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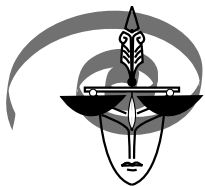
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Contents

- Jan Widacki,
*Logical Identity of Conclusions from Polygraph Testing Performed
in Control Questions Test (CQT) and Guilty Knowledge Test (GKT)
Techniques* 1

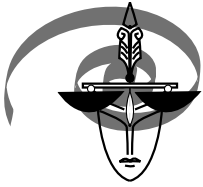
- Vitas Saldžiūnas, Aleksandras Kovalenko,
A Little About Memory Traces 11

Book reviews

- Jerzy Konieczny, T. Shurany, I. Ravid, *Evaluation of Polygraph Charts:
Formats, Criteria and Scoring [T.I. Publications 2004, 150 pp.]* 29

-
- The Basic Information for Authors 35

-
- Subscription: Terms and Conditions 33



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Logical Identity of Conclusions from Polygraph Testing Performed in Control Questions Test (CQT) and Guilty Knowledge Test (GKT) Techniques

Peak of Tension (POT) tests have been known and used in polygraph examinations since 1930s (Keeler 1934, Lee 1953, Reid, Inbau 1966). In the 1950s proposals were made to found the entire polygraph examinations on such tests (Burack 1955), at the same time resigning from control question tests (Lykken 1959, 1960, 1974).

One of the arguments justifying such a proposal were the encouraging results of experimental tests, in which the experimenters using the technique acquired nearly 100% of correct decisions (Lykken 1959, Davidson 1968). Promotion of the techniques based solely on POT tests, referred to as the Guilty Knowledge

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Test (GKT), was strong criticism of the control questions techniques (Lykken 1974, Lykken 1975, Lykken 1981).

Other examiners using the technique did not, however, acquire such a high rate of correct decisions (Ben Shakhar et al. 1970). The contemporary investigations of practical usefulness of GKT technique (Podlesny 2003) proved that it can be used only in a few per cent of cases, where the polygraph examination in the control questions technique was used (from 2.1% to 6.7%, depending on the assumed number of tests necessary to acquire a decisive result: whether two tests were sufficient, or as many as six were needed, as Lykken advised). This is in line with the Polish experience. In the 1970s and 1980s in Poland, Reid's control questions technique was in general use. It is estimated that in approximately 80% of cases, control questions tests were complemented with POT tests. Yet in no examination more than two POT tests were successfully applied (Widacki, 2011). It was so as the examinee – even if he or she did not perpetrate the crime – had learnt most details of the crime that he was to be asked about by the time of testing. He or she knew these details from the media, from the investigation process he participated in, talks with the police, etc., which efficiently encumbered construction of POT tests.

This is also corroborated by the fact that when in the latter half of the 1990s the Polish police assumed the principle that only GKT tests can be performed in investigation, the number of tests performed in criminal cases was reduced, even though after the 2003 amendment, the criminal code *expressis verbis* allowed use of the polygraph for investigation purposes.

Today we also know that in turn, the perpetrator of the crime – due to the emotional state at the moment of committing the crime (frequently, the post-traumatic stress) – remembers many details concerning the look of the victim, details in the victim's surrounding, etc. (Christiansen 2007), which he or she is later asked about in POT tests.

Despite all these unquestionable imperfections of the technique based on the Guilty Knowledge Test (also known as CIT – Concealed Information Test), it is favoured in some countries, including Poland, due to the fact that it is allegedly easier to align with the requirements of the European criminal procedure. Especially important here is the claim that using this technique, the expert does not enter the role of the court, which allegedly takes place in the case of examinations based on control questions techniques. Such views have recently been popular in Poland (Kulicki 1978, Kulicki 1994, Owoc 1995, Kulicki 1998,

Kasprzak, Młodziejowski, Brzęk 2006, Gruza 2008), and also in other countries, including Germany (Weigend 2000), Japan (Nakayama 2002).

The claim that a polygraph examination performed in the GKT (CIT) technique is easier to reconcile with the rules of criminal procedure than examinations performed in the control questions technique is based on a misunderstanding.

The opponents of control questions usually claim that the conclusion of expert testimony from examinations conducted in the GKT (CIT) technique says only that the examinee reacted with a complex of psychophysiological reactions, or that he did not react to the questions concerning details of the crime. Thus, these conclusions do not include the statement whether the examinee lied or was deceptive. This final conclusion may be inferred independently by the court.

On the other hand, in the examinations performed in the control questions technique, the examinee is asked straightforward questions about perpetration ("Was it you who killed?"), and the asking of such questions belongs to the court and not to the expert. Moreover, providing in the expert testimony information that the patient is lying (or deceptive) while answering certain questions determines about the guilt, and the conclusions concerning guilt or innocence belongs to the court and not to the expert.

First of all, it is not true that the expert may not ask about the perpetration of the crime. During the investigation, this is frequently done by expert-witness psychologists and psychiatrists, moreover, experts in other fields also frequently perform evaluation of credibility of the defendant's explanations, assessing whether his or her version of the course of the event can be reconciled with their findings or not. Therefore, expert witnesses quite frequently indirectly express their opinion on the credibility of the defendant's testimony.

When the content of the conclusions from examinations is concerned, in court cases it should have the following form: "reacting to the critical questions in the tests, the examinee reacted in a manner characteristic for people who answer such questions in a deceptive manner, that is lie or withhold the fact of possessing information about crime". (Widacki 1982, Konieczny 2009)

Assuming that the diagnostic value of a polygraph examination is around 85%, such a statement from the expert should be interpreted in the following man-

ner: “the examinee belongs to the group, where out of 100 people, 85 lie and 15 – without lying – for reasons unknown react like those who do”.

The court must assess this in the context of other evidence, and also in the context of the circumstances in which the examination was conducted (whether the examination occurred at the early stage of the investigation, when the diagnostic value as a rule is higher, or in one of the later stages when it is usually lower; whether the expert is highly experienced or on the contrary – he or she is only a beginner, etc.).

A paradox. If the diagnostic value of a polygraph examination were 100%, such an examination would indeed be difficult to reconcile with the European principles of a criminal procedure, as the opinion of the expert would have substituted the court’s prerogatives, and leave no margin for the court to evaluate the evidence.

In that case it would be the expert and not the court who would actually adjudicate about the guilt. Yet it is not so.

If the question is analysed from the logical aspect, there is no difference between the opinion from examinations made in control questions technique and the opinion from an examination performed in the GKT (CIT) technique. They both are subject to evaluation and interpretation of the court to the same extent.

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A Little About Memory Traces

We spent a long time preparing before joining the discussion about memory traces and their detection during a psychophysiological examination with a polygraph. According to Horvath (2008), this science has two sides. We are still not completely confident about the accuracy of our ideas, yet we believe that we have several thoughts that have not been expressed by other authors.

Currently there are dozens of varying theories (Kholodny 2005; Ogloblin 2004; Varlamov 2000; Kniazev 2009) that are used by polygraph examiners and theoreticians to explain what takes place inside a human when a question (i.e. an

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external stimulus) is given to them, and a polygraph examiner uses a polygraph to record responsive physiological reactions under certain circumstances. We agree with Konieczny (2009) that there is not yet a psychophysiological process model that fully and clearly explains how symptomatic reactions are triggered during a polygraph examination and that is not open to criticism.

In our practical criminal investigation we apply the EKT (Event Knowledge Test) method (Saldžiūnas 2008a, b, c, 2009a, b, c), that was created based on the GKT (Guilty Knowledge Test), POT (Peak of Tension Test), CIT (Concealed Information Test), and GAT (Guilty Actions Test; Bradley 1992). Therefore we directed our attention to how Lewandowski (2005) applies memory trace theory in GKT (or POT) tests. Sometimes the memory trace theory has been called “emotional trace” theory (Krzyścin 2000), but based on Le Doux (1997) memory can be both emotional and cognitive.

The concept “memory traces” is used in medicine and psychology. According to Krzyścin (2000), a crime leaves long-term traces in a criminal’s memory that can only be detected during a psychophysiological examination with a polygraph. Let us recall what the traces are. We must agree with Trofimov (2006), that these traces, though called ideal, cannot absolutely truly (or objectively) reflect the image of real crime. First of all, we wrote (Saldžiūnas 2009d) that due to the real situation the participant in a crime captures only part of the details of the image of it. Secondly, as Dilts (1999) once said, they process part of the captured information in their mental activity, so secondary details or fantasies can affix onto primary details and distort the real information (*Figure 1*). Because of this reason Trofimov (2006) believes that it is inappropriate to use GKT, CIT and ECT methods in investigation before a trial. Despite this attitude, courts in all countries of the world accept witnesses’ testimonies, although it is known that they, too, are not absolutely truthful. According to our model (*Figure 1*), a subject’s memory can be weakened by the time that passed between the crime and the polygraph examination, as well as memory problems, such as illnesses.

Lewandowski (2008) writes that peak of tension tests are used to define the evidential value of memory traces. This means that memory traces are measured (registered). The question arises: what units are used to measure memory traces: grams, meters, seconds, volts? Psychophysiological examination is done with a polygraph. And the polygraph is a medical device that registers the subject’s respiration, galvanic skin processes through conductivity, heart rate and blood pressure. So a polygraph is used to register several changing param-

eters of the human organism. Based on the method of question (i.e. stimuli) formation and measured parameters, a polygraph examiner can determine whether the examinee is possibly open in the limits of given questions.

Let us analyze the examples of psychophysiological examination with a polygraph given by Lewandowski (2008), where, in the authors' opinion, a memory trace is registered.

First criminal event

Lewandowski (2008) writes: at around 11:00 a.m. on August 13, 1997, two men entered a jeweler's shop. Its owners, Henryk and Leonarda S., were present in the shop at the time. The men pulled out items which looked like firearms and demanded money. Leonarda S. tried to escape to the shop's backroom, and Henryk S. tried to activate the alarm system whose switch was situated under the desk. At that time, one of the men – Marek L., according to the testimonies of the victims – began to chase Leonarda S. and stopped her. The other assailant – Michal W., as the victims testified – hit Henryk S. on the chest with the pistol and then led him to the shop's backroom. The assailants made their victims lie on the floor. When Henryk S. tried to talk to the attackers, one of them hit him on the head with the gun. Leonarda S. was also repeatedly hit with the gun. The attackers bound the victims with plastic tape and gagged and blindfolded them. They then stole gold jewelry and other objects of value they found in the shop.

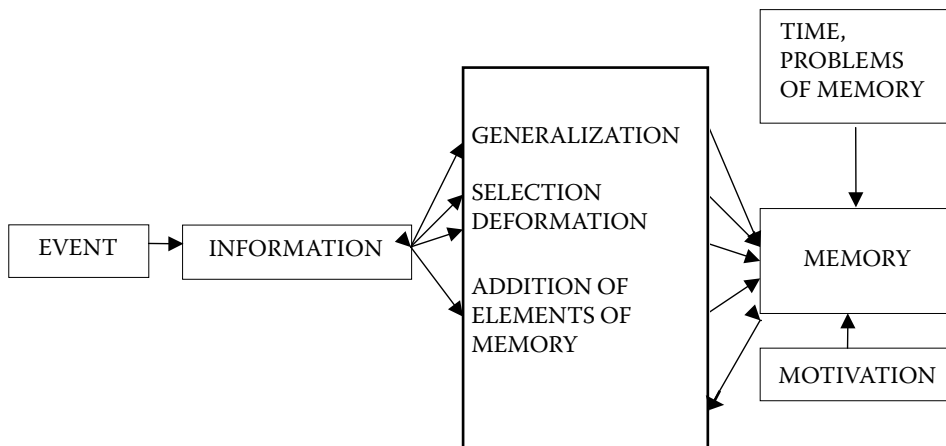


Figure 1. Model of probable event information restoration suggested by the authors

Of significance here is the information that on February 7, 2006 the regional court in Gdynia found Marek L. guilty and sentenced him to five years' imprisonment. Polygraphic examination was conducted at the request of the defendants' lawyer, after recourse to the appellate court. At the time, the examinee was on leave from the detention center.

Lewandowski (2008) further writes that the examinee – accused in this case of violent robbery – denied being at the scene of the crime at the critical time, and could not remember where he had been when it was perpetrated. The examinee was arrested a few months after the robbery and was never able to reconstruct the course of the critical day. He claimed that he had met the victim for the first time in his life in court in 1999 when the trial began.

Lewandowski (2008) determines that, as the typical form of the test to check the alibi of the examinee could not be used in the examination, a decision was reached that the examination was to clarify when he had first seen Henryk and Leonarda S. It was assumed that participation in such a brutal robbery should leave very clear mental and emotional traces in the perpetrator. The fact that the examinee had previously been repeatedly convicted for crimes against property was of no importance here.

1. Did you see Henryk S. for the first time in 1994?
2. ... in 1995?
3. ... in 1996?
4. ... in 1997?
5. ... in 1998?
6. ... in 1999?
7. ... in 2000?
8. Did you see Henryk S. for the first time later than the times I mentioned?

After the examination (*Figure 2*) Lewandowski (2008) writes that it is perfectly visible that the largest emotional changes followed question 6, which gives grounds to assume that, to the best of his knowledge, the examinee saw Henryk S. for the first time in 1999.

After we reviewed the diagram (*Figure 2*), the question that arose first of all was: why were the reactions to questions 3 and 8 ignored? We believe that the polygraph examiner should have given some thought to what these reactions meant, what could have triggered them and how to explain them to the court. From the article (Lewandowski 2008), we understood that these are not artifacts, because they repeated the second time when the examinee did not answer the questions.

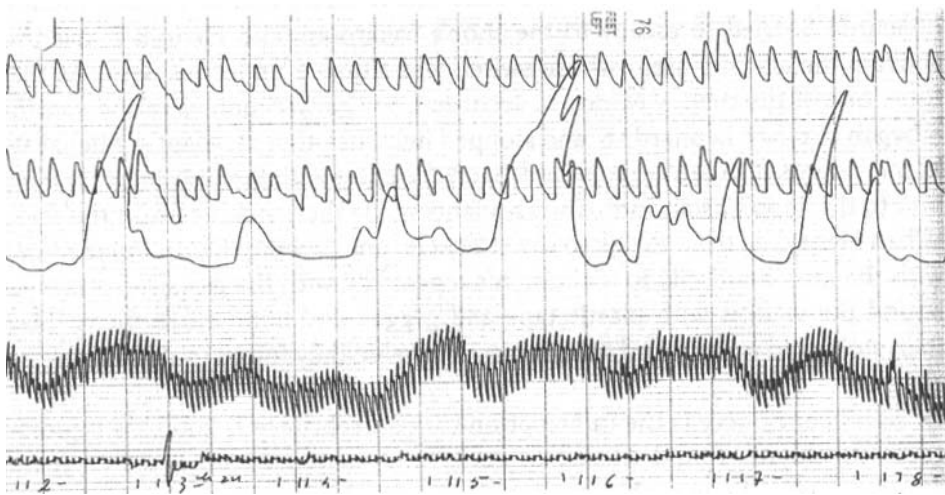


Figure 2. A diagram of Marek L.'s polygraph readings. The examinee answered all questions negatively (Lewandowski 2008).

We understood that Lewandowski (2008) based his conclusion on two silent assumptions:

1. If the examinee possesses all information about the event (i.e. has a memory trace), a psychophysiological reaction will ALWAYS be recorded during a polygraph examination;
2. Only the biggest psychophysiological reaction is valued in examination diagrams.

Let us discuss these assumptions. Krzyścin (2000) wrote, that, in order for psychophysiological reactions to be registered with a polygraph, the examinee must not only possess information (memory traces), but also be afraid. Varlamov (2000) and Trofimov (2006) accentuate the examinee's motivation as a compulsory condition. We agree with the opinion of these authors and tend to use the term "motivation". We believe that motivation is a more general and comprehensive phenomenon that can include fear and stress.

We will illustrate our statements with examples. Let us presume that you are a polygraph examiner. You invite your colleague, friend or acquaintance, connect polygraph sensors to him and, according to the EKT system, form a question and answers to it:

Where did you spend last night?

0. in a bar
1. in a casino
2. at a friend's place
3. at a girlfriend's place
4. at home
5. in an airport

During the conversation before the polygraphic examination the examinee tells you that he spent the night at home. During the measurement, the examinee answers “yes”, “no” or stays silent after every question. We are sure that after the answer “at home” you will not register such a distinguishing psychophysiological reaction as is depicted in *Figure 2*.

Another example. Two dead bodies were found near Vilnius. The police found citizen D., who claimed that citizen O. had told him how he had murdered those two people. The police found no further murder evidence, and both citizens were examined with a polygraph. *Figure 3* presents citizen D's psychophysiological measurement diagram to the question:

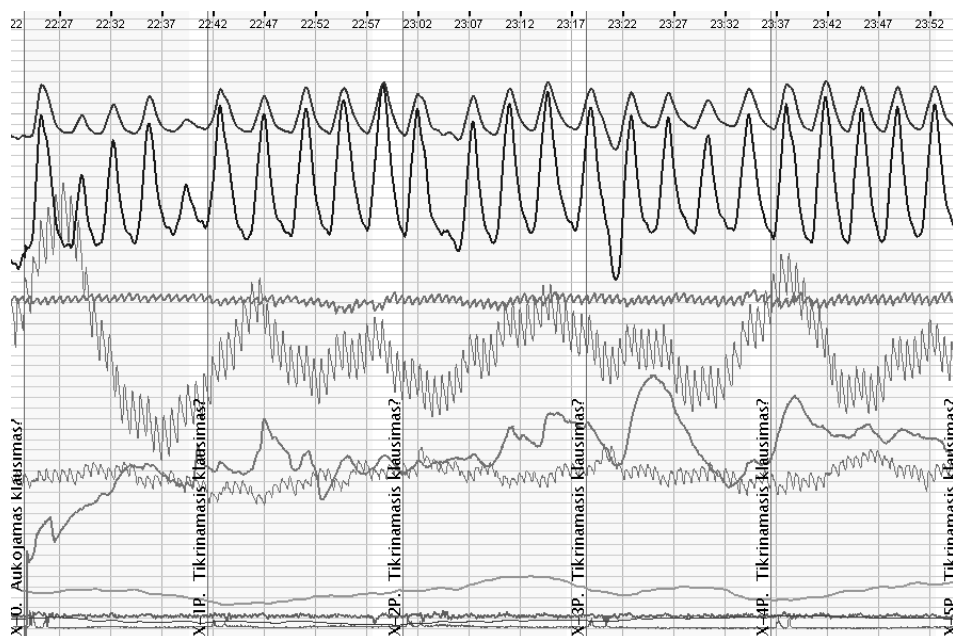


Figure 3. Citizen D's psychophysiological diagram to the answers to question IX.

IX. Do you know who murdered X?

0. Ben
1. John
2. Mike
3. O.
4. Silver
6. Robert

Figure 4 presents citizen D's psychophysiological measurement diagram to the question:

X. Do you know who murdered Y?

0. Karen
1. Walter
2. O.

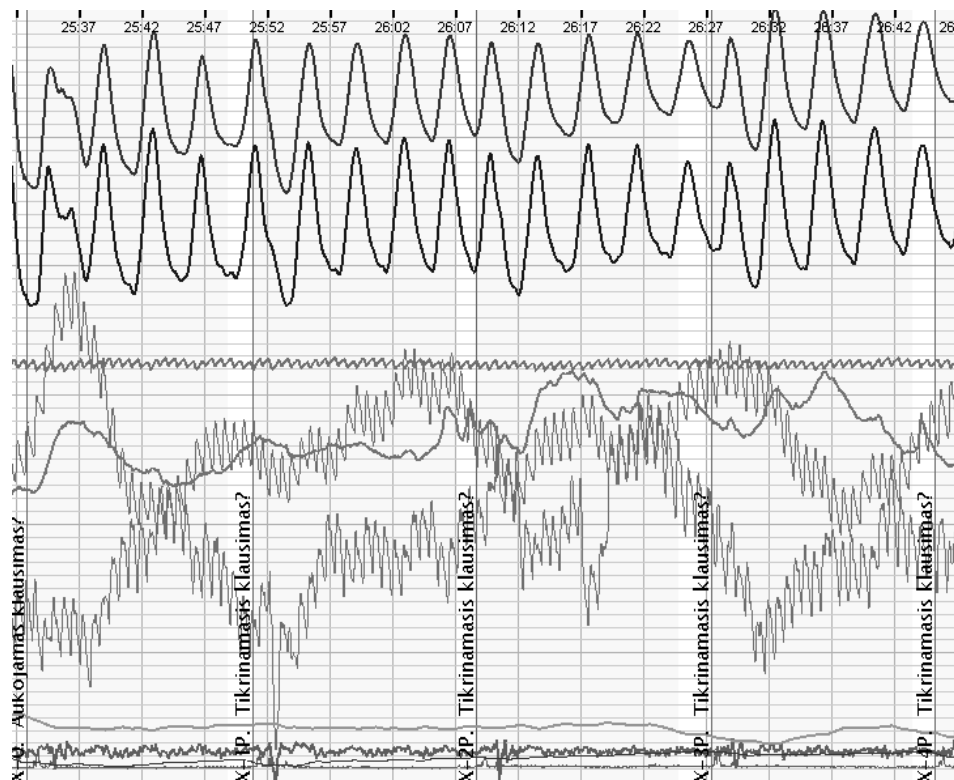


Figure 4. Citizen D's psychophysiological diagram to the answers to question X

3. Bert
4. Simas
5. Ilmar

For all answers (excepting answers IX-3 and X-2) citizen D. said “no”, and for IX-3 and X-2 answers he said “yes”. Visually in both diagrams (*Figure 3 and 4*) no strong distinguishing reactions are seen. Based on these two diagrams and other diagrams from the investigation, the polygraph examiner informed the police that citizen D. was open, i.e. not hiding anything according to the answer versions to the given questions.

Let us summarize:

- A. Citizen D. had information that citizen O. murdered citizens X and Y;
- B. Citizen D. had no motivation to hide this information from the investigators.

Because of these reasons the investigators failed to record very distinctive symptomatic reactions with the polygraph. It is known that universities (Saldžiūnas 2010) in Canada, Belgium, Israel and Germany, when carrying out laboratory psychophysiological examinations with students, use certain amounts of money to motivate them.

We had an investigation when citizen L. (witness) claimed that his neighbor V. had murdered a young woman. The prosecutor already intended to present the case to the court because all other material evidence weighed against suspect V. According to the lawyers, citizen V. would have been acknowledged guilty based on the material of the case. For some reason the police investigator decided to check the testimonies of citizens L. and V. with a polygraph. We carried out the polygraphic investigation by applying EKT. Witness L. had to answer this question:

n. Is it known to you who murdered the young woman?

0. Karl.....no
1. Maks.....no
2. Ivan.....no
3. John.....no
4. V.....yes
5. Nikol.....no
6. Frank.....no

Witness L.'s statements after the answers given to him are presented on the right. A reaction was registered after answer N4 and the statement "yes". Since at that time we were not yet highly experienced, we could not at first interpret this reaction correctly. A questionnaire to suspect V. was drawn up using the EKT method. This questionnaire was a little different from the questionnaire intended for witness L. After reviewing the suspect's reactions to the versions of the answers to the questionnaire, there were no signs that suspect V. knew the details of the women's murder. Then the investigators reviewed the witness's examination diagrams more attentively and noticed that more reactions were recorded that did not meet the version of the investigators of criminal event. The polygraph examiners told their assumption to the criminalists that witness L. was not open by saying "yes" after the answer version N4 – V. to question "n". During further investigation the detectives, thanks to additional evidence, made the witness confess. Witness L. said that he had lied because he had wanted to save his relative D., who was the real murderer. Later the court declared citizen D. guilty.

In our later works we ascertained that such a reaction was not accidental. If an examinee says "yes" after an answer version, and a symptomatic reaction is recorded with the polygraph, we are sure that reasons for such a reaction need to be found.

According to the memory trace theory, a symptomatic reaction should not exist in this example, as no memory trace formed in witness L. about the murder committed by citizen V. According to our theory (*Figure 1*), the witness added a made-up version to the information he possessed about the crime during a "creative" process. During the examination with the polygraph the witness experienced stress (fear, motivation) because:

- Despite his education or knowledge about psychophysiological examination with a polygraph, he cannot be sure that the polygraph examiner will not reveal the made-up version in some way.
- A person who has not been intentionally trained cannot control his psychophysiological reactions.

Based on the above, we believe that Lewandowski's first assumption (2008), that if the examinee possesses information about the event (i.e. has a memory trace), then during polygraphic examination a psychophysiological reaction will ALWAYS be recorded, is erroneous.

Is it necessary to evaluate only the biggest psychophysiological reaction in polygraph diagrams? Fiedler (2002) raised the question whether truly a stronger question can provoke a stronger psychophysiological reaction than is recorded with a polygraph. We have still not found scientific works to confirm this assumption. On the other hand, we believe that everything is relative: if the examiner assumes that one question is the strongest for the examinee, the examinee can assume otherwise. Therefore, we believe that the division of symptomatic reactions into stronger or less strong should be done very carefully. We are convinced that, if there are distinguished and other reactions, it is necessary to ascertain for what reasons they could have been recorded.

Let us come back to the discussion of Lewandowski's (2008) described criminal event. Let us recall: Lewandowski decided that "the examinee saw Henryk S. for the first time in 1999". We suggest explaining the diagrams given in *Figure 2* differently. It can be assumed that the examinee first saw the victim in 1996 – there is a distinguished symptomatic reaction to question N3. Based on the above, we can assume that the symptomatic reaction to question N6 exists because it is a version of the examinee and his lawyer, and the examinee is afraid that it will be revealed. Since the questions concern the first time, there is no distinguished symptomatic reaction in the diagram to question N4: Did you see Henryk S. for the first time in 1997? As we do not know the details of this criminal story, it is difficult to explain the reaction to question N8. We do not recommend making a final conclusion from this one group (test) questions. However, Lewandowski (2008) draws up the second group (test) of question types in this examination: "Did you see Leonarda S. for the first time in ...?" While examining Henryk S., symptomatic reactions to questions regarding the year 1996 and 1999 are registered. These reactions can be explained analogically. Therefore, we believe that, if the examination had been carried out fully according to the EKT method, the psychophysiological examination with a polygraph would confirm that the court had sentenced Henryk S. reasonably.

In order that the explanation of diagrams received during our examination be clearer, let us review *another example* given by Lewandowski (2009). This case refers to a suspicion of insurance fraud. The examinee notified the police on 6th January 2008 that somebody had stolen his car from the parking spaces by the house where he lived. At about 2 p.m. the day before, he had left the car in the parking spaces, and he had seen it for the last time at about 9 p.m. on 5th January. He was convinced that the car had been stolen from him, and did not know who had done it.

The police officer conducting the preliminary proceedings issued a decision to terminate the investigation concerning the theft of the car, due to the lack of a date sufficiently substantiating the actual crime. One of the basic reasons for undertaking such a decision was an official note which claimed that the police had “operational evidence” to prove that W.T. had submitted a false claim to obtain damages under false pretenses, and actually sold or abandoned the car.

Lewandowski (2009) composed question N3 – Did you abandon your car?, question N5 – Was your car stolen from you?, and question N7 – Did you sell your car? W.T.’s examination diagrams are presented in *Figure 5*. Lewandowski (2009) evaluates only the reaction to question N5; the reactions to N3 and N7 are ignored. Therefore, he thinks that the police was wrong to suspect that W.T. was illegally claiming an insurance payment.

As we wrote earlier, we consider the symptomatic reactions to questions N3 and N7 to be important. We have two assumptions:

1. If W.T. is open and tells the truth, the reactions to questions N3 and N7 could have appeared because of the straightforwardness of these questions. The reactions could have been triggered because W.T. was afraid to be wrongfully accused (Ekman 1992). However, why is a reaction to question N5 also recorded?
2. If W.T. is not open and is trying to deceive the police and insurers, he created a version of car theft and is afraid that this version might be revealed. Then all symptomatic reactions become explainable.
3. Two years ago we performed an analogous examination applying EKT. After our examination the insurer did not pay money to the “victim”.

Before closing we will analyze *one more* of Lewandowski’s (2009) examples. This case concerns a false accusation. The examined man was accused by an acquaintance of forcing her with violence and threats to have sexual intercourse. Question N4 was “Was the sexual intercourse the initiative of your acquaintance?”, and question N5 was “Was the sexual intercourse your initiative?”

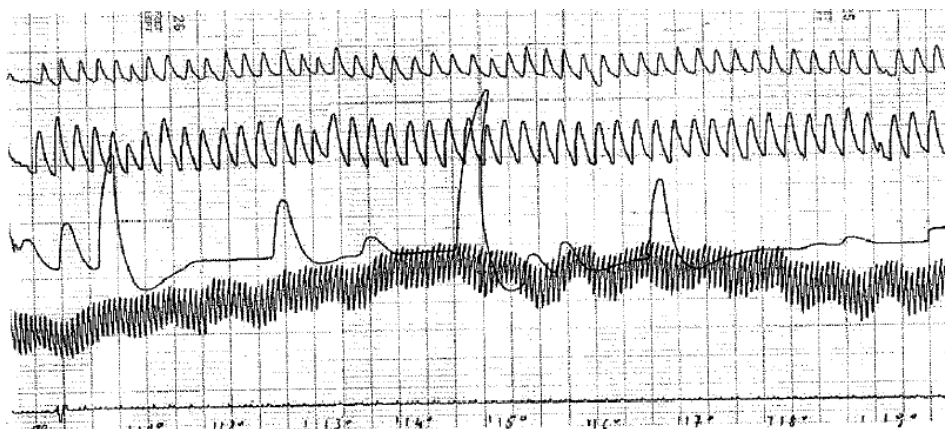


Figure 5. The case about suspicion of insurance fraud (Lewandowski 2009)

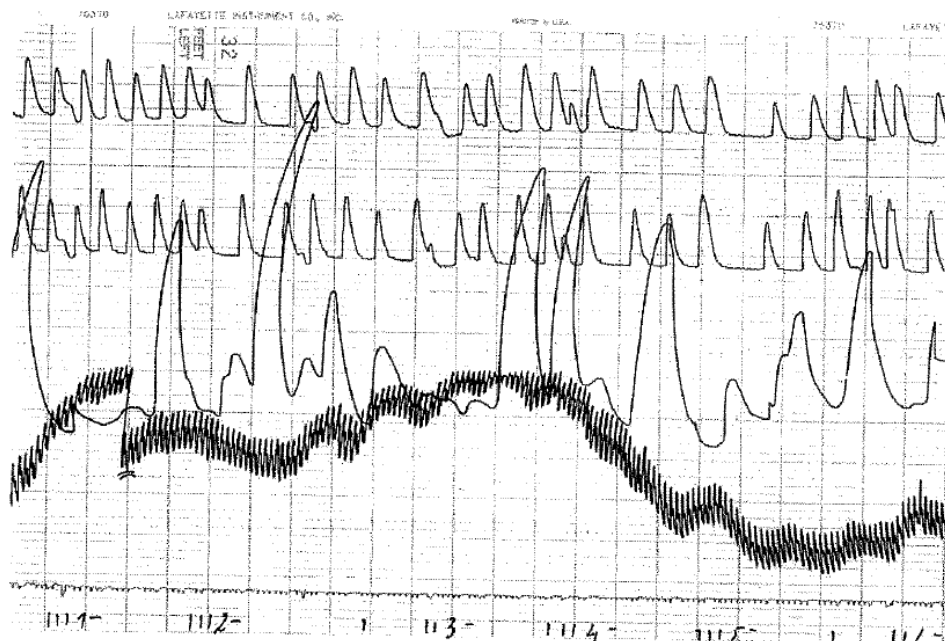


Figure 6. The case about alleged rape (Lewandowski 2009)

One diagram from this man's examination is presented in *Figure 6* (Lewandowski 2009). Lewandowski makes a decision – decisively stronger emotional changes were present after asking the question N4, which gives reasons to assume that the sexual intercourse of the examinee with the slandering woman

occurred on her initiative. Further, he writes – this excludes the element of threats and use of force to coerce her to sexual intercourse.

We directed our attention earlier to the fact that there is no proof that a stronger stimulus (question) must necessarily trigger a stronger symptomatic reaction. After reviewing the diagram (*Figure 6*), we had additional questions:

1. Is the symptomatic reaction after question N4 stronger than after question N5? We think that the man held his breath (apnea) more strongly after question N5.
2. How should the contribution of breathing and GSR () changes to the reaction evaluation be valued? Which of these changes is more important and why?

Therefore, we believe that the questions were very straightforward, so it is impossible to make decisions about the man's openness according to them. We suggest drawing up a completely different questionnaire. Generally, it is very difficult to investigate sexual crimes with a polygraph. In such cases we seek to examine both participants of the intercourse.

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Book reviews



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POLYGRAPH

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T. Shurany, I. Ravid
Evaluation of Polygraph Charts: Formats,
Criteria and Scoring

[T.I. Publications 2004, 150 pp.]

Even though published a few years ago, the book reviewed here is worth recollecting, as its reception so far in the polygraph milieu seems to be inefficient, while the significance of the questions tackled by the Authors is of fundamental importance for polygraph examinations.

The Authors filled in the gap that is present in virtually all polygraph manuals that devote relatively (let me emphasise: relatively!) little space to the evaluation of polygraph charts. And yet an expert, especially while still a beginner, needs knowledge in this scope, much like an experienced one eager to confront his views and habits with the experience of others.

The book is composed of parts covering the following: first, the rules of evaluation are briefly discussed in reference to C. Backster's numerical method. This part to a certain extent is decisive for the profile of the entire book, as the Authors in fact do not consider any matters of interpretations other than the ones designed by C. Backster. The presented set of rules is exceptionally detailed and drawn with precision that can be found nowhere else in literature of the subject. (BTW: The book includes a personal recommendation from Backster)

Another significant element of the book is the listing of interpretation criteria for the most important polygraph techniques and tests. We find here highly detailed step-by-step description of phenomena occurring during the reaction, their progress, and the way they are reflected in charts. The recording of the process of breathing, skin galvanic response, and heartbeat are discussed separately.

It is the following part that deserves the reader's special attention, as it presents phenomena similar to the reactions to test questions, that nevertheless are the result of earlier reactions, or even the very fact of asking the previous questions. The authors carefully analyse the reason for such phenomena that are defined – to use the terminology introduced by J.A. Matte – as “relief tracing segment” (p. 47). Worth mentioning here is the fact that these are the achievements of J.A. Matte that, besides C. Backster's concept, provide the theoretical background for the entire book.

The following chapter brings a detailed discussion of the artefacts encountered in evaluation of charts. The authors use here the causal criterion, and therefore discussed here are the artefacts caused by the following types of behaviour of the examinee: movements of hands and legs, talking during the test, clearing the throat, laughter, etc.

As the basic part of the book discussed above is devoted to the comparative questions tests, the authors provided a special chapter devoted to the peak of tension test. Such a solution is fully justified if one concerns entirely different rules of interpretation that specifically govern this test.

What beyond doubt is the most precious part of the book in question is its last (and most spacious) chapter that contains an abundant set of case studies in test evaluation practice. On more than 70 pages, we find reproductions of tests (in very careful visual arrangement), together with their evaluation made by eminent experts. These tests come from authentic cases, and their results were corroborated in a manner independent from polygraph examinations. This highly precious material was edited in such a manner that a reader can assess individual tests on his or her own, and later compare their results to those of masters in the field. Beyond doubt, this is the most important part of the book, a particular combination of a collection of cases with a set of exercises with the key to solve them. As far as I know, this is the only such a collection in world literature, at least the literature generally available in the open market.

If one were to make some critical remarks about the book discussed, they should include a certain theoretical one-sidedness, if not evasion of theoretical considerations as such. Nevertheless, it does not need to be a drawback; assumption of the concepts of J.A. Matte and C. Backster – after all, the classics of our discipline – for the basic ground is nothing wrong, and it provides the book with clarity of the thought, and the furthest going practical application of the work, which the Authors aimed at.

Evaluation of Polygraph Charts... should be found in the library of every polygrapher.

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