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# The Limits of Participation: Lucia de Brouckère, a Female Professor at the Solvay Conferences on Chemistry

## Abstract

*Lucia de Brouckère (1904–1982) was a Belgian chemist. As chairman and vicechairman of the Faculty of Sciences between 1959 and 1963, she promoted a new curriculum, and helped to rebuild the Chemistry Department of the Université libre de Bruxelles (ULB) after 1968. She distinguished herself at a time when women were still fighting for their rights and a better place in society. She was not only the first woman to become a professor at the Faculty of Sciences of the ULB, but also the first Belgian woman to participate in Solvay conferences on chemistry. She attended each of them from October 1928 (the third one) until her retirement in 1974. Despite her knowledge of chemistry and her position in scientific institutions, for example as headmaster of the Belgian Chemical Society in 1960, she never participated as a speaker to Solvay conferences. At a time when only very few women could access a higher education, and even less entered an academic career in Belgium, Lucia de Brouckère's profile strikes as exceptional. Her systematic attendance as a passive actor at the Solvay conferences provides a unique case study of what it meant to be a female scientist in a prestigious manonly environment.*

## Keywords

*Women in science, female chemist, Solvay Conferences on chemistry, history.*



Figure 1. Lucia de Brouckère taught 'Methodology of Chemistry' at ULB, 1939. (Archives ULB)

## 1. Introduction

Lucia de Brouckère was born in 1904. Daughter of the socialist politician Louis de Brouckère, she followed his path and became an influential citizen of the Belgian society.

Until World War II, female students were a minority group in Belgian universities, and we may even assert they were more of an underrepresented group. Obviously, and as most women of that time, Lucia de Brouckère was not destined to attend university. During the twenties, if a woman persisted to attend university, she had to study philosophy, physiology or law, and she was to be supported financially by her father or family. Ninety-five years ago, a woman who attended university was not given the opportunity to have a job, to work in her field, after her

studies. Most of the time, she would attend university for the sole purpose of instructing herself and to become a ‘pleasant partner’ to her husband [1]. However, Lucia de Brouckère did not study philosophy or law even though she had considered those options. She chose to study hard science, chemistry.

## 2. An inspiration source: Daisy Verhoogen

To understand Lucia de Brouckère’s choice, we first must introduce another woman who was a source of inspiration for her: Daisy Verhoogen.



Figure 2. Lucia de Brouckère when she was a student. (Archives ULB)

Evidence shows she was an inspiration for Lucia de Brouckère, who chose analytical chemistry after attending her classes. Daisy Verhoogen attended university and majored in chemistry thanks to her father and her uncle who were both physician and professor of medicine at the *Université libre de Bruxelles*. After her studies, she became Georges Chavanne’s assistant, a chemistry professor who was well known in Brussels. Female scientists surrounded this professor: Hortense van Risseghem, Alice

Lacourt and later Lucia de Brouckère who became his assistant in 1923. Georges Chavanne seems to have been an influential figure in these women’s career at the university and at the Solvay International Institute of Chemistry which we will discuss further on [2].

An assistant position was an unstable and insecure, not well-paid job. Daisy Verhoogen took this job and after six years of full-time employment, and four years of part-time employment following her marriage, she finally became first assistant. Traditionally, assistants became first assistants after four years of full-time job, but Daisy Verhoogen, being a woman, had to undergo ten years of proving her ability to teach chemistry before obtaining this promotion. In the career path, first assistant, researchers had to pass a final examination if they wished to become full-time professors and receive a diploma which allowed teaching excathedra courses. Daisy Verhoogen failed to pass this exam but Lucia de Brouckère was to succeed in this examination, as we will discuss later. As first assistant, the higher permanent position within the university ever reached by a female scientist until the 1930s, Daisy taught practical application of chemistry and other courses, which Lucia de Brouckère attended. We may assume she chose to study crystallography and mineral chemistry after attending these lectures by Daisy Verhoogen [3].

## 3. Back to the Story of Lucia de Brouckère

Lucia de Brouckère wrote her PhD dissertation entitled “*Sur l’adsorption des électrolytes par les surfaces cristallines*” (On the adsorption of electrolytes by crystalline surfaces) during her assistantship under the supervision of Jean Timmermans for physical chemistry, and Alexandre Pinkus for analytical chemistry. Both these professors were Chavanne’s colleagues and former assistants. Chavanne appointed both to the International Solvay Institute of Chemistry as auditor and secretary. Since 1928, Lucia de Brouckère was also invited to these Solvay conferences.

She was the first Belgian woman to receive the Jean Stas prize from the Royal Academy of Belgium, a prestigious prize awarded to researchers in Science. Lucia de Brouckère considered that a scientist had to be not only a researcher but also a person interested in society, politics, economy, and culture. For Lucia de Brouckère, the requirement of a researcher was also a commitment to society, with a critical and open mind. In her point of view, a chemist could not be a good scientist if his or her interest was only grounded in chemistry. He or she had to understand and have a reflection about the world. She had many reflections about the ethics of Science and the position of a researcher, scientist or professor within society [4].

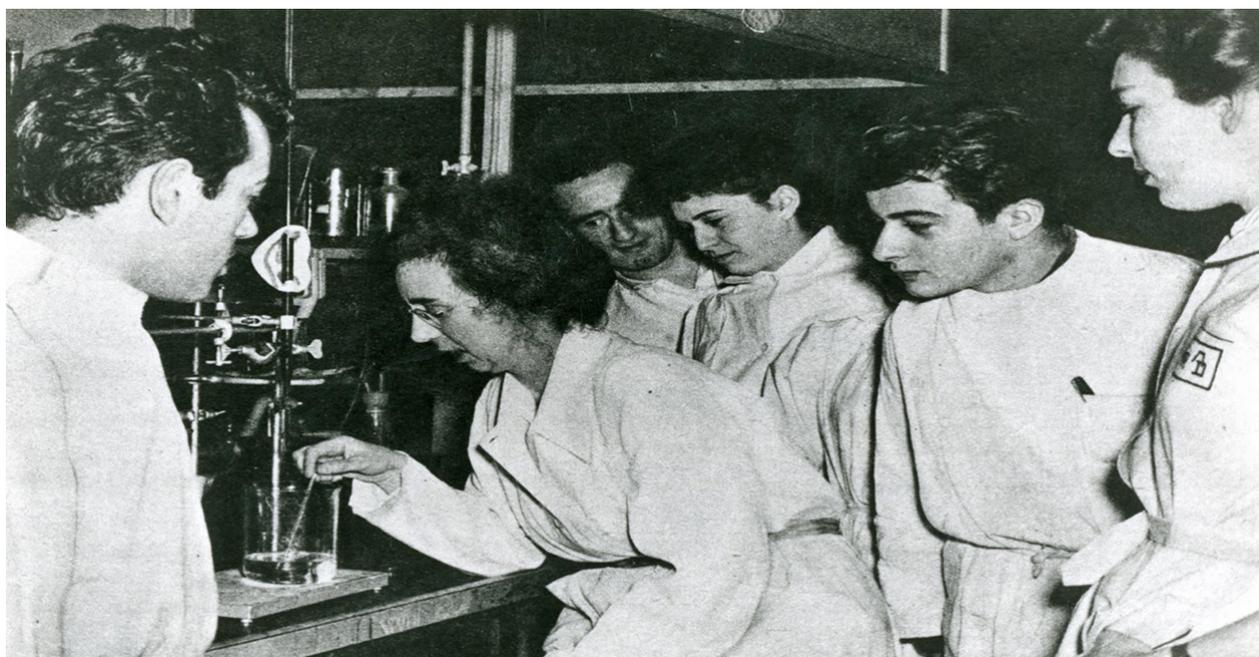
However, she was also a highly qualified chemist. Her interests were focused on the methods and scientific rigour in chemistry research. At that time, scientists did not publish as many articles as what we see today, but she nonetheless wrote nineteen articles between 1927 and 1934 [5]! It was a huge production if we consider her other activities and implications in society and university life [6]. We can identify four reasons to explain this incredible production in comparison with her colleagues. First, her passion. Then, her woman's status. As a member of the so-called 'weak gender', she had to prove her value and enforce her position as a female researcher. A third reason may be found in her family name and ascendancy. She had to demonstrate that she was a good chemist, beyond her name and status as

the daughter of a well-known socialist politician. The last reason may be her male colleagues' and supervisors' support, amongst which Georges Chavanne and Jean Timmermans. We can assume that the support of these well-known and respected professors and Belgian chemists had an influence on the rest of her career.

#### 4. Academic Carrier

She studied at the *Université libre de Bruxelles* (ULB) but was first appointed teaching fellow at Ghent University in 1930. With that designation, she became the first female professor in a Faculty of Sciences in Belgium. Between 1937 and 1940, she became a teaching fellow at the *Université libre de Bruxelles*. She did not immediately teach theoretical chemistry to the students in the Chemistry Department, but rather taught chemistry to students in the Mathematics Department. The theme of her lecture addressed to the chemistry students was the methodology of chemistry. She was also allowed to be a course supervisor. She was therefore in charge of teaching methodological aspects of the chemistry knowledge, but not of teaching theoretical chemistry. Lectures about chemistry, master thesis supervisor, chemistry taught to chemistry students were then the privileges of male professors. Lucia de Brouckère found herself in charge of tasks usually carried out by assistants or first assistants, and not the tasks of a teaching fellow.

Figure 3. Lucia de Brouckère with some of her students (unidentified) at the ULB Chemistry Laboratory, 1954 (Archives ULB)



World War II began and Lucia de Brouckère went into exile in England. When she returned to Brussels, she finally accessed to the position of chemistry lecturer to students in chemistry. May we see there a change in the social and professional position of women after World War II, or was it ‘only’ a temporary substitution because of the lack of men after the war? Anyhow, because she was a woman, ‘she had to promise she would resign in two weeks if there ever were some authority problems with an audience of several hundreds of students!’ [7].

Following 1945, Lucia de Brouckère taught general chemistry to first-year students. In 1951, she started teaching a lecture to students in their last year, and thus reached another level in her

career. Indeed, lectures and practical lessons given to last year students were usually occupied by experienced professors, needless to say, old men. Finally, between 1959 and 1963 she reached the highest position in a faculty department: vice-head and head of the Chemistry Department. Lucia de Brouckère was the first Belgian woman to teach as professor in a Faculty of Sciences but also the first women to head it. She carried on teaching until her retirement in 1974 [8].

### 5. Teaching Style

Lucia de Brouckère applied a different pedagogy in comparison with her contemporary male colleagues. She is considered an avant-garde



Figure 4. Lucia's first participation in the Solvay Council on Chemistry, 1928. (Third Solvay Council on Chemistry, Archives ULB, 011Z Fonds IIPCS.)

professor, a pioneer of ‘participative pedagogy’. In May 1968, when students rose against the university’s archaic structure, she presided over the general assembly to discuss the reform of the teachings and of *Université libre de Bruxelles*’ organisation itself.

She highlighted what we would call today “methods and proficiency”. She wished to develop reasoning and deduction at a time when lectures were exclusively theoretical with no discussion between professor and student. Until 1968, most of the lessons were ex cathedra lectures taught by professors. Students had to memorize the theory without experiencing by themselves and practicing with laboratory experiments [9].

## 6. A woman in the Solvay Conferences on Chemistry

Lucia de Brouckère was the first woman to be a chemist professor at the *Université libre de Bruxelles* and the first woman to attend a Solvay Conference on chemistry. These conferences were held in Brussels every three years from 1922 and brought together the most influent specialists in their field. Internationally, the Solvay Conferences on physics are better known, but the same model was used for the Solvay Conferences on chemistry. Most of the specialists gathered during these conferences were Nobel Prize winners.



These meetings were organised by an Administrative Commission and a Scientific Commission within a structure called *Institut International de Chimie Solvay* (Solvay International Institute on Chemistry). The Administrative Commission was composed of Belgian scientists. The Scientific Commission, on the other hand, was composed of internationally renowned scientists.

Georges Chavanne and Jean Timmermans, both of whom supported the career of Lucia de Brouckère, designated her to participate in this prestigious conference as a Belgian representative. She attended the conferences from 1928 (year during which she obtained her doctoral degree) until 1974 when she retired. She has never been invited as a speaker during these conferences although some sessions dealt with mineral chemistry or crystallography, which were her fields of expertise in research. She attended these gatherings as an auditor just once but was one of the four scientific secretaries during the other sessions. She was recognised more as an educated secretary than as a chemist and was chosen for this position because of her knowledge in the fields discussed during the conferences. Since the 1950s, she had a good working relationship with Ilya Prigogine who became secretary of both administrative commissions of the Institutes in 1959 before becoming director of the Solvay Institutes after their reorganisation into a non-profit organization in 1970. (The Solvay Institute of Physics and Solvay Institute of Chemistry have officially merged together in 1963) [10]. In 1965, she entered the Administrative Committee of the Solvay Institute of Chemistry. In 1970, she joined the newly created General Assembly of the Solvay Institutes until her resignation in 1982. By then, she was fully recognised as a professor and chemist by her peers [11].

Figure 5. Lucia de Brouckère surrounded by five of her final year students (unidentified), 11 April 1964. (Archives ULB.)



Figure 5b. Lucia de Brouckère with King Baudouin during the 12<sup>th</sup> Solvay Council on Chemistry, 5–10 November 1962.

## 7. To conclude...

Lucia de Brouckère was an inspiration for her time but also for the next generations of female students and scientists to come. She trained many male and female students in chemistry during her career and engaged herself in many societal issues: freedom of speech, equality of rights... She thought that anyone could access education, regardless of his or her gender or social status and fought for the democratisation of higher education. She wrote an amount of papers on chemistry in comparison with her male fellows. Her teaching methods were used, time and again, long after her retirement.

Despite her status as a woman, she had a successful career and opened a door for other women to become professor or scientist and allowed a new generation of women to envision entering a scientific career. Fifty years after the so-called liberalisation and democratisation of teaching, equality between women and men in scientific careers and other fields, is not attained, and we are still far from it today. For example, there are only 11% of women at the last stage of an academic career—professor!—in Belgium, and only 19% of female professors in Europe [12]. The case study of Lucia de Brouckère is instructive for the history of a minority of women working in science, a field still ruled by a strong male majority.



Figure 6. Lucia de Brouckère near the end of her career, n.d. (Archives ULB)

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