

Analytic women

Twin forces marginalised the women of early analytic philosophy. Correct those mistakes, and the next generation benefits

by Jeanne Peijnenburg & Sander Verhaegh

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A couple of years ago, the library of the University of Groningen in the Netherlands was subject to a massive reclassification. Hundreds of books were provisionally placed higgledy-piggledy on the shelves, atlases leaning against poetry collections, folios of sheet music wedged between a tome on malaria treatments and a study of birds in the Arctic. In the midst of this jumble, one of us was preparing the valedictory lecture that would mark her official retirement as professor of philosophy.

After two hours of thinking and writing, it was time for a break and a leisurely look at the miscellany of intellectual effort on the shelves. A bright blue book drew attention. It was the fourth volume (the rest were nowhere to be seen) of *A History of Women Philosophers* (1995) edited by Mary Ellen Waithe, which deals with female philosophers in the 20th century. Upon inspection, it contained not only essays on thinkers such as Simone de Beauvoir and Hannah Arendt, but also a chapter on a completely unknown English philosopher, E E Constance Jones (1848-1922). The authors of this chapter, Waithe and Samantha Cicero, argued

that Jones had solved Frege's Puzzle two years before Gottlob Frege himself had done so.



Emily Elizabeth Constance Jones (1916) by John Lavery. Courtesy Girton College Cambridge/Wikipedia

This was by all accounts a spectacular claim. Frege, the German mathematician and philosopher born in the same year as Jones, had been the major inspiration for *Principia Mathematica*, the bible of modern logic that Alfred North Whitehead and Bertrand Russell published between 1910 and 1913. Frege's grand aim was to find a foundation from which the whole of number theory could be derived. In carrying out this project, however, he encountered a philosophical problem. How to account for the fact that an equation like $2 \times 2 = 1 + 3$ is informative, whereas $4 = 4$ is not? It is not just that the symbols on both sides of the identity sign are different. After all, in $7 = VII$ the symbols on either side of the identity sign differ, but the statement is not informative in the way that $2 \times 2 = 1 + 3$ is; it simply represents the number seven in two different symbol systems. In later work, Frege used a non-mathematical example to illustrate his problem. Why is the statement 'The morning star is the evening star' informative, whereas 'The morning star is the morning star' is not? Since both 'the morning star' and 'the evening star' refer to the planet Venus, both sentences seem to say nothing more than that Venus is Venus.

Frege solved the problem in his paper 'On Sense and Reference' (1892). He argued that the meaning of a term like 'morning star' is not just its reference (Venus), but also contains another component – the *sense* – which is the way in

which the reference is given to us, in this case as a star that appears in the morning. ‘The morning star is the evening star’ is informative because the references of ‘morning star’ and ‘evening star’ are the same, while their senses are different. In fact, it took the Babylonians quite some time to discover that this star that appears in the morning is the same heavenly body as the star that appears in the evening. ‘The morning star is the morning star’, on the other hand, is trivially true – for the Babylonians as well as for us.

Waithe and Cicero discovered that Constance Jones was struggling with a problem similar to that of Frege, for she wanted to know: why is the statement *A is B* significant while *A is A* is trivial? Waithe and Cicero argued that in 1890 – two years before Frege wrote his classic paper – Jones had published a solution that was basically the same as Frege’s.

For any scholar in analytic philosophy, this was breaking news. Both of us have long been teaching the history of analytic philosophy, one of us for more than 30 years. We have taught countless students how, at the University of Cambridge, Bertrand Russell and George Edward Moore revolted against traditional logic and traditional philosophy, thereby founding what became known as analytic philosophy. We have described how, in the 20th century, analytic philosophy branched out in two different directions, a formal one that led to Ludwig Wittgenstein’s *Tractatus Logico-Philosophicus* (1922), the Vienna Circle, and W V Quine’s naturalised philosophy; and an informal one consisting of the ordinary language philosophy associated with J L Austin, Gilbert Ryle, and the later work of Wittgenstein. Nowhere did we mention Constance Jones. We simply did not know about her, much less did we suspect that she could have anticipated that crucial building block of analytic philosophy, Frege’s distinction between sense and reference.

When we subsequently read Jones’s work ourselves, we found that the story is a bit more nuanced than what we had gathered from the chapter by Waithe and Cicero. There are similarities between Jones and Frege, but also some salient differences. It is not just that Jones’s approach is simpler than Frege’s, dealing only with elementary sentences such as ‘*A is B*’ – there are differences that cut much deeper than this. Frege’s distinction between sense and reference (in German: *Sinn* and *Bedeutung*) does not coincide with Jones’s more traditional distinction between what she calls ‘determination’ and ‘denomination’, and later ‘connotation’ and ‘denotation’, or ‘intension’ and ‘extension’. The extension of the predicate term ‘is red’, for example, is simply the class of all red things in the world. The Fregean *Bedeutung* of this term is, however, a concept, more

particularly a mathematical function. And while Jones's 'intensions' are properties of real or imagined things, Fregean *Sinne* (senses) constitute an objective realm separate from any actual or fictional world. (For details on the differences, see the chapter 'E E Constance Jones and the Law of Significant Assertion' by Jeanne Peijnenburg and Maria van der Schaar, forthcoming in the *Oxford Handbook of British and American Women Philosophers in the Nineteenth Century*, edited by Lydia Moland and Alison Stone.)

None of this alters the fact that Jones was completely forgotten, even though she had been a very active and respected member of the philosophical community. From 1884 to 1916, Jones taught Moral Sciences at Girton, the first residential college for female students in the UK, where she became Vice-Mistress and later Mistress. Her specialisation was logic: she wrote four books on the subject and many articles in leading philosophical journals such as *Mind* and *Proceedings of the Aristotelian Society*. Although her work is firmly rooted in the old Aristotelian syllogistics, it is in some respects surprisingly modern. At a time when logic was generally seen as being about subjective laws of thought, Jones anticipated later developments by staunchly asserting that logic was objective. Moreover, her problem-driven approach and remarkably clear style make her work different from the florid prose of some of her contemporaries and more akin to the later analytic tradition. In 1892, she became a member of the Aristotelian Society. Four years later, she was the first woman to address the Cambridge Moral Sciences Club, and established philosophers such as F C S Schiller, W E Johnson and Bernard Bosanquet engaged in public discussions of her work.

Then why was she forgotten? The history of 20th-century philosophy is largely shaped by handbooks, textbooks, companions or anthologies. By the choices they make, by the texts they rely on, historians, editors and educators influence our ideas about who are and who are not important philosophers. Jones's name is not in the handbooks. Why not? Perhaps it was due to the supremacy of modern mathematical logic, which reduced the old Aristotelian logic that Jones uses to a mere special case. The fact that Russell was personally exasperated by Jones and her Victorian mindset, describing her in a letter to Ottoline Morrell as 'motherly' and 'prissy', may not have helped either. But, whatever the precise causes, Jones does not deserve to be consigned to oblivion.

The case of Constance Jones is one of what we may call *historiographical marginalisation*: although she was a prolific and respected writer during her lifetime, her work never entered the canon because historians and textbook authors for some reason chose not to include it in their overviews. There are also

cases where the marginalisation is *historical*: a philosopher's significance is insufficiently recognised by her contemporaries. An example of historical marginalisation is the reception of work by the German philosopher, physicist and mathematician Grete Hermann (1901-84). After the dawn of quantum mechanics at the beginning of the 20th century, physicists and philosophers were baffled by its spectacular empirical successes. How could an essentially indeterministic and counterintuitive theory be so effective? Was the world really that weird? Following Albert Einstein, many people suspected the existence of 'hidden variables' that, once discovered, would reveal that quantum mechanics was deterministic after all. Their hopes were dashed in 1932, when the mathematician John von Neumann seemingly proved that any theory about hidden variables is incompatible with quantum mechanics. The quantum mechanical structure, he argued, is such that it simply does not allow the addition of variables that would enable us to identify deterministic causes, on pain of becoming inconsistent.

But he had a challenger. In a paper of 1935, Hermann showed that von Neumann's argument was flawed. The source of difficulty is an assumption he makes about a sum of noncommuting operators. Von Neumann was right that this assumption holds in quantum mechanics, but he failed to see that it may well be false in an extended theory, encompassing both quantum mechanics and the new or hidden variables. Hermann explained that this failure made his proof essentially circular. Her voice, however, was not heard. Thirty years later, the Irish physicist John Bell independently criticised von Neumann on similar grounds, and the subsequent experimental check of his findings earned Alain Aspect, John Clauser and Anton Zeilinger the Nobel Prize in 2022.

Although Hermann's argument against von Neumann was mentioned by Max Jammer in his standard work *The Philosophy of Quantum Mechanics* (1974), and by David Mermin in a paper of 1993, it received little attention at the time. This changed in 2016, when Guido Bacciagaluppi and Elise Crull discovered an unpublished manuscript by Hermann in the archives of the English theoretical physicist Paul Dirac. As it turned out, in 1933, one year after von Neumann's book, Hermann had sent a paper of 25 pages to Dirac, explaining the flaw in von Neumann's argument. Dirac never responded. It is, however, no exaggeration to say that the history of 20th-century physics would have been different if he had, and if the papers by Hermann had been noted earlier.

Historical and historiographical marginalisation are of all times and places: they arise in arts, sciences, and in all corners of philosophy. While generally lacking

justification, the causes of marginalisation are strong and manifold, ranging from the political, social, cultural or even personal. More women than men were affected by it, and the history of analytic philosophy is in this respect no exception.

In our recent book *Women in the History of Analytic Philosophy* (2022), we collected the metadata of articles published in main outlets for analytic philosophers in the first half of the 20th century. In particular, we looked at all the 3,288 articles that appeared in six philosophy journals between 1896 and 1960: *Mind*, *The Monist*, *Erkenntnis*, *Analysis*, *Journal of Symbolic Logic*, and *Philosophical Studies*. In 99.6 per cent of the cases, that is, in 3,274 articles, we were able to identify the gender of the authors. We found that, on average, only 4 per cent of these 3,274 articles were authored by women. Most of these women, 70 in number, are presently forgotten, as is illustrated by recent meetings of the Society for the Study of the History of Analytical Philosophy. Only four of the 246 papers presented at meetings of this society in the period 2015 to 2019 were about female philosophers – less than 2 per cent.

In practice, it is often hard to separate historical and historiographical marginalisation, for they typically go hand in hand. If work by female authors is not much read or cited by contemporaries, historians will be disinclined to include it in their textbooks. And if these female philosophers' views are not discussed in textbooks, anthologies or introductions, they are less likely to be studied by the next generation of philosophers.



Susanne K Langer photographed by Richard Avedon. Courtesy the [Smithsonian National Museum of American History](#)

A prominent example of the interplay between the two types of marginalisation is the reception of work by Susanne K Langer (1895-1985), one of the first to use the term ‘analytic philosophy’ in print. Langer was an American logician and a student of Whitehead, the co-author of the aforementioned *Principia Mathematica*. Whitehead had worked at the University of Cambridge in the UK his entire career but had taken up a position at Harvard University in Massachusetts in his 60s. This move greatly stimulated the dissemination of logical analysis in US philosophy, and Langer was among the most active proponents of the new approach. In 1964, she recalled having been part of a small group of students ‘who looked forward to a new philosophical era, that was to grow from logic and semantics’. After completing her PhD, Langer actively contributed to the spread of the new ‘analytic’ philosophy. She published a number of papers on *Principia Mathematica*, wrote one of the first American logic textbooks, and co-founded the Association for Symbolic Logic, the first international society for logicians.

In the beginning, Langer’s work was much respected by her colleagues. Her first books and papers were frequently discussed by analytic philosophers, both in print and in private discussion groups. Members of the celebrated Vienna Circle studied her work in the early 1930s and saw her as one of the major representatives of the analytic approach in the US. (For details, see the [chapter ‘Susanne Langer and the American Development of Analytic Philosophy’](#) by Sander Verhaegh in our book.)

Then, Langer published what would become her most influential work: *Philosophy in a New Key* (1942). It sold more than half a million copies and has been cited in the academic literature almost 10,000 times. The book is a plea to expand the scope of logical analysis. Until then, analytic philosophers had used the new logic to analyse science, philosophy and language in general. But Langer suggested to apply it to a broader range of phenomena: abstract paintings, sculptures, symphonies, rituals, dreams and myths. All these things, Langer argued, are complex symbols with an internal structure and are therefore suitable subjects for logical analysis. Much as we can investigate the logical form of propositions such as '2 x 2 = 1 + 3' and 'The morning star is the evening star', we can analyse the logical structure of J S Bach's Air on the G String and Piet Mondrian's *Composition with Red, Blue, and Yellow*.

In the years that *Philosophy in a New Key* went through reprint after reprint, Langer's work began to be ignored by her former analytic companions. In advocating the study of art, myths and rituals, Langer had proposed research topics that many analytic philosophers relegated to the realm of the irrational. While her colleagues were reconstructing the foundations of probability, arithmetic and quantum mechanics, Langer was studying subjects that were taken to be expressions of emotions and feelings. As a result, there was hardly any discussion of her book within the analytic community, despite her rising fame outside it. Even analytic colleagues who were demonstrably influenced by her book, such as Quine, failed to cite it. By the time that analytic philosophers started to compile anthologies and took the first steps towards documenting the history of their own discipline in the late 1940s, Langer's work was pushed into the background: it was not mentioned, not even her contributions to the development of logic and analysis in the first phase of her career. Today, Langer is well-known among philosophers of art, but her role in analytic philosophy has been forgotten.

In recent years, quite a lot of attention has been given to the ways in which sociopolitical and other external factors shaped the development of analytic philosophy. Were it not for the grim political situation in the 1930s, members of the Vienna Circle would not have immigrated *en masse* to England and the US. And were it not for the amenable climate at US universities, where rigour and clarity had become key virtues across the humanities and social sciences, their logical positivism would not so quickly have caught on. Even demographic factors played a role. When the first 'baby boomers' started to enter college, in the 1960s and '70s, many departments had turned analytic, and profited from the explosive

growth of higher education, creating more and more jobs for analytically minded philosophers.

Textbooks on analytic philosophy tend to present its development as a more-or-less continuous line, where key figures respond to one another: Russell reacting to Frege, Wittgenstein and Rudolf Carnap to Russell, Quine to Carnap, and so on. This way of telling the history has been very effective: it is no exception to find that, at a conference on the history of analytic philosophy, more than half of the papers are about Frege, Russell, Wittgenstein or Carnap. But the actual spread and growth of analytic philosophy is of course richer, more varied and more complex than is suggested by the stylised and regimented narratives that authors of textbooks are necessarily bound to relate. Like the development of any other historical movement, the development of analytic philosophy is full of interesting details that not only fail to match, but even contradict and undermine the general textbook outline. Had scholars given these details more attention, we might have enjoyed a broader and intellectually more diverse canon. For then we might have seen that the development of analytic philosophy was not only driven by purely philosophical arguments, but also by political, sociological and cultural circumstances, some of which made it difficult for particular academics, such as women, to be heard.

We are not suggesting that a broader recognition of the consequences of historical and historiographical marginalisation will lead to a completely novel canon or a radically new history of the tradition. What happened happened: we cannot go back in time and undo the processes that pushed female philosophers into the periphery. We will have to deal with the facts, even if we do not like them and believe they were preventable. It is a fact that only a small percentage of the publications in analytic philosophy were written by women. And it is also a fact that most of them were junior academics and therefore relatively young. Even if women were allowed to get a degree and were able to make it to the vanguard in a male-dominated intellectual climate, they often stopped publishing when they got married. This is why the 70 female authors we identified were responsible for just 131 publications in the journals we investigated, less than two articles per person on average. Only a very small number of women, such as Jones and Langer, had the time and the opportunity to build a comprehensive philosophical research programme.

What we *are* saying is that historians can play a role in correcting the omissions, oversights and even downright mistakes our predecessors made in writing about (or worse, not writing about) the contributions of female philosophers. For there

is an ‘internal’, purely philosophical point to be made. Although external factors influenced its development, analytic philosophy is more than the product of sociopolitical and cultural circumstances. In documenting the history of analytic philosophy, there is something to be right or wrong about. Hermann’s discovery really was a significant contribution to the debate about the existence of hidden variables, even if her colleagues and later historians failed to see it. And Langer really did play a major role in the development of US analytic philosophy, even though her name is missing in companions and anthologies on the subject. It is true that, until the 1960s, only a few women actively contributed to the development of analytic philosophy, but many of them had ideas that are worth studying. In examining and re-assessing their work, we will be able to discover interesting but forgotten theories, proofs and arguments, shed new light on the development of the tradition, and contribute to a richer, more diverse and philosophically more fertile canon.