time and later became known as the Reid Control Question Technique.

## Contributions from Reid and Associates

During the period of interest here, from about 1950 through today, our focus is on developments that were reported from Chicago, mostly from John E. Reid and Associates. Though during those years the Keeler School was well known there were not many innovations or changes from that school, or its graduates, that were publicized in either the literature or the associations affiliated with the field. Two other training programs that were prominent during the period were the Arther School of Scientific Lie Detection and the Backster School of Lie Detection. Although both of them were well known at the time and both contributed to the field in some ways they were not Chicago based.

Our focus on John Reid and Associates leads us to first discuss a bit about Reid as a person, a leader in the field. In our view Reid was a most generous and devoted man who was professionally dedicated to his chosen field of interest. He believed that he, and those in the field, particularly those he chose to be trained in his program, had a responsibility to lead in a professional way. He emphasized the sharing of knowledge through participation in associations and in publication. He placed a strong emphasis on ethical practices and in careful selection of those who entered the field as well as in their training, which he thought ought to include both academic and practical teachings.

Reid’s interest in advancing Polygraphy is evident in the fact that he was one of the leading practitioners who merged the extant five separate professional groups of examiners into what became the American Polygraph Association, now the leading internationally recognized association in the world. Reid was a dominant force in getting this done though he was reluctant to do so. The reason for this is he thought a college degree ought to be a minimum requirement for training. He was promised by other proponents that if he agreed to approve the merger the degree requirement would be adopted after a short period when “investigative” experience would be allowed to substitute for a degree. Reid agreed to that condition and the APA became a reality.

Reid’s training program was a significant departure from what was, and still is, the norm in the field. That program was not less than six months in duration and, importantly,

required careful supervision of trainees while they administered real-life polygraph examinations under a state-controlled internship licensing program. Completion of that program typically led to a licensing examination administered by a state (Illinois) agency which, if passed successfully, granted a polygraph examiner's license to practice in that state. In fact, it might be said that such a licensure program, adopted in the 1960's and strongly emphasized by Reid, was one of the important Chicago-based contributions. Illinois was the second state in the U.S. to have such a program, largely as a result of Reid's efforts. The Illinois program was considerably stronger than others that followed. Among other things, it required applicants to possess a college degree, six-months of supervised training, and passage of a licensing examination. As a brief point of historical interest the Reid training program evolved into the Reid College, a state-approved professional school offering a Masters degree. However, it is no longer operational. The only program that is somewhat similar in its emphasis on both academic and practical training is that offered in the United States by the National Center for Credibility Assessment, the sole site for the training of polygraph examiners for U.S. government agencies (Horvath, 2008a).

Another often neglected early contribution by Reid, in collaboration with Fred Inbau, was to bifurcate the related but separate practices of police interrogation on the one hand and on the other polygraph testing; that is, Polygraphy. This was done by their authoring two important and independent contributions to the literature. One of these was a book devoted exclusively to detailing humane and legal practices of criminal interrogation. It became the leading manual across the world and still, today, though having gone through a number of editions, is the most influential, though now somewhat controversial, volume on the topic (Inbau, Reid, Buckley & Jayne, 2001).

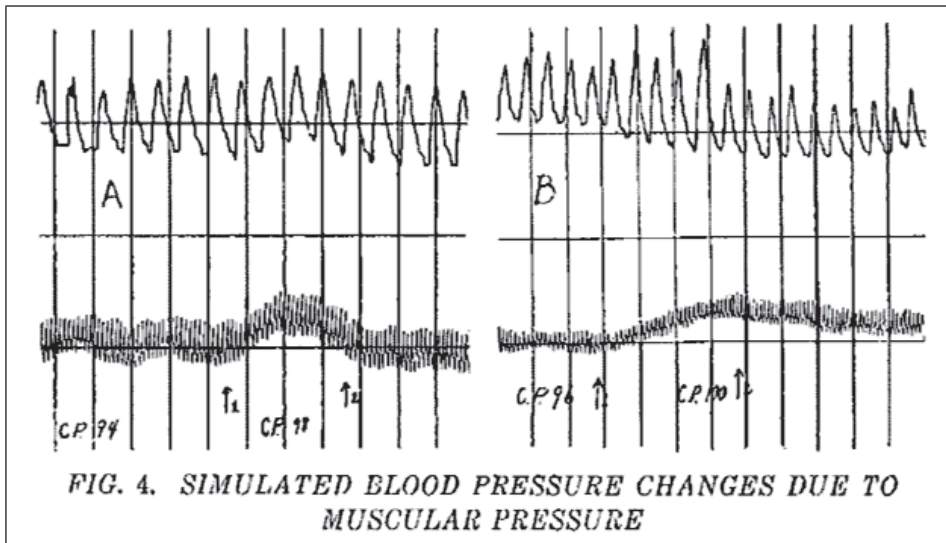
The second book dealt directly with Reid and Inbau's perspective and recommended practices on Reid's development and application of the CQT (Reid & Inbau, 1977). This book was for many years the most frequently and widely cited volume on "lie detection." It laid the foundation for all of the contemporary CQT procedures in use today.

The separation of 'interrogation' from Polygraphy showed the two practices to be independent. That is, polygraph testing using the CQT not only did not necessitate the use of "interrogation" practices, e.g., accusation, it, to the contrary, required avoidance of them. Direct recognition of this point by Reid and Inbau was a clear departure from what was an historical artifact no doubt stemming from the early influence of Keeler's approach to Polygraphy (Horvath, 2007, 2008a). In other words CQT polygraph testing as advanced by Reid and Inbau made it possible to establish "truthfulness" with the use of instrumentation to detect 'objective' physiological changes within a standard procedure; science-based detection of deception was now a reality.

Reid's interest in contributing to the field through publication likely came about from his close association with Fred Inbau, who was a prolific author in many areas related to criminal law but also in "lie detection." It is somewhat surprising though that one of Reid's initial contributions dealt with a topic that has been a prominent one in the field only in the past decade or so. Countermeasures and their effect on test outcomes was a concern to Reid as early as 1945. That was the year he published an article describing the effect of self-induced 'blood pressure responses' on testing data (Reid, 1945). His work in that area led him to develop a device to detect such countermeasure efforts and to incorporate it into the polygraph instruments he had specially manufactured by the Stoelting company. The device Reid devised was, in fact, similar in function to those in widespread use today, though the current technology is more advanced. The use of Reid's device was a standard practice in the testing done by him and his colleagues from the early 1950's and on.

In Figure 1 I have displayed a photo that was included in Reid's 1945 publication. As shown, on the left side of the figure is a rise in the cardio tracing due to induced muscular tension in the right arm. On the opposing side is a similar display showing a blood pressure rise induced by an examinee pressing his feet to the floor.

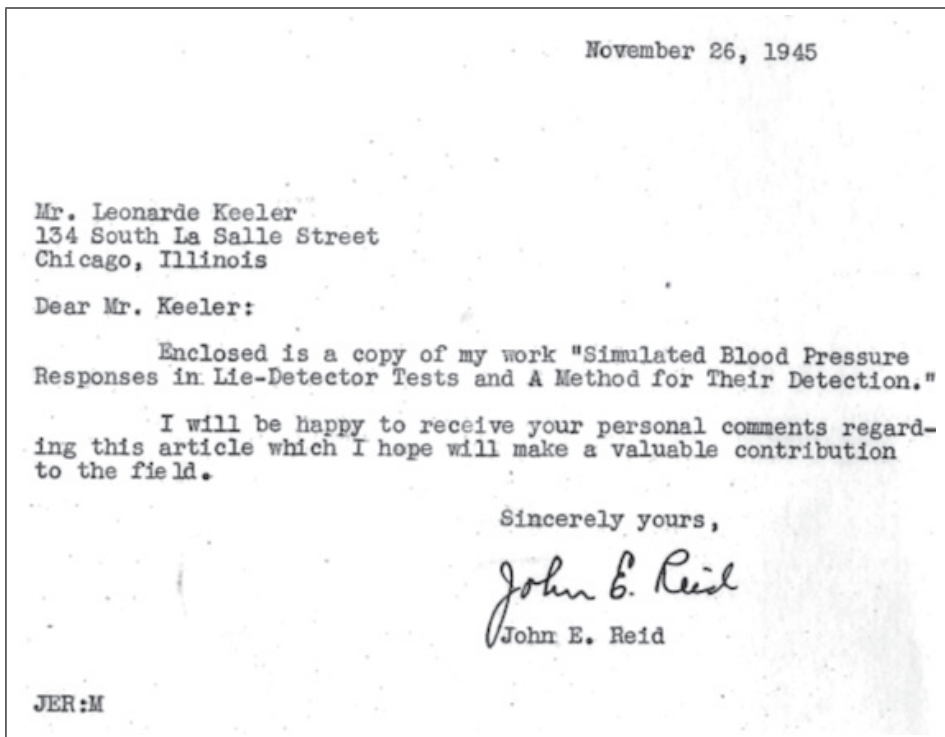
Figure 1. Copy of Simulated Blood Pressure Changes Reported by J. Reid, 1945



Source: Reid, J. (1945). Simulated Blood Pressure Responses in Lie-Detector Tests and a Method for Their Detection, *Journal of Criminal Law and Criminology*, 36, 3, 201-214.

In Figure 2, I have shown a copy of a letter Reid wrote to Leonarde Keeler. Here Reid advises Keeler of the article on 'countermeasures' and welcomes receipt of Keeler's comments. It is not known if Keeler responded. The letter does indicate, though, that Reid desired to let other examiners know of his concern regarding examinees' distortion of their physiology.

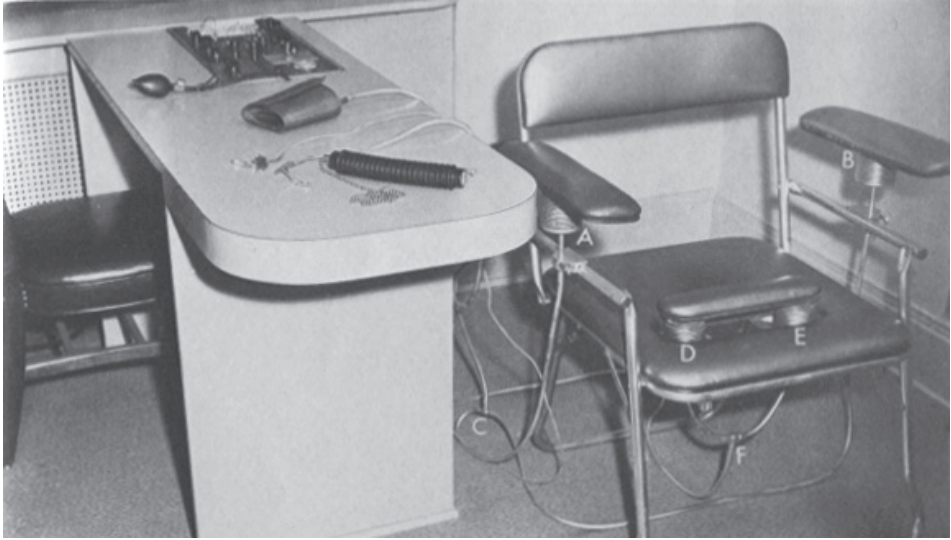
Figure 2. Copy of a letter Reid wrote to Leonarde Keeler Regarding his article on possible 'countermeasures' in 'lie-detection'



Source: Personal files, F. Horvath.

Shown in Figure 3 is a photo of the Reid apparatus that was incorporated in his polygraph instruments to detect upper torso and leg pressure movements by examinees. In both cases the devices were based on the use of specially constructed metal bellows that were operational in a closed pneumatic system. The bellows system was very sensitive but somewhat fragile, requiring regular maintenance.

Figure 3. Photograph of Reid's early muscular tension/movement chair



Source: Reid, J. & Inbau, F. (1977). *Truth and Deception: The Polygraph ("Lie Detector") Technique*, Williams and Wilkins Company, Baltimore

Reid was and continues to be well known along with Fred Inbau, for his work in advancing police interrogation from what was referred to as the 'third degree' to a more humane and acceptable and yet more effective questioning technique (Inbau, Reid, Buckley & Jayne, 2001). However, it was in the 'lie detection' field that his primary contribution was made. Two years after his publication dealing with 'countermeasures' he authored an article that described an enduring, fundamental revision to the extant Relevant/Irrelevant Technique then in common usage. In this article he gave the field a new way of structuring polygraph examinations that greatly enhanced the likelihood of distinguishing truthful examinees from those who were deceptive. This approach as mentioned earlier was initially described by Reid as incorporating a comparative response question; his testing method evolved and became known as one of the Control Question Techniques, and, subsequently in the field as one of the Comparison Question Techniques. (This change in terminology came about primarily because of criticism that the 'control question' was not technically a 'control' as it would be described in the scientific literature). Today the family of Comparison Question Techniques (CQT) is in widespread use.



There are some cosmetic differences between them and they are applied in somewhat different ways. They are often eponymously named so as suggest real differences, such as: the Army MGQT, the Arther Technique, the Backster Zone Comparison Technique, the Marcy Technique, the Utah Technique and so forth. In spite of the claims to the contrary all of these, as well as others differently named, when properly applied, are functionally similar and seem to yield similar outcomes (Horvath & Palmatier, 2008).

That improvement by Reid was initially based on the insertion of a single “comparative response question” into the question structure common in use in the 1940’s, as indicated in the listing shown at the top of Figure 4. Reid’s initial change is shown in the bottom line of Figure 4, in which a comparative response question is inserted near the middle of the question list. Over time that format was changed by Reid and his associates as were a number of other testing procedures; some of the most significant we’ll describe here.

Figure 4. Initial and Revised Reid Test Format Structure: 1947

Conventional Test Format (RIT):

I, I, R<sub>1</sub>, R, I, R, R, I, R, R, R<sub>7</sub>

R<sub>1</sub>, a ‘knowledge’ question

R<sub>7</sub>, a ‘lie’ question

Initial Comparative-Response Test Format:

I, I, R<sub>1</sub>, I, R, C, I, GC, R, R, R

R<sub>1</sub>, a ‘knowledge’ question

GC, a ‘guilt complex’ question

Source: Reid, J. (1947). A Revised Questioning Technique in Lie-Detection Tests. *Journal of Criminal Law and Criminology*, 37, 6, 542–547.

## Assessment of Polygraphic Data

We do not know who devised the method employed by Reid to systematically ‘score’ polygraphic data. It is certain though that the method was in use in the 1950’s about the time when Paul Trovillo and Richard Arther worked with Reid. The scoring method then, and through at least the 1980’s, was known as the check-mark scoring system (Horvath, 2011). Simply stated this method did not require the assignment of numerical values to responses seen on polygraph charts. Rather, it required an assiduous, systematic review of response data to each relevant and comparison question in the collected polygraph charts. Check-marks, varying in strength according to the degree of response to each question (sometimes reported as ‘small’, ‘medium’ or ‘large’), were noted for each question and the accumulated ‘check marks’ for each question were used to indicate the examiner’s chart-based decision; stronger and more frequent marks to comparison questions led to an outcome of ‘truthfulness’ whereas if the stronger, more pronounced checkmarks were seen at relevant test questions, a decision of ‘deception’ was in order.

We note here that this method of ‘scoring’ charts was a standard procedure used by Reid. It was introduced by Richard Arther to Cleve Backster when they worked together in New York. The ‘scoring’ form used by Arther is shown in Figure 5. It can be seen there that the method was very similar in concept to what is often done today, requiring inspection of response data to each test question in each physiological channel. Backster “borrowed” that approach and advocated the assignment of numerical values instead of check-marks and he also devised a way of using the accumulated assigned numbers to set numerical values for decision points, an approach that we are confident all trained examiners recognize. Arther didn’t agree with the way Backster’s numerical values were being used and it is clear that Reid also preferred the check mark system for many years after Backster’s scoring method was introduced. We mention here that the available evidence does not show, in spite of what some have said, that the accuracy of blind ‘scoring’ outcomes differs substantially between those two ‘scoring’ approaches, though the assignment of numerical values is advantageous for purposes aside from decision-making.

Figure 5. A Copy of an Early Arther Chart-Analysis Form Using the 'Check-Mark' System for Chart Evaluation

**ARTHER'S CHART-ANALYSIS FORM** Person: 5 Date: 7/10/60 Opinion: T

ANSWER WITH JUST "+" OR "-". Is B in PST same as in SAT? + Is B in DVT same as in SAT? +  
 During warm-up period, cuff inflation, and cuff deflation, is B basically "normal" in: PST? + DVT? + SATs? +  
 Comparing pre/post test with when actual questions are asked, is B basically same in: PST? + DVT? + SATs? +  
 Is the person controlling his B? -  
 Start with the second question. Use 3 different size checkmarks.  
 Check NO MORE than the 2 largest reactions in each recording for each SAT and the DVT.

	1	3V	3K(B)	5	6	8	8T	9	10	11
T-1	Breathing	B ✓	B	B	B	B ✓	B	B	B ✓	B
	Breathing	B ✓	B	B	B	B	B	B	B ✓	B
	CSH	C ✓	C	C	C	C	C	C	C	C
T/L/I	Cardio	C	C ✓	C	C	C	C	C ✓	C	C
T-3	Breathing	B ✓	B ✓	B ✓	B	B	B ✓	B	B	B
	Breathing	B ✓	B ✓	B ✓	B	B	B ✓	B	B	B
	CSH	C ✓	C	C	C	C	C	C	C	C
T/L/I	Cardio	C	C	C	C ✓	C	C	C	C	C
T-4	Breathing	B ✓	B	B	B	B ✓	B ✓	B	B	B
	Breathing	B ✓	B	B ✓	B	B	B	B	B	B
	CSH	C ✓	C	C ✓	C	C ✓	C	C	C	C
T/L/I	Cardio	C	C	C ✓	C ✓	C	C	C	C	C
DVT	3	5	7	9	10	13	15			
	Breathing	B	B ✓	B ✓	B	B	B			
	Breathing	B	B ✓	B ✓	B	B	B			
	CSH	C ✓	C ✓	C	C	C	C			
	Cardio	C ✓	C	C	C	C	C			

Please half-moon underneath actual chosen number. Do the DVT checks indicate possible spot-responder? -

120 16

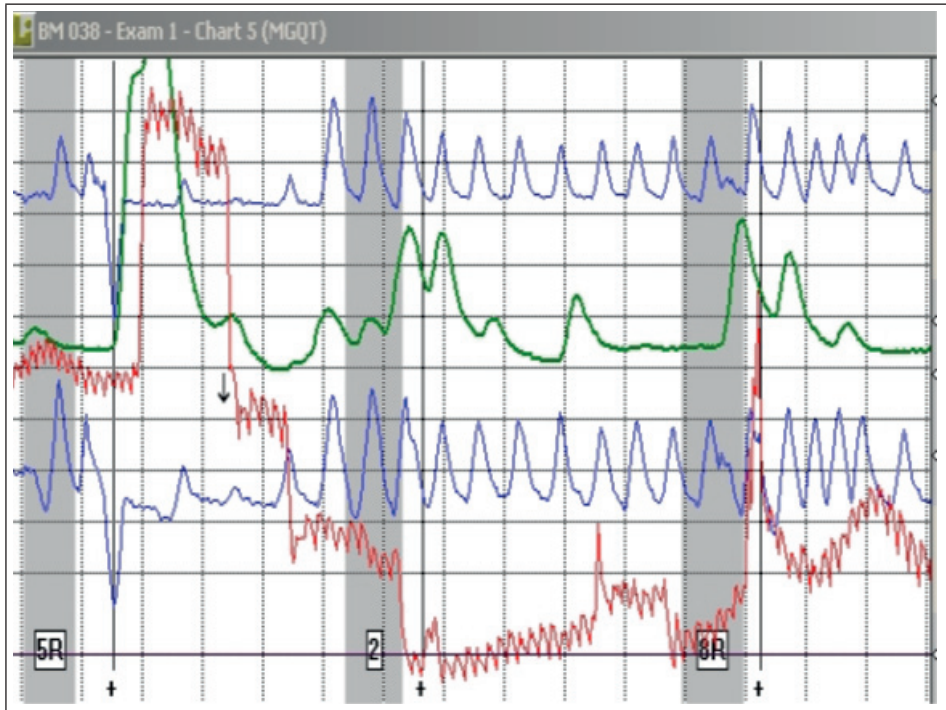
Source: Personal files, F. Horvath

### Specialized Tests

A number of specialized "tests" were introduced by Reid and his associates. These tests were designed to accomplish specific purposes and typically, if appropriate, were included as a part of the testing protocol in addition to the 'standard' tests that made up the basic battery of three tests that were fundamental to the testing process. The first of the specialized tests was introduced by Reid about 1960. This was known, and is still known and commonly used at times today, as the "Yes" test. In this the examinee is directed to answer each test question with a "Yes" that had been already answered in prior testing with a "No." The specific purpose of this is to determine if the examinee will willingly follow the instructions of the examiner or will purposely do otherwise and engage in efforts to distort the polygraphic data. Commonly this test is employed

when the examiner has reason to believe that the examinee is being uncooperative. (See Figure 6). The test is for that reason an option the examiner chooses when it appears to be justified.

Figure 6. Copy of a “Yes” Test Showing Deliberate Distortion on Test Questions

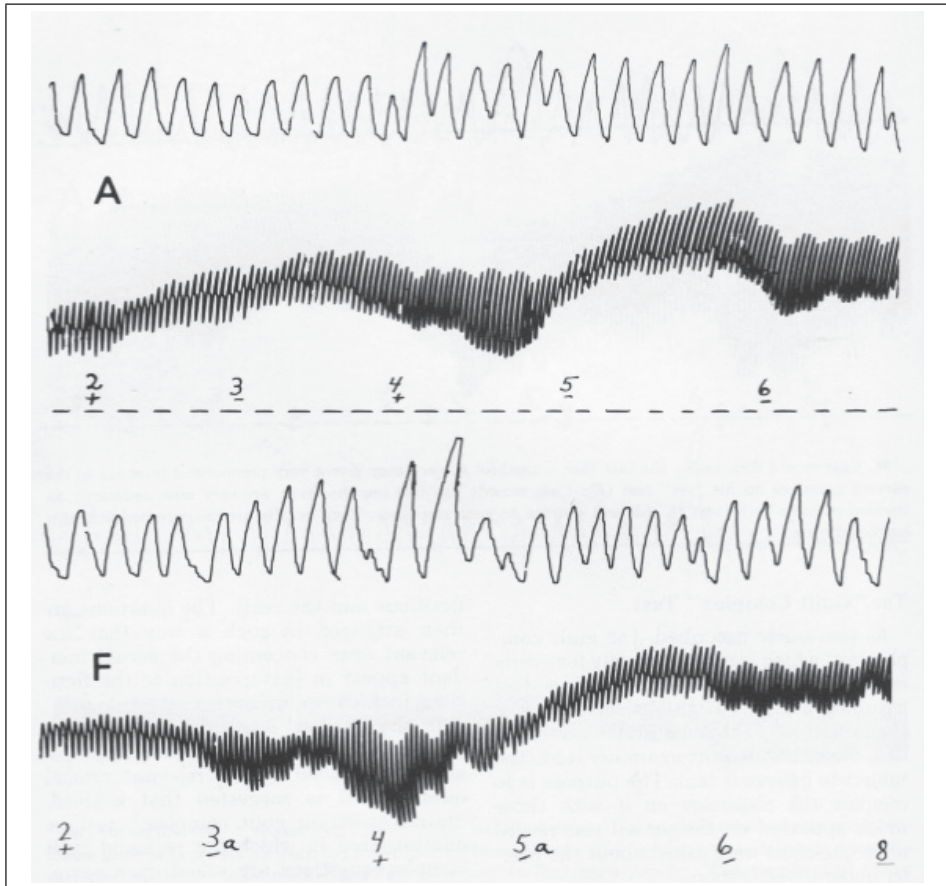


Source: personal files, F. Horvath.

As the Reid testing format changed over time he introduced the use of a “guilt complex” (GC) question (See Figure 4) in an effort to determine if an examinee was producing responses to the relevant (and sometimes the comparison) questions but apparently for reasons not related to actual deception. The regular use of the GC question did not show it to be advantageous either in its own right or as an alternative ‘comparison’ question. However, it was recognized that there were some examinees, particularly in serious, highly-emotion-laden examinations, who would respond to all questions in a way that appeared to be suspect. When this occurred it called for GC testing, not just the asking of a GC question. This testing involved the administration of a complete examination but one in which a fictitious crime was introduced to the examinee but which

he/she wasn't told was not real. An example of a GC test is shown in Figure 7 wherein the responses were not produced by deception, although they appear to be.

Figure 7. Copy of a Guilt Complex Test Showing Physiological Responses not Due to Deception



Source: Reid, J. & Inbau, F. (1977). *Truth and Deception: The Polygraph ("Lie Detector") Technique*, Williams and Wilkins Company, Baltimore

Reid's examiners, like many others in the period of time of interest to us, carried out a large number of screening examinations, particularly those dealing with security screening, such as applicants for employment in law enforcement and other security-conscious agencies. One of the principles that governed that testing process was that the issues of

inquiry were narrower and more specifically defined than they would be otherwise. That is, for example, asking about the theft of money would be separated from asking about the theft of non-monetary items. And, that testing was carried out in a manner similar to what was done in specific-issue testing. This was accomplished by separating issues of inquiry so that those that were similar in nature, involving theft, for instance, were separated (and covered in independent testing) from those that involved other behaviors, such as involvement in bribery. That testing method was structured so that the Reid CQT standard protocol was applied in each of at least two separate examinations, each devoted to a set of related relevant questions. And, the testing required the use of standard comparison questions and standard evaluation of the polygraphic data.

There were many occasions when Reid invited or accepted requests from 'outside' examiners to his office complex so that the practices he advocated could be made clear to others. Even though much of what he emphasized was included in his papers and books on the topic (Reid & Inbau, 1977), there were some practices that were newer than what had been written about and some that were not well understood even though there was written documentation. One example of this was the fundamental Reid CQT technique. The application of that method was demonstrated to many persons who requested instructional visits at Reid's office. Among these were representatives of foreign governmental agencies, U.S. police agencies, U.S. governmental agencies and commercial polygraph examiners. These visitors also included persons from the U.S. Army Military Police School (USAMPS-Army Polygraph School), the early federal government polygraph examiner training facility. There is no need to detail here all that took place in these visits or what occurred after them. But, it is worth noting that subsequent to the USAMPS visits the federal government adapted the Reid CQT to its own use and renamed it – with Reid's reluctant approval – as the Army Modified General Question Test (MGQT). Though it was applied in a way similar to what Reid advocated there were some significant differences with which Reid didn't agree.

Similarly, the Reid security screening examination process was adapted to the USAMPS (Which was later renamed as the Department of Defense Polygraph Institute, the Defense Academy for Credibility Assessment and more recently as the National Center for Credibility Assessment.) own use with some modification. It was renamed the Law Enforcement Pre-employment Test. The LEPET approach has been widely used and has been shown to be quite effective in the limited research that is available, though there is seldom any recognition of its initial development by Reid and Associates.

Another specialized process that Reid emphasized for use in testing, when it was appropriate, was an evidence-connecting-question. While the value of this type of question is now well known, its use has limited application. It is best applied when a connection between an event, a crime, for instance, and an identifiable and realistic point of evi-

dence is known. A finding of a shoe print below an outside windowsill of a home that had been burglarized, for instance, would be a common example.

One of the specialized tests that was developed and researched by one of the authors (FH) when he worked with Reid and that is widely used today is the Silent Answer Test (Horvath & Reid, 1972). This test initially was applied in an attempt to overcome the reticence of some examinees to verbally respond to comparison questions. As research was carried out it became clear that the test had value in a variety of circumstances often encountered in field examinations. For examples, it helped to stabilize the physiological data and it seemed to enhance the data in subsequent testing. Over time, the test was adopted as a standard one in the Reid testing protocol.

We have already noted that Reid developed an apparatus to enable the recording of deliberate efforts to distort polygraphic data. Less well known than this was Reid's exploratory methods to develop alternative ways to collect physiological data. One of these included the use of an infrared transducer, attached to an examinee's neck over the carotid artery, to record blood flow (See Figure 8). Neither this method or Reid's use of a laser-doppler apparatus to remotely record breathing proved to be useful in practice (See Figure 9).

Figure 8. Photograph Showing an Alternative Method for Recording Cardiovascular (Blood Flow) Changes Using an Infrared Transducer at the Carotid Artery



Source: Reid, J. & Inbau, F. (1977). *Truth and Deception: The Polygraph ("Lie Detector") Technique*, Williams and Wilkins Company, Baltimore

Figure 9. Photograph of a Doppler Non-contact Sensor for Recording Breathing Activity, Reid & Associates, 1960's



Source: Reid, J. & Inbau, F. (1977). *Truth and Deception: The Polygraph ("Lie Detector") Technique*, Williams and Wilkins Company, Baltimore

During the period of interest to us, there was a Chicago-based examiner not affiliated with Reid and Associates whose name was Richard Golden. He had an interest in experimenting with testing methods and he developed, and promoted, an approach he referred to as the Yes-No Technique. In this method an examinee would be asked the "standard" list of test questions but each would be repeated two times, separated by 15 or 20 seconds. The examinee was instructed to answer, during the asking, with the 'truth' the first time the question was asked and with a 'lie' the second time. Golden believed that the dual askings would provide a 'control' since one asking in each pair would be a lie and one would not be. This idea was of some interest for a short period of time and limited attention was given to it in the literature; it didn't appear to be very effective. However, it is worth noting that Golden's idea was very similar to an approach suggested by critics of the CQT. The late Dr. John Furedy, for instance, reported that



double-askings of questions provided an actual scientific “control” to be preferred to what was done in CQT methods (Furedy, Davis & Gurevich, 1988).

## Testing Processes

It is well known that Reid emphasized an approach to polygraph testing that included the careful and systematic attention to all information developed during a polygraph examination. This method was somewhat analogous to medical diagnosis in which observable symptoms are brought to bear on the development of an outcome. The term Global Evaluation, as described by Slowik (Slowik, 1982) would be applicable here, though as he described it the term is quite different from how some examiners in the field use it; they use the term to refer to a desultory, unsystematic overview of ‘chart-based’ data. Reid used it, and Slowik showed, that in practice the term described a systematic, methodical evaluation of all relevant examination data; chart-based information was one of the components in that assessment. Overall, the proper use of that method was to reduce the likelihood of an erroneous diagnosis (Horvath, 2011; Slowik, 1982).

In Reid’s approach to polygraph testing observation of examinee behaviors was an important adjunct to the testing process. Reid and Arther, when they worked together in the early 1950’s, noted that the behavior of examinees who were truthful were often different from those of deceptive examinees (Reid & Arther, 1953). As a consequence of this they developed a pre-test interviewing process in which they tried to capitalize on—or enhance - those behavioral differences to assist their decision - making. In subsequent years that interviewing process saw many changes and it remained a standard component of the Reid testing method. In the 1970’s one of the authors (FH) reported a research paper in which that interview process, referred to by him as a Structured-Pre-test Interview (SPI), was investigated. This was reportedly the first “English language report of original research on the prediction of deception from multiple cues” (Horvath, 1973). The result of that research confirmed that the verbal and nonverbal behaviors of truthful examinees did indeed differ from those of deceptive persons, though the accuracy with which that could be done was limited. Today, of course, many examiners eschew the idea of using behavioral data as an assistive to decision - making, though there is clear and compelling scientific data that confirms, in principle, that ‘deception’ is indeed accompanied by regular and observable behaviors.

The research on the SPI led to another Reid contribution to the field. This was what is now known as the Behavioral Analysis Interview, the BAI. Although this is often seen as being the same as the SPI it is not. There is an important distinction to be noted:

the SPI was administered immediately prior to a pending polygraph examination; the BAI was developed as a stand-alone interview process. [The difference between the two revealed in usage might be attributed to what has been described in the literature as the 'bogus pipeline' (Jones & Sigall, 1971; Roesse & Jamieson, 1993). This refers to the finding that persons tend to be more forthcoming when aware that a 'lie detector' is readily available than when they're not anticipating such a check on their statements.] The BAI was developed from the SPI and was intended to be applied primarily in those cases in which polygraph testing was not anticipated or in those instances in which a large number of persons needed to be reduced to a smaller, more focused group for investigative purposes. The SPI/BAI, or, at least, parts of them are used by many examiners and are commonly taught in leading polygraph examiner training programs; generally, though, the emphasis is on the use of isolated items drawn from those processes and they are not usually applied as a methodical, structured interview process.

## Reid Testing Format and Process

Initially Reid's testing process involved the use of Relevant/Irrelevant testing as described in his early article (Reid, 1947). After he developed the 'Comparative Response' question he incorporated that question in each test he carried out. Over time, in the early 1960's the testing process (in specific-issue instances) evolved such that it always included a 'stimulation test' as the first in the series, followed by two investigative tests, the format of which incorporated two 'comparison' questions, four relevant questions and four irrelevant questions.

Because experience showed the use of a 'stimulation test' was more effective if done as the second in the series the basic testing process was altered so that it included three tests, the first one of which included an investigative list of questions. The second test was a stimulation test and that was followed by a repetition of test one. There were some instances in which additional testing was appropriate. If that situation arose the basic battery was followed by a test in which the investigative question list was asked again but this time the questions were asked in a different order; this was a "mixed question" test. Also, in some instances a "Yes" test would be administered, often as the last one in the series.

After it became clear that the Silent Answer Test contributed to the series of tests Reid routinely relied on, it was introduced as a standard test in the series. Typically, as experience showed, this was best done after the second investigative test was completed. All of this and other information regarding the Reid testing process is readily available in the Reid and Inbau (Reid and Inbau, 1977) volume.

## Evidence: Chicago Contributions

Since the process was developed in Chicago it's logical to ask what it was that developments in that city contributed to what is known about the CQT and how well it works. As a point of interest we note that the first research report on blind review of CQT 'charts' was reported there (Horvath & Reid, 1971). This report in 1971 was followed by several others that showed that the Reid CQT yielded in blind review a very high accuracy and, interestingly and importantly, as high as that which has been reported in more recent years with other CQT procedures.

We note here that the early studies reported by the Reid examiners have raised some methodological concerns (Office of Technology Assessment, 1983). However, there are a number of very important points to bear in mind regarding these studies. First, they were all reported in a respected journal. Second, they all involved blind review of real-life polygraph data, not laboratory collected data. Third, they all were known to involve testing done by Reid-trained examiners using the actual Reid CQT procedure. Fourth, in each of the studies a variety of different case types were being investigated by polygraph testing, from simple thefts to homicides. Finally, when the blind review evaluators assessed the chart-based information they used the 'check-mark' scoring system that we've already mentioned. None of the evaluators employed any of the numerical scoring systems in use today. In other words, notwithstanding the comments of some observers, we suggest that it is careful attention to assessing the data in polygraph charts that can lead to high accuracy whether that involves the assignment of numbers or not. Since the check-mark system was developed in Chicago and it was the genesis for the common numerical scoring systems in use today we mention findings from its usage here.

While we will not review the details regarding each of the Reid-based blind-review studies of interest here, we do show in Table 1 the results from the first study along with the findings from the subsequent reports. In that table it can be seen that in the first study, by Horvath and Reid (1971), the average accuracy of inexperienced evaluators was 79%; evaluators with higher experience levels also had a higher average accuracy, 92%. In the subsequent three studies the average accuracy was about 87%. It is to be noted that in these studies the blind-review accuracy did not differ significantly between decisions on "truthful" charts versus those made on deceptive persons' charts; in fact, accuracy was somewhat higher on truthful persons than on those who were deceptive.

Not shown in Table 1 are the results from one of the Reid studies that was done somewhat differently from the others (Senese, 1976). In this study it was of interest to deter-

mine if the stimulation test carried out between a first test and a second affected the accuracy with which those tests were blind-scored. It did; the accuracy was greater (71%) following the stimulation test than before (56%), though it is clear that the accuracy of blind reviewers was lower when they evaluated only one ‘chart’ as opposed to all that were administered in an examination as was done in the other studies.

Table 1. Summary Results, Percentage Correct Only on Truthful and Deceptive Persons’ Polygraphic Data Using Check-Mark Scoring, from Published Blind Review Studies Reported by Reid & Associates

Study	Percentage Accuracy of Blind Reviewers	
	Truthful Subjects	Deceptive Subjects
1: Horvath & Reid, 1971		
High Experience	94%	89%
Low Experience	83%	75%
2. Hunter & Ash, 1973	86%	87%
3. Wicklander & Hunter, 1975	87%	90%
4. Slowik & Buckley, 1975	90%	84%
Average Accuracy	88%	85%

One of the notable absences in the Reid testing method is that it didn’t include the so-called advances that others have advocated over the years. For instance, there was no use of what are called technical questions such as a sacrifice relevant question, a symptomatic question, or a countermeasure question. Moreover, non-exclusive as opposed to exclusive comparison questions were used and there was no arbitrary pairing of comparison and relevant questions in the testing format. In spite of these ostensible deficiencies the procedure yielded an accuracy in blind review studies comparable to the procedures which incorporated those features. It is also worth noting that the average accuracy in these early Reid-based studies, 87%, was quite similar to the average “accuracy” of 85% reported by the National Research Council, (2003) in their review of many of the studies provided to them. (Unfortunately, the NRC group apparently did not do an extensive, independent search to identify research relevant to their needs. They relied heavily on what was made available by the Department of Defense Polygraph Institute personnel, particularly the Research Division.)

One other Chicago-based development necessary to mention here is the use of Peak-of-Tension testing (POT). Surely, all examiners are aware of this special testing method even though its usage is quite limited in the field (Reid & Inbau, 1977). It appears that the first person to make use of that approach was Leonarde Keeler. Since his work was done in Chicago, largely while at the Scientific Crime Detection Laboratory housed at Northwestern University, his contribution of a well known, highly regarded though seldom used procedure is worth noting (Alder, 2007).

## Conclusion

It is clear that while Chicago may not have been the birthplace of polygraph testing, what took place in that city set the stage for many of the advances that have been made in the field. The first formal testing procedure, the Relevant-Irrelevant Technique, was initiated—and some might say ‘perfected’- there. The first use of specialized testing processes, the POT, the Yes test, the Guilt Complex Test and the Silent Answer test, occurred in that city. In addition, examiners in that city reported the first formal studies of behavioral assessments of real-life polygraph examinees, the first studies involving the blind review of polygraphic data drawn from real-life CQT testing and the first report of countermeasure effects on testing and the first development of an instrumental apparatus to detect them. Finally, and importantly, Chicago was also home to the first use of the comparative response question that provided the basis for all of the CQT testing approaches that are widely used across the world today. All of these were more than cosmetic developments; each of them in its own way made very substantive improvements in the testing processes in Polygraphy.

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Letter to the Editor  
*European Polygraph*

*Dear Editor:*

*I am writing to correct the record. In *European Polygraph* v.13, 1 (47) an article “Chicago: Where Polygraph Becomes a Science” was published showing co-authorship by Stanley M. Slovik and Frank S. Horvath.*

*I did not co-author this article nor did I review it or have any involvement in its preparation or submission to *European Polygraph*.*

*Frank Horvath, Ph.D.,  
Professor Emeritus  
Michigan State University*

\* \* \*

From the Editor:

*Dear Professor Frank Horvath, Dear Readers,*

*I am very sorry for our mistake that should have never happened but as it did, I sincerely apologise for it.*

*Jan Widacki*