Harald Cramér, Willy Feller, and the 'Institute' — between two world wars

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Background: 'Stockholms högskola' and Harald Cramér

Stockholm University

Sthlms högskola (SH): Not state university – private school

- Founded 1878 as a radical alternative to Lund and Uppsala.
- Open lectures, from 1904 also exam rights, Sth city financed.
- Not all faculties, one reason for not called university.
- State university in 1960, with name change, SH –> SU

Harald Cramér (1893–1985):

- 1912 started studying Maths and Chem at SH.
- 1914 Bachelor exam, work in biochem but turning to maths.
- 1917 Lic. exam and Doctoral degree in Math => Docent title;

  Number theory; *On a class of Dirichlet series* (in French)

Maths at SH after the war

Stockholm University

- *Helge von Koch* (prof math, died 1924), (v K 'fractal curve')
- *Ivar Bendixson* (prof math, also SH 'rektor' (retired 1927))
- *Ivar Fredholm* (prof mathem physics, died 1927). (F 'integral eq')
- *Marcel Riesz* (dynamic, docent position, influenced HC much)
- *Mittag-Leffler* (retired, but still manipulating, and influential)

Maths at SH after the war

Stockholm University

- *Helge von Koch* (prof math, died 1924),

  replaced 1925 by Torsten Carleman from Uppsala (via Lund).
- *Ivar Bendixson* (prof math, also SH rektor, retired 1927)

  replaced by Fritz Carlson from Uppsala.
- *Ivar Fredholm* (prof in mathem physics, died 1927).
- *Marcel Riesz* (dynamic, docent position, influenced HC much),

  1926 got a chair in Lund, where Carleman did not want to be.
- *Mittag-Leffler* (retired, but still manipulating, and influential)

  behind the appointments of Carleman and Carlson at SH.
- *Cramér* commented: *"dead hand over Stockholm maths"*.
  Cramér suffered.

Math at SH after the war

Cramér had strong interest in number theory ***and*** in probability:

- e.g. 1923: proof of the CLT with more precise error bounds.
  Now 1925 *"a dead hand over Stockholm mathematics"*
- And Cramér was banned by Mittag-Leffler.
- Cramér had seen his future in pure math, but no longer.
- From 1919, Cramér had also been involved in actuarial work.
- The actuarial field seemed more promising for Cramér now.
- Actuaries wanted a prof. in Actuar. Math; HC promising candidate
- 1928 a chair was financed, and created at SH.
- 24 July 1929 Cramér was appointed professor of
  Actuarial mathematics and mathematical statistics at SH.
  Resources: part-time 'amanuens' (assisting teacher)

First locations of the chair

Stockholm University

Both before and after the appointment, Carleman & Carlson worked against Cramér in many ways, but Cramér got support in particular from the younger members of the faculty.

1929–1932, Cramér gave his lectures in Room 3, *Kungstensg. 45*. He had no office at SH, until 1932 he could move to the new social sciences building, *Odengatan 61*.

After seminars, speaker and audience usually went downhill to nearby 'Metropol' restaurant for *'post-seminars'* ('Hard Rock Café'). Old verse content: *Room 3 is the waiting room to Metropol.*

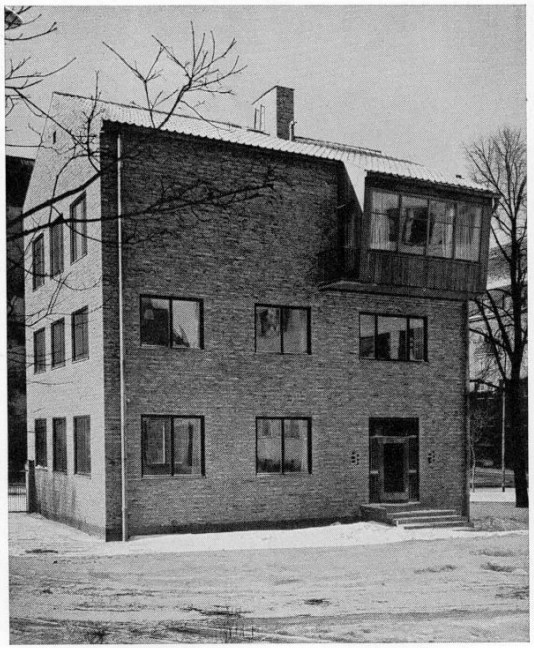
The *'Institute'* remained at Odengatan 61 until Cramér managed to get a new building of his own, at *Norrtullsgatan 16,* in early 1940.

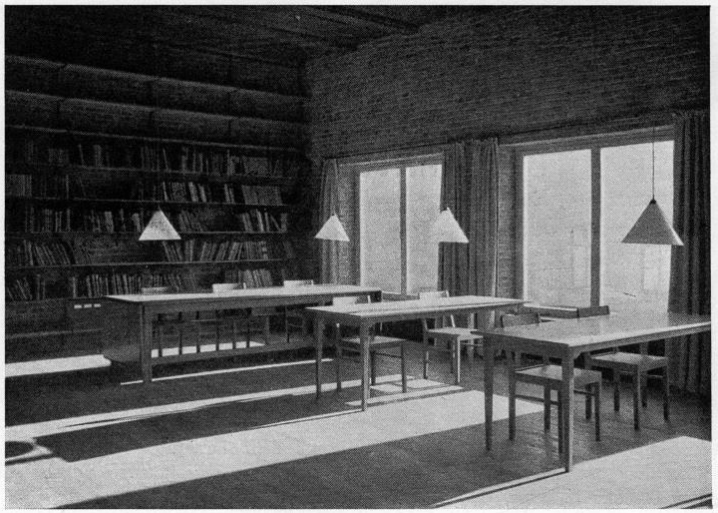
Kungstensgatan 45 nowadays

(from Google maps) originally the home of the science faculty

Odengatan 61 nowadays

Norrtullsgatan 16, from 1940





INSTITUT FÖR FÖRSÄKRINGSMATEMATIK
OCH MATEMATISK STATISTIK

vid Stockholms Högskola

First years as professor

Stockholm University

First year, public lectures on ***probability*** (and applications).

First version of his elementary book had already appeared (”lilla Cramér”;

Sannolikhetskalkylen och några av dess användningar).

Next two years of teaching, 1930–32, were devoted to ***actuarial maths***.

These years he published his fundamental work on risk theory

(in particular *On the mathem. theory of risk*, ~80 pages), and the

whole decade he carried out a variety of tasks within the actuarial field.

1932–33, an elementary course on ***theoretical statistics***,

1933-34, a year devoted to a course in *time series.*

1934-35, chosen topics in ***probability theory*** *(based on Kolmogorov's work from -33)*

Etc, in particular 1936–37 on theory for random variables, and 1937, 1st ed of his

Cambridge Tracts book appeared: *Random Variables and Probability Distributions*.

(*”read by a whole generation of probabilists”*; from Gunnar Blom's obituary)

Willy Feller (Zagreb 1906 – USA 1970), to become "*giant in probability theory*". (In Stockholm at SH 1934–1939, (Rydén&S))

Stockholm University

Feller first studied in Zagreb,

–> Göttingen, where he studied for Courant and Hilbert.

Finished his doctoral thesis in 1926 (at age 20!)

–> Kiel Univ. (NW G.) to be leader for *Applied Maths* Institute.

So far, so good, but times got gradually worse . . .

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Jan. 1933 Hitler got the polit. power in G., discrim. of Jews, etc.

Feller was ¼ Jewish (p. grandfather had converted to catholicism),

So he chose to leave, –> Copenhagen.

(together w his (anti-nazi) Danish student Clara; married 1938).

Feller made friends with the brothers Harald and Niels Bohr.

Feller could not remain permanently in Copenhagen.

Harald B wrote to his friend Harald C (co-authors).

Willy/William Feller

Photo from 1936

Willy F and Clara Nielsen

In the 1960s

Willy Feller to Stockholm 1934

Cramér later wrote (in Sw.) in his Memories:

"In the autumn 1934 an event happened, that had great implications both for me and for my group of students. My friend Harald Bohr wrote to me and recommended a young mathematician, Willy Feller.
I managed to give him a modest payment for lecturing at SH. "

Feller impressed not only on Cramér, but also on other scientists, because he was actively interested in applications (note his position in Kiel).
And he quickly learnt Swedish (Ove Lundberg).

However, despite support from e.g. Zoology and Political economy, Cramér failed to give Feller a formal position (anti-Semitic and other opposition).
Feller's name is absent in SH catalogue of staff and courses.
In Institute records these years he is called

"*Guest of the Institute, Privatdozent W. Feller*".

Feller in letter from Stockholm

How did Feller experience the tense relation btw the Maths Institute and Cramér's Institute? Here is an indication.

From letter to *Courant* 1934 (transl. fr German):
" I never catch a glimpse of pure mathematics,
partly because it virtually does not exist as a university institution – the students are learning on their own, and the professors are only doing the exams – ,
partly because Carleman is of the touching opinion that one should execute all Jews and immigrants (which, however, he tells his assistant only after consuming a nonnegative amount of alcohol). "

(but according to Cramér, Fritz Carlson caused even more trouble than Carleman)

Willy Feller in Stockholm, publications

Stockholm University

Feller was very productive, ~20 publications

Cramér in Obituary 1970:

” … two outstanding papers,
one containing his celebrated necessary and sufficient conditions
for the validity of the CLT, (Lindeberg–Feller)
and the other a development and generalization of the Kolmogorov
theory to Markov processes. (Feller process, Feller continuity, etc)

Why no publication with Cramér?
According to Marta C, they planned a joint Springer book, but was
made impossible already by the German regime,
of course also by the war.

Willy Feller in Stockholm 1934–1939

Here, his documented&reviewed seminars in the Institute:

1934 Oct–Nov (3 weeks) Über die Grundlagen der Wahrscheinlichkeitsrechnung

(Note, Kolmogorov's booklet 1933 & Cramér lectures (& Khinchin paper))

1935 Febr Über den zentralen Grenzwertsatz der Wahrscheinlichkeitsrechnung.

1937 Sept On the foundations of probability theory. (German->English)

1937 Nov From the probability conference in Genève 1937 (see next page)

1938 Sept About Neyman&Pearson's "Statistical estimation" theory.

1939 April On fully monotone functions and their use in probability.

Willy Feller in Stockholm, two comments

1937 From the probability conf in Genève 1937

(small conf, with Cramér and Feller participating)

Interesting general remark by Feller, that I sympathize with: *"Contacts with applications were missing, a common drawback of modern mathematics. Applications of probability theory should not be regarded as a separate subject, but be treated in connection with theory."*

More briefly, do not keep theory separate from applications!

1937, Feller had a mutually fruitful contact with Conny Palm, from LM Ericsson ("Palm measures"). Palm visited seminars and gave one himself. In Feller's Volume I, 1950, he wrote "In particular, Palm's impressive work over many years …", and many examples from telephone traffic theory are found in Feller's two books.

From Doob's obituary (1972), about Feller's lecturing

Stockholm University

”Apart from his mathematics, those who knew him personally will remember Feller most for his enthusiasm, the pleasure with which he met life, the excitement with which he drew on his endless fund of anecdotes about life and its absurdities, particularly the absurdities involving mathematics and mathematicians. To hear him deliver a mathematics lecture was a unique experience. No one else could generate in himself, as well as in his audience, so much intense excitement.
In losing him, the world of mathematics has lost one of its strongest personalities as well as one of its strongest researchers."

Willy Feller in Stockholm

Stockholm University

Feller was important for two (of three) doctoral students in the Institute in the 30s, namely

Herman Wold (Amanuens 1932–37, thesis 1938 -> docent title)

Ove Lundberg (Amanuens 1936–40, thesis 1940)

(son of Filip Lundberg, whose work had inspired Cramér)

Cramér (Memories):

"For Herman Wold's thesis, and even more for Ove Lundberg's thesis, their discussions with Feller was of a radical/far-reaching ('genomgripande') importance"

Willy Feller leaves Stockholm

Letter to Neugebauer 1939:

The emotions here are aggravating from day to day. There is a flood of student revolutions, Nazism at the universities is mushrooming.

Summer 1939, Feller got an invitation to a position in USA. Cramér writes:

”We dared not advise him against accepting this, and shortly before the war outbreak he left for USA, where he met a brilliant future. **...**

Talking with Feller had been a great help in my work on the purely mathematical presentation of probability that Hardy had asked me to write, and I gave him a well deserved thanks in my Cambridge Tracts book. ”

Also late summer 1939, bulding-work started at Norrtullsgatan 16.

1 Sept, Germany invaded Poland.

The end of this account

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Sundberg: Various material about our math stat history to be found on our dept web pages.