

Prof. Jan Widacki

Andrzej Frycz Modrzewski Krakow University, Dean of the Faculty of Law, Administration and International Relations
jan.widacki@gmail.com

Polygraph or Variograph?

Summary

In Poland and only in Poland, a polygraph is occasionally called a “variograph”. For some, the argument in favor of the name “variograph” is that the term “polygraph” is allegedly misleading as it can be associated with the printing industry. The author argues that in other countries, the ambiguity of the name “polygraph” does not cause confusion. Furthermore, the author mentions several names synonymous with “polygraph” and recalls how the name of the device commonly known as the “lie-detector” has evolved in the US before it eventually became known as the “polygraph”. Finally, the author proves that the name “polygraph” was in use in the Polish physiological literature already in the 19th century, for denominating the device capable of simultaneously registering more than one physiological function of the human body.

Keywords polygraph, variograph, history of polygraph

The name “variograph” was coined by Prof. Paul Horoszowski, who used it for the first time in his expertise issued on June 27, 1963, in the case of manslaughter run by the District (formerly Voivodeship) Prosecutor’s Office in Olsztyn (file no. II Ds. 25/63). In 1965, Prof. Horoszowski introduced this term into the scientific literature (Horoszowski, 1965), and two years earlier used it in his popular science book entitled “*Od zbrodni do kary*” [From Crime to Punishment] (Horoszowski, 1963).

In fact, the name was first formulated by the prosecutor in a notice of appointment of an expert, ordering the expert to “conduct variograph analysis”. However, it was certainly not the prosecutor who coined this term, and the fact that he used it in the notice of appointment indicates that he had it previously consulted with the expert to be appointed.

Earlier, for example in his 1958 book entitled “*Kryminalistyka*” [Criminalistics], Horoszowski used the American name “*lie-detector*”. As a curiosity, an earlier attempt can be mentioned to introduce the name “odkłamywacz” [debunker] into Polish literature (Kreuz, 1949), however, with no success.

In Polish terminology, both professional and scientific, the term “variograph” is used interchangeably with “polygraph”. The latter is used worldwide in a variety of linguistic variants (e.g. “polygraph” in English, “der Polygraf” in German, “poligraf” in Russian). The name “variograph” is used exclusively in Poland.

Both names are basically synonymous. “Polygraph” comes from the Greek *poloi* – much and, *graphos* – writing. In turn, in the term “variograph”, the first Greek segment was replaced with “vario” – a word derived from Latin (from *varius* – various), while the second Greek segment was left unchanged. Incidentally, the Polish word “wariat” [madman] (“different”, “different from normal”), has the same etymology.

In the author’s opinion, there is nothing wrong with using the name “variograph”. Moreover, the author has repeatedly stressed that it is not important whether the analysis is referred to as “polygraphic” or “variographic”, as long as it is performed in accordance with the rules applicable (Widacki, 2014). However, for some authors, the choice of name seems, for unexplainable reasons, to be of the utmost importance. So for example, M.Kulicki (1994) dedicates a few pages of his textbook to convincing the reader that the name “polygraph” is misleading, as it is associated with the printing industry (also referred to as polygraphy).

The author does not consider the opinion that the name is misleading for the Poles, but not for the Americans, Germans, English, Czechs or Russians, a compelling argument. In each of these countries there is an equivalent of the word “polygraphy” in the meaning of the printing industry. What’s more, in the United States a typewriter has been even manufactured, called the “polygraph” (cf. fig. 1). The seemingly largest dictionary of the English language (Oxford English

Dictionary, 1971) knows 5 meanings of the word “polygraph”, 4 of the word “polygraphic”, 3 for each of the words “polygrapher” and “polygraphy”, most of which are related to printing techniques.



Fig. 1. American typewriter “Polygraph”.

Name ambiguity is typical of each language. For example, the Polish language knows three different meanings of the word “zamek” [castle, lock, zipper

– translator’s note], two of the word the word “pokój” [room, peace – translator’s note], and so on.

The polygraph and its constructor, John A. Larson are included on the list of 325 greatest inventions and inventors of all time, published in the Encyclopedia Britannica Almanac. The prototype of this device is held by the Smithsonian Institution, Washington D.C. Interestingly, Larson did not name his construction “polygraph”, but referred to it as „cardio-pneumopsychograph”(Larson, 1922). A popular slang term for the polygraph was “sphyggi” (an abbreviation from “sphygmomanometer”). The apparatus consisted of a spiograph (a device known since the 19th century) and a modified sphygmograph, named “cardiograph”, allowing the observation and recording not only the pulse, but also the fluctuations in blood pressure. The indications of the spiograph and cardiograph were recorded on tapes made of blackened paper, wrapped around the reels of a kymograph. It should be added that the first kymograph was designed already in the year 1840, by the German physiologist Karl Ludwig. The first sphygmograph was designed in 1854 by another German physiologist, Karl von Vierordt. Finally, the spiograph, commonly used since the end of the 19th century, was the construction of the French scientist and inventor, Etienne-Jules Marey.

Another lie detection device was designed in the 1920s, in Berkeley, by Captain Clarence D. Lee, who named it “The Berkeley psychograph”. It was also a dual-channel apparatus (spiograph plus cardiograph),



Fig. 2. Keeler's polygraph.

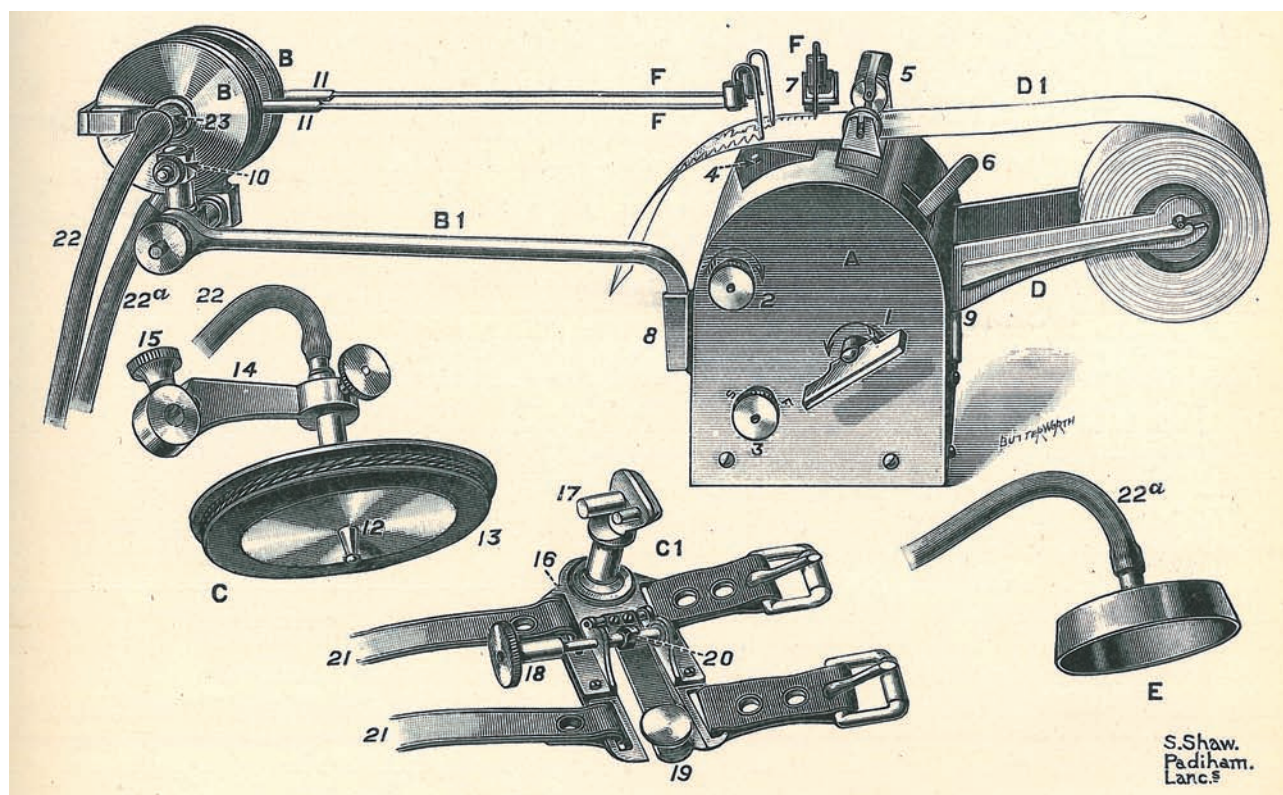


Fig. 3. Mackenzie's polygraph.

additionally equipped with a question marker. The reactions and the moments of asking questions were marked on the moving paper tape by ink plotter pens. In this respect, Lee's "psychograph" was similar to the "ink polygraph" developed by the Scottish cardiologist, J. Mackenzie, which was erroneously considered the first apparatus with this name (see below).

Prior to complementing his dual-channel apparatus with psychogalvanometer and naming it "polygraph", Leonard Keeler used the name "emotograph". Since Keller began manufacturing the apparatus called "Keeler polygraph" in the 1930s, the name "polygraph" has become a term widely used in the US for the devices simultaneously registering the course of respiration, dermal-galvanic reaction, changes in the operation of the cardiovascular system (pulse rate, relative fluctuations in blood pressure), or other physiological variables (for example, plethysmographic reaction, muscle tension). At the same time, a common name "lie detector" has been in parallel use.

Notwithstanding the above, some manufacturers have denominated their individual models with a variety of trade names. Stoelting company, for example, used the term "deceptograph" for one of the models from the 1950s, and "interrograph", "Emotional Stress Monitor" or "Polyscribe" for subsequent models.

According to Fred Inbau, the name "polygraph", with reference to the device capable of simultaneously recording multiple bodily functions, was for the first time used by the above mentioned Scottish cardiologist

James Mackenzie (Inbau, 1953). Thus Mackenzie's construction was named "the first polygraph" by Inbau.

Indeed, Mackenzie had actually used the name "polygraph" for his construction made up of a kymograph and more than one device registering a bodily function. For example, his "clinical polygraph" registered on the same tape the "radial pulse", "apex beat", the pulse of the carotid artery ("carotid pulse"), "venous pulse" and "respiratory movements" (Mackenzie, 1910). Another innovation was the construction of the "ink polygraph", which plotted the records of several bodily functions on a paper tape, using ink plotter pens. At that time, the records were either made with a dry stylus on blackened, or, more rarely, waxed paper, or by casting the shadow on light-sensitive paper. Such ink plotter pens were later applied by Leonard Keeler in his polygraph constructions. The recording on light-sensitive paper was applied in Darrow's "photopolygraph", a device brought to Poland in the 1930s and used for studying emotions at the National Institute of Mental Hygiene in Warsaw.

Without denying the importance of improvements made by Mackenzie to the device registering bodily reactions, it should be emphasized that, contrary to Inbau's convictions, shared by dozens of authors citing him worldwide, Mackenzie did not invent the name "polygraph" to be used with reference to the device simultaneously registering more than one bodily function.

It has actually functioned within the European science community long before Mackenzie's publications. Also, as regards the Polish language, the name **polygraph** was used by Napoleon Cybulski in his work entitled "Fizyologia człowieka" [Human physiology], published in 1895, for the device coupled to the kymograph, capable of simultaneously recording more than one bodily function. Twenty years later, an identical device was assigned the name **polygraph** by Zbyszewski (1914). As can be seen, the name "polygraph" in the meaning of the device simultaneously registering more than one bodily function is not, as considered by some, merely a loan translation from English, since it was in use within the Polish science community long before it entered the English language.

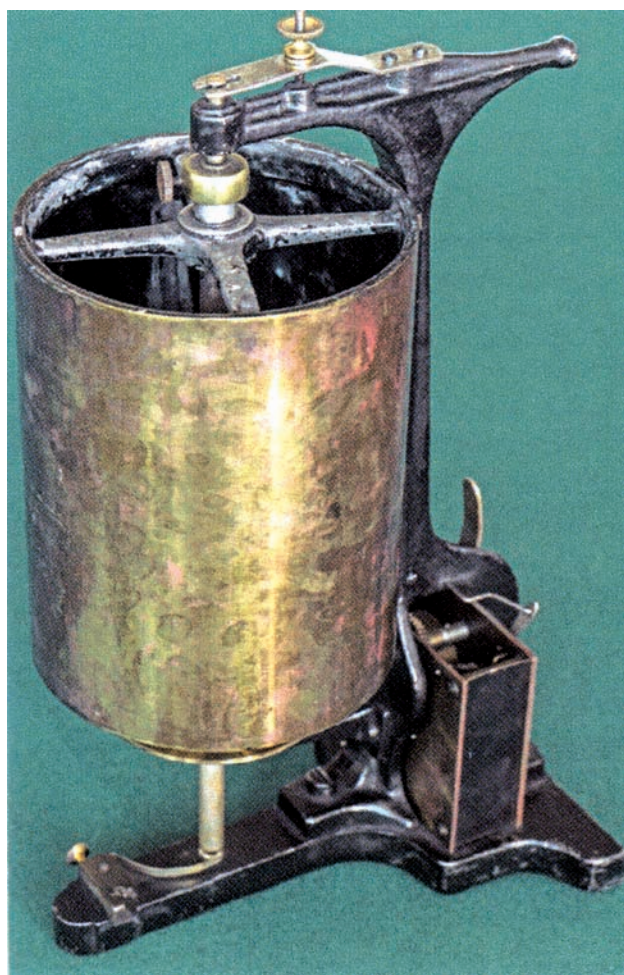


Fig. 4. Kymographs from the collection of the Jagiellonian University.

As regards the terminology concerning the device commonly known as a "lie detector", just like in the case of other technical devices, the names were coined either by the constructors or manufacturers. Needless to recall, the author of the name "variograph", Prof. Paweł Horoszowski, did not belong to either group. He initially opposed the polygraph, calling it "a device contributing to enhancing the atmosphere of intimidation



of the person being examined" (Horoszowski, 1958). However, a few years later, after purchasing a similar apparatus, Horoszowski used it for the purpose of criminal proceedings, without having a proper background, in a manner that undermined elementary rules for conducting such studies, issuing an opinion that was damning for the accused. The description and assessment of research carried out by Horoszowski in 1963 and 1964, can be found in the literature (Horoszowski, 1965; Krzyścin, 1977; Widacki, 1981, 2014). The list of errors committed during these studies, which fueled criticism among other authors, is lengthy and beyond the scope of this article. It will therefore be sufficient to recall only one of these errors, more than serious. Namely, after informing the person being examined that the study was completed, Horoszowski unexpectedly asked a critical question and noted the response given. Even the most elementary knowledge of polygraphic analyses should be sufficient to realize that, in such a situation, any test subject would react to the critical question, of any content, including about his/her involvement in Kennedy's or Ceasar's assassination. Such an obvious reaction was considered by Horoszowski as proof that the test subject responded untruthfully to the question asked, and was therefore guilty of the alleged deed.

One can have doubts whether Horoszowski, being neither the constructor, nor manufacturer of the polygraph, and having questionable contribution to implementing it into investigatory practice in Poland, had a moral right to propagate the name of his choosing for this device. This author shares the above doubts and thus uses an old Polish name "polygraph", instead of

“variograph”, while being satisfied that the same name is commonly accepted worldwide.

The author can understand that certain persons may have no such doubts, or for some reason became attached to the name “variograph”, and thus continue to use it. At least, they will be able to do it knowingly after reading this article.

Sources od figures:

Figure 1-2: author

Figure 3: [11]

Figure 4: from the collection of JU on the basis of To experimental psychology, M. Kielar-Turska (edit), JU Publishing, Cracow 2016

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Translation Rafał Wierchośławski

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