



BACKGROUND INFORMATION

Werner von Siemens and the needle telegraph

How the telegraph becomes a worldwide revolution through the application of the first strategic white paper in the world

Even if the word “white paper” was yet to be discovered, you can find usage of the white paper concept in 19th century Germany for the first time by no-one less than Werner von Siemens (1816-1892).

Let's document the events of the year 1847. On the 12th October Siemens opens a workshop with his partner Johann Georg Halske (1814-1890) in Schöneberger Street in Berlin. They built innovative machines which can send messages via electrical conducting cables over long distances in mere seconds. At the beginning the telegraph machines are nothing more than self-made cables made from copper or iron wire. At both ends an electro-mechanical device is connected so that messages, letter for letter, can be sent electronically. However, this only works if the electric cables are sufficiently well insulated. Without the right kind of insulation, rain, snow, wind and weather conditions have free range and they can prevent a clear message transmission. Only the person who can correctly insulate the cable electrically can solve the problem of telegraphy.

Siemens experiments for a long time with the already known electrical insulators: cotton, glass-tubes or resin. But nothing protects the cable in the long-term well enough against weather disturbances over long distances. Siemens reaches a breakthrough when his brother sends him “by chance from London a sample of a material which had just appeared on the English market, gutta-percha, as a curiosity.” (1) Gutta-percha is the coagulated latex of the gutta-percha tree. This material has many interesting properties: it insulates electricity exceptionally well, and in 50 degree heat it is soft and ductile, while at room temperature it is harder and not as elastic. Siemens establishes the fact that you have to use the material in its raw form and not vulcanised, for the sulphur, which is used during vulcanisation,

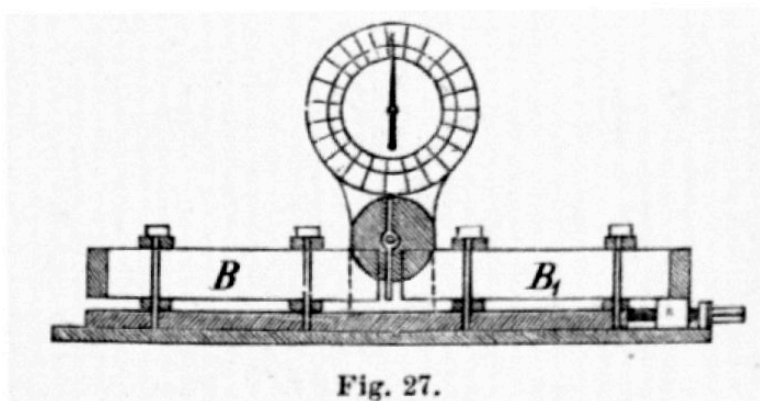


Fig. 1. By using attractive illustrations in addition to short factual texts, Siemens convinces “the high society circles” that his method of long-distance transmission is better.(3) Depicted here is the needle telegraph.

touches the copper of the wires. Almost entirely from his own means, Siemens develops a press with which the warmed material is easily welded into electrical cables. Armed with the new method of insulation of electrical cables, Siemens realises that he has solved the problem of message transmission over long distances. He senses that it will be nothing less than a revolution. But how does he inform the outside world? The solution is, as the young entrepreneur Siemens knows: to inform the decision makers.

“The story of the surprisingly favourable results of these experiments [with the gutta-percha] made its way at that time around the high society circles of Berlin and at the request of the princess of Prussia, whose son our later crowned prince Friedrich Wilhelm and Emperor Friedrich, led me to give a lecture on the electric telegraph.

The lecture, which was accompanied by experiments on the Berlin-Potsdam line and a memoir which tied in with it, where I explained what significance telegraphy would gain in the future, in the event that one made it the common property of the people, contributed



apparently greatly towards gaining the favour of the high society circles. “

(Siemens, Lebenserinnerungen, p. 53)

The “memoir” is a “brief portrayal of the experiences on the Prussian telegraph lines with underground cables.” In a scientific style Siemens provides information in it about his experiences with telegraph lines. But at the same time, the text aims to show decision-makers that his method of insulating electric cables works much better than those of his competitors. In his objective portrayal Siemens combines his expertise with water-tight logic, persuasive arguments, intricate technical details and a grand vision for the readership from the “higher circles”:

“Electric telegraphy is in every sense still in the childhood of its development. Only then can it overcome this standpoint and achieve its appropriate position as a powerful arm of the state mechanism and of the public transport, if one always can count on its reliability and the precision of its messages with certainty. (2)

Hence, the “Brief portrayal” of Werner von Siemens is the first strategic white paper in the world. It is as such very successful, for it drew all the attention to the knowledge head-start of his firm “Siemens & Halske”. It also made it possible for the young company to be soon commissioned with laying large national and international telegraphy networks.

Footnotes

(1) Siemens, Werner von. Lebenserinnerungen, Prestel: München, 16. Auflage, 1956, S. 51.

(2) Siemens, Werner von. Gesammelte Abhandlungen und Vorträge, Berlin: Julius Springer, 1881, S. 110.

(3) Siemens, Werner von, "Der magneto-elektrische Zeiger-Telegraph von Siemens & Halske", Dingler's polytechnische Journal, Bd. 151, S. 377, 1859. In: Siemens, Abhandlungen, S. 209.



Of interest to readers

Werner von Siemen's "Memoirs" have just recently been re-published by Piper.

Would you like to receive more information?

Please contact:

knowledgeatwork

Dr. Sybe I. Rispens

Wrangelstrasse 22A

10997 Berlin/Europe

Tel: (49)030- 692097520

Fax: (49)030-692097529

E-Mail: info@knowledgeatwork.eu

Internet: www.knowledgeatwork.eu