

The mathematician Wolfgang Doeblin (1915-1940) – searching the Internet

Last year two documentaries, new publications and a celebration at the “Berlin-Brandenburgische Akademie der Wissenschaften” popularized the fate and the mathematical work of Wolfgang Doeblin. Is it possible to find more detailed information about Wolfgang Doeblin in some of the FIZ Karlsruhe databases and on the World Wide Web?

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In the summer of 2007 the German-French television channel „arte“ presented a documentary about the mathematician Wolfgang Doeblin. If you missed this opportunity, and if you are curious to find out more about Wolfgang Doeblin, you can obtain fast and comprehensive information from our databases „Zentralblatt MATH (ZMATH)“ (free demo access; full access for subscribers) and “Jahrbuch über die Fortschritte der Mathematik (JFM)“ (open access). Using further internet services, one may nowadays gain fast access to fundamental information, reprints, articles and original publications without leaving one’s computer, at workplace or at home. Time-consuming visits of libraries or bookshops are no longer necessary.

The first source consulted by most people is “Wikipedia, the Free Encyclopedia“. Not all entries in Wikipedia are reliable or complete, but most entries are a good starting point. Wolfgang Doeblin is not recorded in the English version of Wikipedia, but in French and German (as per Oct 10, 2007; translated from German):

[Wolfgang Doeblin, or Vincent Doblin \(* March 17, 1915 in Berlin; + June 21, 1940 in Housseras, Vosges\), the second son of Alfred Döblin, was a German-French mathematician. In view of the defeat of the French army and in fear of the Nazis he committed suicide in 1940 . His parents where also buried in Housseras in 1957.](#)

His work in Probability Theory became generally known after an announcement and publication of the Académie des Sciences in Paris in 2000. This work was contained in a sealed letter dated February 1940. With the results in the paper “Sur l'Equation de Kolmogoroff" he could have anticipated Iro Kiyoshi's theory about stochastic integration.

Now several questions are still open:

Why was Wolfgang Doeblin in danger, and why did he commit suicide?

Only one publication is noted in Wikipedia.

Did he really write only one article?

Why wasn't this article published before 2000?

Searching now in the databases JFM and ZMATH gives the answers to the questions above and moreover makes it possible quickly to find out more about Wolfgang Doeblin:

Searching in the Jahrbuch database for publications of the author „Doeblin, W*.“, obtains 31 articles, and one paper of author „Doblin, V*.“ (Fig. 18).

All articles were written between 1936 and 1940. This answers one of our questions: Wolfgang Doeblin has written not only one publication, but at least 32, and this over a period of four years. For a mathematician this is a lot. All articles are contained in the section “Probability Theory and Applications“ of the Jahrbuch; the sub-sections are: “Distributions“, “Probability of Dependent Events“, “Limit Theorems” and “Finance



Fig. 18: Result of the search in JFM database

Mathematics“. The papers and announcements are written in French. Many of them are published in the “Comptes rendus hebdomadaires des séances de l’Académie des Sciences” – the well-known journal of the French Academy of Science. Three articles have co-authors: Robert Fortet and Paul Lévy. Thus it is evident for most mathematicians that Wolfgang Doeblin worked with the well-known probabilists Paul Lévy and Maurice Fréchet at the famous “Institut Poincaré” in Paris.

Searching in ZMATH for the author “Doeblin, W* or Doblin, V*” obtains 63 articles (Fig. 19).

Some documents are duplicates, because between 1938 and 1942 the abstracting journals Jahrbuch and Zentralblatt handled the data sometimes individually, sometimes in common. 21 articles in ZMATH have links to the complete digitized texts. Therefore, it is possible for you – if you understand French and the theory of probability – to read two thirds of the original work of Wolfgang Doeblin.

Three articles on top of the list in ZMATH were published in 2000. Number three (Zbl 0973.00016) is a special issue of “Comptes rendus hebdomadaires des séances de l’Académie des Sciences” with several chapters. The review mentions the spectacular discovery of an additional work of Wolfgang Doeblin at the Académie des Sciences in Paris: “Sur l’équation de Kolmogoroff“. It is possible to order these 154 pages with the services “FIZ AutoDoc” or “subito” (in Germany) within one or two days. If you would like to read two short digitized summaries first, it can be recommended to follow a link in Wikipedia to the

“Lettre de L’académie des Sciences, no. 2, 2001“. In this paper Prof. Bernard Bru sheds light on the tradition of the sealed folders in the Académie des Sciences (“Les plis cachetés du passé au présent“ p. 15) and the surprising discovery of the work of Wolfgang Doeblin (“La vie de W. Doeblin et le pli cacheté 11668“ pp. 16-17).

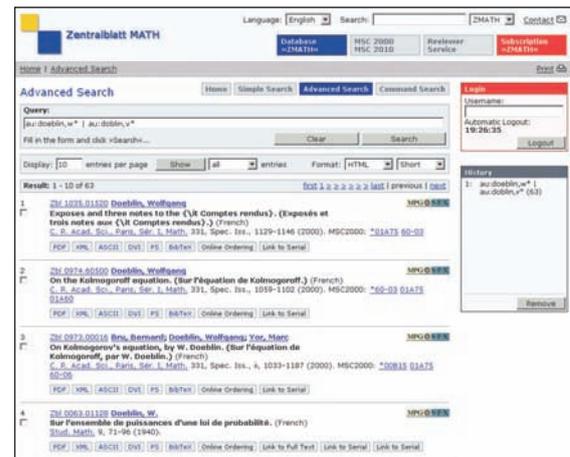


Fig.19: Result of the search in ZMATH

What can you do, if you do not understand French? If you query ZMATH for the title word “Doeblin” and “EN” as language, you find a list of 45 documents. Among others there is an article “Comments on the life and legacy of Wolfgang Doeblin” (Zbl 1046.01009) and a video DVD “Wolfgang Doeblin. A mathematician rediscovered” (Zbl 1046.01009). The article in the journal “Finance and Stochastics” in English contains the main results described in the special issue of the Comptes Rendus cited in the previous section. You may order a copy via the services “FIZ AutoDoc” or “subito” in Germany. The film is not the same as the one shown by “arte”, but also well worth watching. The details about the life and work of Wolfgang Doeblin are fascinating and impressively presented by the producers with original interviews of Doeblin’s brothers and more witnesses. You may order the film with the publisher Springer or internet services such as “Amazon” or “Libri” (Fig. 20).

The detailed review of the film in ZMATH gives answers to almost all questions asked in the beginning. We will summarize the answers in the next section.



Fig. 20: Cover of the DVD: “Wolfgang Doeblin. A mathematician rediscovered”

Life and Work of Wolfgang Doeblin

Wolfgang Döblin was born in Berlin during World War I. He was the second of four sons of Alfred Döblin, medical scientist, doctor, writer and well-known author of the novel “Berlin Alexanderplatz”. Alfred Döblin was a Jew, socialist and even before 1933 well known for his opposition against the Nazis. The night the “Reichstag” was burnt down, he left Berlin, and took refuge in Paris. His wife and children also moved to France, and they all became French citizens. Wolfgang Döblin changed his name first to “Wolfgang Doeblin”, then to “Vincent Doeblin” or “Vincent Doblin”. He had just graduated from high school in Berlin. In Paris he took up his studies in mathematics at the Université Sorbonne. Being now a French citizen he had to serve as a soldier in 1938. During his military service as a regular soldier he tried to continue with his mathematical studies – at least one hour per day. After the beginning of World War II in spring 1940 his battalion was surrounded by the “Wehrmacht” in the Vosges. When the German soldiers arrived at the little village of Housseras and there was no escape, W. Doeblin burnt his remaining papers and committed suicide in a barn.

Some weeks before his death, Wolfgang Doeblin had sent a sealed letter containing a new mathematical treatise to the Académie des Sciences in Paris. He only mentioned it by the way in a letter to M. Fréchet. At least since 1701 there has been a tradition at the Académie des Sciences that sealed letters, “plis cachetés”, could be deposited. As a general rule only the sender, his relatives, or the Académie des

Sciences (after a period of 100 years) have the permission to open such a “pli cacheté” (Fig. 21).

In connection with the conference “50 years after Doeblin: development in the theory of Markov chains, Markov processes, and sums of random variables” held in 1991 at the University of Tübingen, Bernard Bru, professor for the History of Mathematics at the Université René Descartes Paris, was looking for information about Wolfgang Doeblin's vita. In an archive in



Fig. 21: The archive of the “Académie des Sciences

Paris he discovered a letter written by W. Doeblin to M. Fréchet containing the hint to the pli cacheté. After further investigation and time-consuming efforts, he was given permission by the brothers Claude (Klaus) and Stephan (Stefan) Doblin to open the letter. The family had not been aware of the importance of Wolfgang Doeblin's mathematical work. Then the pli cacheté was opened, and an exercise book with a hand-written article “Sur l'équation de Kolmogoroff” was found (Fig. 22).

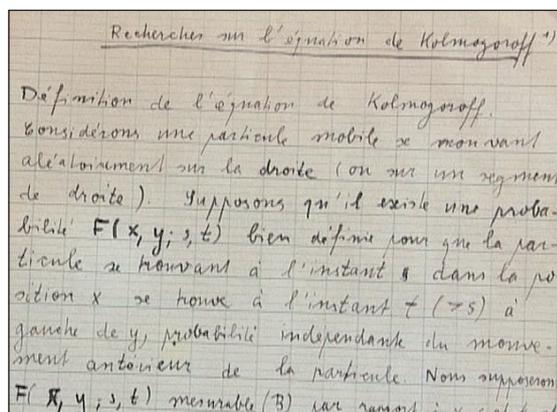


Fig.22: First page of the “pli cacheté no. 11668”

Prof. Bernard Bru and the probabilist Prof. Marc Yor investigated the paper and found to everybody's surprise that Wolfgang Doeblin as early as 1940 had developed a formula comparable to the famous formula established in the 1950s by Kiyoshi Itô. Kiyoshi Itô began his research regarding Kolmogoroff's equation also around 1940. He got his most important results during the 1950s. Today, Itô's theory is of great importance for many parts of science and economics, especially in finance mathematics. The Black-Scholes Model for option pricing is based on it.

In 1955 Paul Lévy compared Wolfgang Doeblin's mathematical abilities and destiny to those of Niels Henrik Abel and Évariste Galois. In any case, Wolfgang Doeblin was certainly a gifted mathematician, and some parts of the probability theory could have been developed faster, had he lived some years longer.

Four more remarks

A simple search in ZMATH with the keyword "Doeblin" obtains 261 publications. Some authors use expressions like "Doeblin's condition", "Doeblin type theorem", "Doeblin decomposition", "Doeblin processes" or "Doeblin's big limit theorem". Every year, mainly since 1970, articles are published which are based on Wolfgang Doeblin's ideas. So it is again evident that Wolfgang Doeblin's articles are important and still of interest for today's researchers.

It is striking that all publications of Wolfgang Doeblin were completely reviewed in both *Jahrbuch* and *Zentralblatt* (see publication list of B. Bru and M. Yor in *Zbl.* 1046.01009). Wolfgang Doeblin was a Jew, refugee from Germany, and regarded as an enemy by the Nazis. The editors of the *Jahrbuch* and *Zentralblatt* at that time, Dr. Harald Geppert and Prof. L. Bieberbach, were members and stalwarts of the "Nationalsozialistische deutsche Arbeiterpartei". But the abstracting journals *Jahrbuch* and *Zentralblatt* continued to report as objectively and comprehensively as possible about mathematical publications, although the authors were ostracised in Germany. Likewise, the *Jahrbuch* and *Zentralblatt* remained relevant for the mathematicians abroad. Wolfgang Doeblin wrote a letter from Givet (the position of his battalion at that time) to Michel Loève in Paris and asked him to send him the latest reviews on his papers in the *Zentralblatt*.

There were other three mathematicians in Wolfgang Doeblin's French battalion. All three were made prisoners of war and asked to work for the *Jahrbuch* and *Zentralblatt* in 1941. During World War II the editorial staff of the journals was reduced and needed more specialists. Four French mathematicians wrote reviews (J. Leray, C. Pauc, F. Roger, J. Ville), and two French mathematicians worked in Berlin (C. Pauc and F. Roger in 1943).

In Wikipedia a book about W. Doeblin is quoted: Marc Petit "Die verlorene Gleichung. Auf der Suche nach Wolfgang und Alfred Döblin" (The lost Equation. In Search of Wolfgang and Alfred Döblin). Marc Petit discovered many biographical facts about the two men. He read many sources and interviewed Bernard Bru, Marc Yor and contemporary witnesses. Marc Petit is Professor for literature and tries to retrace people's lives between 1910 and 1940. But being neither a scientist nor a mathematician, the fascination of mathematics and unsolved mathematical questions remain alien to him. He can hardly understand that sometimes Wolfgang Doeblin spent day and night in the library and even chose mathematics as a distraction during the war. Thus, character and qualities of Wolfgang Doeblin remain somewhat vague and incomprehensible in this biography.

Pictures:

- [1]: Deutsches Literaturarchiv (Marbach am Neckar),
 [2]: Agnes Handwerk, Harrie Willems:
 "Wolfgang Doeblin. A mathematician rediscovered".
 Springer VideoMATH, Berlin: Springer, DVD (2007).

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