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A CRITICAL ANALYSIS OF THE THEORY, METHOD, AND LIMITATIONS OF THE "LIE DETECTOR"

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The year 1954 showed increasing use of the machine called the "lie detector," also known as the "polygraph," "psychograph," "psychometer," "deceptograph," "reactograph," etc. In one northern city all the students in one high school were asked to volunteer to take the test, concerning a student found murdered; until school let out for summer, hundreds had been tested. In various cities the tests are being admitted as court evidence for the first time. Newspaper editorials and "letters to the editor" are increasingly urging and even demanding such tests.

The present article is a study of the theory, method, and limitations of the "lie test" in criminal or other court cases, particularly in relation to suspects who may happen to be innocent. Little or no consideration is given to methods of "beating" the machine, already well described in the literature. Only major methods and principles are discussed. A multitude of minor variations have been developed but are not considered here.

Basically, the "lie detector" simply indicates various physiological functions (breathing, pulse, blood-pressure, sweating, etc.), as well as any sudden changes in these functions. Such body functions become momentarily disturbed by either physical stimuli or emotional stimuli. In "lie detection" work the machine detects, not *lies*, but *emotions*. No machine exists which can detect the act of lying. The machine merely detects the arousal of emotion, and only indirectly: it is not even the mental or feeling aspect of emotion that is detected, but only the physiological changes (modified breathing, faster pulse, increased blood-pressure, increased sweating, etc.) which immediately follow any sudden stress emotion. That the machine does not depend upon lying can be indicated by the fact that it reveals the arousal of emotion even when the person does not answer the crucial questions.

The appearance of the instrument which can indicate such physiological functions depends on the particular function measured. To indicate breathing, an air-filled rubber tube is placed around the person's chest. To indicate pulse and blood pressure, a cloth band is wound around the upper arm. To indicate perspiration, two pads are placed on the hand. Any machine which indicates several of these physiological functions simultaneously is called a "polygraph," meaning literally "many pictures." These physiological functions register on a moving strip of paper running across the face of the machine.

It should be mentioned again that any sudden stress emotion will bring about these physiological changes. The emotion need not be fear, though that is the emotion probably aroused in most lie detection work. Not only do various stress emotions bring about physiological changes, but these changes seem to be the same for the various stress emotions. In other words, there is no way of identifying the emotion by study of the accompanying physiological changes. Furthermore, some of these functions can be observed without a machine but less accurately. For example, breathing can be observed visually, pulse can be felt by touching the wrist veins, etc. The earliest recorded attempt to detect emotion was accomplished by Erasistratus (300-250 B.C.), a court physician, who noticed that the pulse quickened during emotional states.

WHY TEST-SUBJECTS BECOME EMOTIONAL

There are three main reasons, in relation to a crime, for a person becoming emotionally aroused when taking a polygraph test.

1. *Responsible guilt*: the guilty suspect. If a guilty suspect lies when answering a question relevant to the crime, he may fear that the machine will detect his lie. Any such fear will be indicated on the machine as changes in the physiological functions already described above. Even without speaking, a guilty person will usually experience stress emotion when he merely hears certain questions asked or certain details of the crime mentioned, the reason being that he fears that his undue familiarity will "show through" and register on the machine.

2. *Guilty knowledge*: the confidante or accomplice of the guilty person. If a confidante or accomplice, familiar with the details of the crime, lies when answering a question he too may fear detection of his lie. The physiological changes will register on the machine.

3. *Innocent knowledge*: the innocent suspect. An innocent person who answers a question truthfully, but who recognizes (or guesses) that the question is relevant to the crime, may show emotion for any of several reasons:

- a. Fear that the machine may fail to affirm his innocence;
- b. Sudden anger and resentment that he is suspected of this crime; or
- c. Sudden acute distress or grief at the great personal loss he has sustained (if the crime was murder of a member of his family, for example).

Thus, we see that emotional response to a specific question may indicate either responsible guilt or guilty knowledge or innocent knowledge. The only thing all three have in common is familiarity with certain details of the crime. If the person can reasonably show how he became familiar with the critical details in some innocent fashion, probably no valid test can be administered to him.

If the person can not reasonably show how he became familiar with the details of the crime, then his emotional response to relevant questions leads us to infer undue familiarity, based on either "guilty knowledge" or "responsible guilt." This is probably as far as the test can go.

But even to go this far, it is necessary to design the questions (or spoken ideas) in such a way that the innocent person would not recognize which items refer to the crime (assuming of course that he has not learned of these details innocently), while

the guilty person (or his accomplice or confidante) would recognize which items refer to the crime.

Basically, there are two main designs for the series of questions. The first we shall call the "disguised questions test," and the second we shall call the "undisguised questions test."

THE DISGUISED QUESTIONS TEST

Where the important details of the crime have not become public knowledge by way of newspapers, radio, daily conversation, etc., a reasonably valid test can be given. This test consists of several groups of ideas. In each group only one idea concerns an actual detail of the crime, a detail which could not be known to an innocent person. This detail we call "relevant" while the other ideas in the group are "irrelevant." On the surface, all the ideas in each group must appear equally irrelevant (or equally relevant) to an innocent suspect. When we compare the person's reactions to the relevant question with his reactions to the irrelevant questions, we are using the irrelevant questions as a kind of "control," a basis for comparison.

Suppose a gold watch was the only article stolen during a burglary in a home. The following group of questions could be asked:

"Do you know whether a pearl necklace was stolen?"

"Do you know whether a diamond ring was stolen?"

"Do you know whether a gold watch was stolen?"

"Do you know whether a fur coat was stolen?"

"Do you know whether a silver bracelet was stolen?"

As a variation, instead of requiring the subject to answer the question we can just speak the questions one at a time. Or we can merely speak the key words one at a time: "pearl necklace," "diamond ring," "gold watch," "fur coat," "silver bracelet." Regardless of the form used, there should be pauses of five to ten seconds in-between the items. The form requiring answers to questions is probably best, because a person with responsible guilt or guilty knowledge will fear detection of his lie, in addition to fearing detection of his recognition of the one relevant item in the group.

Some examiners permit the person to see the list of questions before asking them, on the theory that knowing what will be asked serves to stimulate (in guilty persons) greater emotional response to the one relevant question. Because the guilty person builds up tension as the examiner approaches the anticipated relevant question, this variation of the disguised questions test is sometimes called the "peak of tension test."

There should be as many groups of questions as there are important details about the crime that an innocent person would not be expected to know. Thus, the innocent person will be safeguarded if he happens to show an emotional response to only one of a number of relevant questions.

Great care must be used in interpreting the meaning of the test results. Greater emotional response to all (or most) of the relevant questions (than to the irrelevant ones in the same group) suggests an undue familiarity with the details of the crime referred to in the relevant questions. But this apparently undue familiarity could result from any of the following:

1. *Sheer guessing*, probably involuntarily. For example, an innocent suspect might involuntarily guess that the stolen article in the list above was a fur coat, or the diamond ring, or the gold watch. If he thus involuntarily assumes the article was one of these items, he may show emotional response to that item. This probably happens more frequently in the "peak of tension" variation, where he is first shown the questions (before the test begins) and thus has (unfortunately for him) an opportunity to guess at the relevant item. Whenever this happens, the person should inform the examiner. But it is not likely that he will guess correctly more than one of the relevant questions; unless the questions are worded so poorly that they suggest the relevant question in each group.

2. *Innocent knowledge*. If the person recognizes that some question refers to a detail he has heard about, he should inform the examiner and explain exactly where or how he has heard about this detail. As in the case of guessing mentioned above, it is not likely that he will have heard about most of the details if the examiner has used proper caution in eliminating details that have become public knowledge. If, however, the person can explain reasonably his familiarity with certain details mentioned in the test, those questions should be eliminated as invalid.

3. *Guilty knowledge*. This is the case with an accomplice or confidante of the guilty person. Such accomplice or confidante can of course confess the reason for his familiarity.

4. *Responsible guilt*: the guilty person.

Thus we see that even when we disguise the questions so that on the surface the relevant one in each group does not appear to be any more relevant than the irrelevant questions, various inferences are possible. Narrowing the inferences down to the inference of responsible guilt would require elimination of every relevant detail that a non-guilty person can reasonably explain his familiarity with. This must be done in order to give the person the benefit of the doubt. Since inference of guilt increases in reliability when based on several groups of questions, the risk of inferring guilt on the basis of one or two groups of questions is too high. In such cases, where only one or two details are available for use in relevant questions, it is better to declare that no valid disguised questions test can be administered to this person.

THE UNDISGUISED QUESTIONS TEST

Much (if not most) "lie detection" testing today uses *undisguised* questions. This becomes almost inevitable if the important details of the crime become public knowledge before the test can be given, or if these details are unwittingly revealed to the suspect when he is arrested, or during the interrogation process by detectives. Also, it is much more difficult to formulate a disguised questions test than an undisguised questions test. Finally, we must recognize that undisguised questions have the irresistible appeal of going directly to the "heart of the matter": "Did you kill —?" or "Did you steal this watch?" etc.

As originally used, the undisguised questions test was simply a group of questions in which some were obviously relevant to the crime while the others were obviously irrelevant to the crime. As with the disguised questions test discussed previously, the irrelevant questions were the control questions against which the person's

response to relevant questions was compared. If the person showed greater emotional response to the relevant questions, he was assumed to be lying.

After some years it became evident, both logically and from practical experience, that undisguised irrelevant questions were, by themselves, an inadequate comparison-control for undisguised relevant questions—that innocent suspects often become emotional when asked implicating questions. No study has ever shown that innocent suspects invariably show less emotion than guilty suspects when asked obviously implicating questions. So the more sophisticated lie detector examiners began to add other “logical” controls. And this story of the search for controls to support a shaky structure brings us to the uncertainty that much “lie-detection” work finds itself in today. All references in the remainder of this article, except where otherwise indicated, refer to two of the leading books in the field.¹

Suppose that Joe “Red” Blake is suspected of the murder of John Jones, last Saturday night, and of the theft of Jones’ watch. (Inbau-Reid, pages 13–22). The following type of test is suggested:

1. Are you in Chicago now? (irrelevant question)
2. Have you ever been called “Red”? (irrelevant question)
3. Do you know who shot John Jones? (relevant question)
4. Do you ever smoke? (irrelevant question)
5. Did you shoot John Jones last Saturday night? (relevant question)
6. Did you ever steal anything? (added “control question”)
7. Are you wearing glasses now? (irrelevant question)
8. About two months ago, did you shoot Jim Smith at First and Main Streets? (added fictitious “guilt complex question”)
9. Did you steal John Jones’ watch last Saturday night? (relevant question)
10. Did you have a coat with you today? (irrelevant question)

The relevant questions are numbers 3, 5, 9, and are obviously undisguised. They strike directly at the heart of the matter. The irrelevant questions are numbers 1, 2, 4, 7, 10, and are also obviously undisguised. It should be noted that even the irrelevant questions have been carefully chosen by the examiner. They are such that the examiner knows the correct answers. Otherwise, a guilty suspect could try to “beat the machine” by lying to all questions and thus cause emotional reactions on every question. Such a record would look like a general pattern of nervousness. If the suspect lies to the *irrelevant* questions (to beat the machine), the examiner will certainly mention this in his report; also he can inform the suspect of this and then repeat the test, giving the suspect another chance. When the suspect answers the irrelevant questions truthfully, the examiner has the first basis of comparison, in the difference between emotional response to relevant and irrelevant questions.

But because of the already mentioned limitation, that innocent persons, too, may respond more greatly to obvious relevant questions, new controls are added. Questions 6 and 8 are added controls which purport to provide a “double check” upon the suspect’s response to the relevant questions.

¹ INBAU, F. E. AND REID, J. E. *LIE DETECTION AND CRIMINAL INTERROGATION*. Williams & Wilkins Company, Baltimore, 1953. LEE, CLARENCE D. *THE INSTRUMENTAL DETECTION OF DECEPTION—THE LIE TEST*. C. C. Thomas Company, Springfield, Ill., 1953.

The purpose of Question 6 (Did you ever steal anything?) is not to learn about the control incident (that is, whether the suspect ever stole anything), but rather to establish a situation in which he will lie. If the suspect answers "no," it is momentarily assumed that he is lying, on the assumption that everybody has stolen some trivial thing in a lifetime, even if only in childhood. To protect the suspect against the possibility that he was truthful in such a denial, he is asked later (after the test) whether he was really telling the truth. If he insists that he was, the test is repeated, and some other question is asked, to which he may lie. If necessary, he will be told to lie in answer to some personal question. As a last resort, he can be given the "card test." In the card test, he is shown about half a dozen playing cards or numbered cards, and told to think of one of them. He is then told that when the examiner reads off each one, he is to say "No, that's not the one" each time. Thus he will lie once, and the machine will indicate an emotional response at the correct card (in a high percentage of cases). For control purposes, however, Inbau-Reid state that it is far less dependable than the general control question.

Now, what is the purpose of getting the person to lie in the test situation? This lie supplies an emotional reaction for control-comparison with the emotional reaction to the questions relevant to the crime. If his lie-reaction to the "control question" is equal to or greater than his reaction to the relevant questions, he is considered to be answering the relevant questions truthfully, apparently on the assumption that an innocent person will react emotionally to the forced lie. But if his lie-reaction to the "control question" is *less* than his reaction to the relevant questions, he is considered to be answering the relevant questions untruthfully, on the assumption that a guilty person will react less emotionally to the forced lie. Note, however, that actually all that may happen in the latter instance is that an innocent person may show less emotion when lying about a relatively trivial matter than when confronted with critical questions serious enough to imprison him or even take away his life!

It is interesting to note that Lee recommends this question for a different purpose. When a person shows no reaction to the undisguised relevant questions, there is a remote possibility that he may be guilty but just does not respond emotionally to any questions. So Lee recommends that the special control question be used. Then, if the suspect reacts emotionally to the control question (required lie), he is "responsive" and is considered to show innocence on his original test. But if he shows no emotional reaction, he is a "non-responsive" subject and his original test results are considered "indefinite" (Lee, p. 107).

Question 8 (About two months ago, did you shoot Jim Smith at First and Main Streets?) is a similar control, in the form of a fictitious "guilt complex" question. In a sense it accuses the person of a second crime which (unknown to him) never even happened, for the purpose of arousing some emotional reaction (even though he truthfully answers "no."). It provides an opportunity to see whether the person shows greater emotion on the questions relevant to the actual crime. If his reaction to this control question is greater than or equal to his reaction to the actual crime questions, he is considered to be innocent; he is showing innocent nervousness ("guilt complex") toward both crimes. But if his reaction to this false "accusation" is *less* than his reaction to the relevant questions, he is considered to be guilty.

Note, however, that the fictitious crime charge should be as plausible as the actual crime charge. That this is doubtful is reflected by the use of three times as many actual crime questions (at least in the example furnished above), by the chance that the actual crime has already become public knowledge, etc.

Lee adds a control of his own: The use of both "major" relevant questions and "secondary" relevant questions. Whereas "Did you kill White?" is major, "Did you hit White with a lead pipe?" is considered to be secondary. If the person reacts to major and secondary questions, he is considered to be guilty, on the supposition that all questions are threatening to a guilty person. If he reacts to major questions but not to secondary questions, then he is considered innocent, on the supposition that secondary implications are relatively meaningless or unthreatening to an innocent person (p. 84). As with most controls described thus far, the logic or rationale is arbitrary and not backed up by any kind of experimentation or research on the specific control.

Unfortunately, many examiners persist in using the undisguised questions test in spite of its shaky foundation with or without added "controls." For example, Trovillo flatly claims that it has been verified that innocent persons do not react more to undisguised relevant questions than to irrelevant ones, as guilty persons do.² But when we examine the kind of "verification" referred to, we notice for example that after a theft of \$100 in a dormitory house, (1) about 9% of innocent students did react more to the relevant questions, (2) the results can refer only to persons of above average education, (3) no person was "suspect" or "on the spot," each seeing himself only as one of 81 persons volunteering to take the test, and (4) the results do not apply to instances where the charge is murder, not a \$100 theft.

That some experienced examiners do recognize the limitation of the undisguised questions test (even with its various "controls") is reflected by the following comments by Lee: "The type of case wherein the details have been withheld from the suspect are relatively rare. . . ." "In interrogating the suspect, they often unwittingly reveal the highlights of the crime, thereby depriving the psychograph examiner of his best weapon in case a deception test becomes necessary" (pp. 95-96). The "best weapon" is, of course, the disguised questions test. Lee further affirms that the "Peak of Tension Test" (disguised questions test) will "more clearly differentiate between guilt and innocence" (p. 195).

Thus, rather than rely on questionable test-procedures, it would be better to use all the ingenuity required to formulate a disguised questions test. The best preparation would be to ask the suspect what he knows about the offense, and then question him further as to whether he knows of other details. For example: "Do you know what time the victim died?", "Do you know how she died?", etc. Then each detail for which the suspect denies knowledge can be used as part of a disguised questions test. Lee proposes an excellent systematic set of items concerning crimes, from which an examiner could select those relevant to the particular crime committed and which the suspect denies knowledge of. Lee even presents groups of suitable questions for

² BITTERMAN, M. E. AND MARCUS, F. L., Cardio-vascular responses of innocent persons to criminal interrogation. *AMERICAN JOURNAL OF PSYCHOLOGY*, 1947, Vol. 60, pp. 407-12. TROVILLO, P. V., Scientific proof of credibility. *TENNESSEE LAW REVIEW*, 1953, Vol. 22, page 753.

each relevant item (with a few lapses into occasional use of undisguised questions), so that a valid disguised questions test can be formulated (pp. 195-217).

ACCURACY OF THE "LIE DETECTOR" TESTS

Where later confessions of guilt or confirmations of innocence have provided a check upon the validity of the lie detector test results, we find claims varying anywhere from 80% to 100% accuracy. But when we look for a scientific report based on reasonable statistical and experimental principles, some confusion is evident. For an example, let us examine the accuracy report presented in a leading text already referred to.

The statistics, based on criminal offenses only, are as follows: (Inbau and Reid, p. 111).

Lie-detector test indicated as "guilty":	1334	31.1%
Lie-detector test indicated as "innocent":	2759	64.5%
	<hr/>	<hr/>
Total number of definite diagnoses made:	4093	95.6%
Lie-detector test was "indefinite":	187	4.4%
	<hr/>	<hr/>
Total number of cases:	4280	100.0%
Number of guilt-diagnoses later confirmed:	486	
Number of innocence-diagnoses later confirmed:	323	
	<hr/>	
Total number of correct diagnoses known:	809	
<i>Number of verified errors: 3 (in 4093 definite diagnoses) = .0007%</i>		

Now we will demonstrate the inadequacy of these results:

1. The percentage of verified errors should read .07%, not .0007%. (3 out of 4093 = .0007 = .07%).

2. The 3 verified errors should have been divided by the 812 verified cases (809 correct diagnoses plus 3 erroneous diagnoses), thus yielding .004, or .4%. (We do not know the amount of error in the several thousand *unverified* cases; see paragraphs 4 and 5, below.)

3. Since only 812 definite follow-ups are reported, what of the remaining 3281 definite diagnoses made? If even as few as 37 of these 3281 unverified diagnoses were erroneous, the error (when we add the 3 verified errors) rises to .01 (40 out of 4093), or 1%. If 406 unverified diagnoses were wrong, the error rises to .10 (409 out of 4093), or 10%.

4. Now, since we are more concerned here with an innocent person being diagnosed as guilty, than a guilty person being diagnosed as innocent, we must know particularly the amount of error in the group diagnosed as "guilty." But here the same frustrating situation faces us. Of the 1334 diagnoses of "guilty," only 486 were verified as guilty. What of the remaining 848 cases? Even assuming that the 3 verified errors were for "innocence" diagnoses, if as few as 13 of the 848 unverified "guilty" diagnoses were erroneous, the error is .01 (13 out of 1334), or 1%. If 133 of these 848 were erroneous, the error rises to .10 (133 out of 1334), or 10%.

Note, however, that unless it can be shown that *unverified* diagnoses are likely to be more erroneous than are *verified* diagnoses, we have to accept the Reid-Inbau figure of over 99% accuracy. This could well be made the model of what is attainable when guilt detection is in the hands of expert examiners.

It would be unfortunate if the 99% figure became an assumed accuracy-level for all polygraph work. Some agencies have reported accuracy figures as low as 80%. Also note that the private nature of polygraph tests does not make ethically possible any independent inspection of test data and follow-ups, for possible errors, as has been done in medical and other scientific research of a controversial nature. Therefore, all polygraph agencies doing research on accuracy have the responsibility of using experimental and statistical consultants for such research.

LACK OF EDUCATIONAL AND TRAINING STANDARDS

As for basic qualifications, there appear to be no agreed-upon minimum standards of intelligence, education and training. This is understandable, however, in a field which is relatively new. Inbau and Reid suggest above-average intelligence, preferably some college training (but no mention of college psychology or physiology courses), and at least 6 months intensive training in a testing agency (p. 114–115). Trovillo (in the article already cited) recommends a minimum education of a four-year college degree, with a major in psychology or physiology (p. 764). A professional association of polygraph experts would be a good step toward setting up minimum standards. The International Society for the Detection of Deception, founded in 1945, has not established such standards. The recently formed American Academy of Polygraph Examiners (September, 1954) offers much promise by requiring a college degree or equivalent, as well as demonstrated competence and integrity or an active research interest.

UNETHICAL PRACTICES

Sometimes unproved accusations are made against the person. Inbau and Reid suggest that if the first test's results are vague and indefinite, "the examiner, for purposes of stimulation, should accuse the subject of lying about the principal offense" and then administer a re-test (p. 19–20). Lee similarly suggests that when a person shows no reaction to either the relevant questions or the required lie (control question), the examiner "pretends that the record convinces him of the suspect's guilt and accuses him outright of lying, and then proceeds in an attempt to induce him to confess" (p. 107–108). Lee adds: "Some may question the ethics of such procedure; but in the type of crime in which the test usually is applied, it would seem that the interests of justice outweighs the consideration of ethics, especially in this country where defendant's legal rights are so thoroughly protected" (p. 187).

Probably the lowest form of interrogation consists of the asking of highly embarrassing personal questions, to establish an emotional reaction for control-comparison purposes. Inbau and Reid, who condemn this practice, describe how it recently brought forth the statement by a United States senator that "if the use of the lie detector technique as an employment testing procedure was not abandoned by

federal agencies he would introduce legislation to outlaw its use".³ They add that subsequently the U. S. Defense Department announced that "lie detection applicant testing would be abandoned within the Department" (p. 23).

SCIENTIFIC RECOGNITION

Legal recognition of a test involving a mechanical device almost inevitably involves scientific recognition of such a test. Up to the present time, no official recognition of the "lie detector" has come from either of the two scientific groups most familiar with the machine: psychologists and physiologists. This does not imply disapproval, however; scientific bodies rarely take a stand on a test.

Aside from the professional societies, individual psychologists and physiologists have been somewhat doubtful about "lie detector tests." These doubts usually do not reflect on the machine itself. The machine has been found to be accurate as regards detecting the several physiological functions and sudden changes. The problem is in the interpretation of test results.

The proponents of the tests have presented arguments which seem to be contradictory. On the one hand, they have admitted the scientific limitations and judicial hazards. But on the other hand, they have scorned scientific criticisms and have urged admissibility of the test results as judicial evidence. Let us examine both of these views. All quotations below are taken from Inbau-Reid.

LIE DETECTION EXPERTS' ARGUMENTS AGAINST

"First of all, consideration must be given to the fact that the technique is still in a relatively early stage of development. It has not yet become standardized as to test procedure, examiner qualifications, or even instrumentation itself. Much more remains to be done and accomplished before the courts should be urged to generally admit test results as evidence" (p. 127-128).

"If lie detector test results were admitted as legal evidence they would be offered and treated as proof of some very important phase of the case, usually the validity of the entire claim or contention of one of the parties. There would then be a tendency on the part of many judges and juries to accord conclusive weight and significance to the test results." In other words, polygraph evidence "would usually bear upon the crux of the whole case—e.g., is the defendant lying when he denies killing the deceased; if he is, then he is guilty; if he is telling the truth, then he must be innocent" (p. 129).

Because test results interpretation has not been standardized, the authors state that "courts would be unable to properly determine whether or not the results of some particular test should be admitted in evidence." "A judge or jury ordinarily would have no opportunity to observe and understand the basis for the witness' opinion, because even if the recordings are produced in court they are frequently of such a nature that in the average case one witness could point out what he considers indications of deception while another with perhaps equal effectiveness could point out on the same records what he considers the indications of truthfulness" (p. 129).

"Moreover, the essential qualifications for competent examiners have not been

³ CONGRESSIONAL RECORD, Jan. 17, 1952, Vol. 98, Part 1, pp. 258-262.

well enough established to permit a court to determine whether or not a certain examiner should be permitted to testify as an expert" (p. 129).

The authors conclude that ". . . we should not be too hasty in our own acceptance of proposed innovations. In the case of the lie-detector technique such a cautious attitude will operate not only in the best interests of the administration of justice but also to the ultimate advantage of the technique itself. A premature acceptance of the test results as legal evidence would undoubtedly occasion such a series of abuses and miscarriages of justice as to stigmatize forever the technique in the field of law as well as of science. It seems much wiser, therefore, to await a further development and standardization of the technique before admitting the test results as evidence in civil or criminal cases" (p. 131-132).

Only about 50% of deception examiners in a national survey in 1953 thought that the test should be used as evidence in court trials.⁴

In spite of these doubts and cautions by the professional lie detection examiners themselves, at other times they scorn scientific criticism and urge admissibility of the test results as judicial evidence.

LIE DETECTION EXPERTS' ARGUMENTS FOR

Inbau and Reid, for example, feel that the psychology and physiology professions generally "have not been sufficiently interested" and are "not prepared to offer an authoritative opinion upon the subject."

An example closer to scorn and arrogance is the statement, by Lee, that the refined techniques and standardized criteria of the specialists in this field "seem to have gone beyond the understanding of the academicians" (p. 22). Similarly, Lee ridicules the view by psychologists that the diagnosis of "lying" is only an *inference* (p. 24). This in spite of the fact that Leonarde Keeler, whom Lee acknowledges as an authority, warned that ". . . there is no such thing as a 'lie-detector.' There are no instruments . . . that deserve the name 'lie-detector' any more than a stethoscope, a clinical thermometer, or a blood count apparatus with a microscope can be called an 'appendicitis detector'."⁵ In other words, instruments lead to diagnoses, and diagnoses are inferences.

An example of the anti-academic approach that probably alienates academic cooperation is the following type of exaggeration and ridicule: "Simulated emotion in psychology classes on the lecture platform, in drama, and in experimental laboratories has done more to clutter up and confuse honest polygraphic reporting than all the quackery of 50 years." and "The professor who buries his nose in textbooks and bores his students with myopic dronings over verbal autopsies will never be interested in conducting vital research in lie detection" (Troville, p. 747 and 762).

As a safeguard, Inbau and Reid would restrict the use of the polygraph to one specific situation: where the opposing attorneys are themselves doubtful of their clients' guilt, agree that the test be given, and stipulate in advance that the results

⁴ CURETON, E. E. A consensus as to the validity of polygraph procedures. *TENNESSEE LAW REVIEW*, 1953, Vol. 22, pages 728-742.

⁵ KEELER, L. Debunking the "lie-detector". *JOURNAL OF CRIMINAL LAW AND CRIMINOLOGY*, 1934, Vol. 25, p. 153.

be entered as evidence (page 132). They mention the appellate court decision (in California in 1948) which upheld the lower trial court's acceptance of the test results as evidence, based on previous agreement and stipulation.⁶

LEGAL STATUS OF THE "LIE DETECTOR" TEST

In several states, trial courts have admitted the test results as evidence. However, whenever appeal was made to a higher court, the higher courts usually have held that the test results are not admissible.⁷ Public confidence in the "lie detector" is increasing. More and more demands are being made that the machine be used in civil and criminal cases.

Neither the public nor its juries and judges are sufficiently familiar with the limitations of the polygraph test and with the legitimate concerns regarding reports of extremely high accuracy-statistics. We can expect to see a slow but steady movement toward making the test compulsory. Lee feels that "an ideal situation would be to make it a rule that when a suspect denies his guilt at the outset, he be referred at once to the psych lab without further ado" (p. 96).

In various commercial organizations the test is already compulsory. It is being used to test employees of banks, department stores, chain stores, etc., in one or more of three ways.

1. Pre-employment test: primarily to determine whether the applicant stole anything from his previous employer.
2. Periodic check-up: to determine whether employees have stolen anything during the last year (or two-year period, etc.).
3. Emergency test: where a substantial theft has occurred in the bank or store.

Even refusal (by an innocent person) to take the test offers no real protection, for such refusal has come to imply guilt, at least in the eyes of the examiners. As one says: "What implication does such refusal carry other than of guilt?" (Lee, p. 185).

CONCLUSIONS

1. The machine used in polygraph work is extremely accurate mechanically and is probably almost as good now as it ever will be.
2. This machine measures only physiological functions and any sudden changes in these functions.
3. These physiological changes in an interrogation test-situation undoubtedly reflect the arousal of emotion.
4. The "undisguised questions test," with or without various controls, has little logical validity.
5. The "disguised questions test," when used for a person who could not reasonably be expected to be familiar with certain details of the offense, has logical validity.
6. The commercial, governmental, and scientific "lie detection" examiners still have no accepted standards of educational and training requirements for competency.

⁶ *People v. Houser*, Calif. Dist. Court of Appeals (4th) CALIFORNIA APPELLATE, 2nd Series, 1948, Vol. 85, p. 686. (abstracted in PACIFIC REPORTER, 2nd series, 1948, Vol. 193, p. 937).

⁷ *Stone v. Earp*, Michigan Supreme Court, MICHIGAN REPORTS, 1951, Vol. 331, p. 606. (abstracted in NORTHWESTERN REPORTER, 2nd series, 1951, Vol. 50, p. 172).

7. There is still a fairly common insensitivity to certain unethical practices in polygraph work.

RECOMMENDATIONS

1. That the newly established American Academy of Polygraph Examiners maintain adequate educational and training standards, and that only members of the academy be used by courts for the purpose of administering polygraph tests.

2. That examiners, using the best methodological and statistical techniques known today, initiate separate research investigations on the accuracy of the "disguised questions test" as compared with the "undisguised questions test."

3. That the "disguised questions test" be used when the suspect requests it and if he could not reasonably be expected to be familiar with certain details of the offense.

4. That when a test is used, juries and judges be clearly informed of its limitations, particularly if it was an "undisguised questions test."

5. That the term "lie detector" and all variations of it not be used whenever possible and that the following terms be substituted: "polygraph," "polygraph test," "polygraph study," etc.