

Prof. Dr. Thed van Leeuwen

Academic Life at a Crossroads



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Academic Life at a Crossroads

Inaugural Lecture by

Prof. Dr. Thed van Leeuwen

on the acceptance of her position as Professor by special appointment

Science Studies

at Leiden University

on Monday June 16, 2025



Universiteit
Leiden

Madam Rector Magnificus, esteemed members of the board of the Leiden University Fund, esteemed members of the Curatorium, dear colleagues, beloved family, friends, and acquaintances.

The Context

Let me start by trying to explain the title of my inaugural lecture to you, particularly the reference to crossroads. A few years ago, I wrote a text titled “Living at the Crossroads”, a piece that at the time helped me articulate how I had perceived my own career up to that moment, how I repositioned myself within the CWTS, but also where I realized my strengths lay within the academic world. This piece described how the work of the CWTS usually consists of two dimensions: namely, an academic-conceptual dimension in which we scientifically engage with our object of study, namely science, and the relationship of science to its surrounding environment, as well as a practical-empirical dimension in which we could apply that knowledge from the first dimension. However, that second dimension often provided input for our more academically oriented work. I realized at that time that my strength lay precisely there, at that intersection of translating scientific knowledge to the users of our knowledge, in evaluation processes at various levels, and identifying problems in the practice of academic evaluation procedures. This is the first intersection in this lecture.

I am delivering this inaugural address because I have been appointed as a special professor, with the title of the chair being “Monitoring Open Science policies and practices.” This implies that there is something to be examined that arises from a change, a transition. And this is the second intersection that this address will discuss, namely the transition from a more traditional, closed way of working in science to more open, transparent, and fairer ways of working in science. Both of these ways of working had and have consequences for example on how scientific work is evaluated, but more on that later.

For CWTS, this transition means that we must leave our familiar paths, and that we as an institute must embark on the uncertain path of using incomplete datasets, where we cannot always be sure of what we find; in short, a moment where we are thrown back in time to somewhat reinvent ourselves.

Originally, CWTS has focused on applying bibliometric, quantitative methods and techniques to support research evaluations, often in support of peer assessment, the so-called peer review. The working relationships between researchers and analysts of CWTS with a diverse array of scientific domains that CWTS served created a constant flow of questions to CWTS. These questions often directly concerned the application of research metrics, or how the research metrics developed by CWTS relate to peer assessments. The synergy between application-oriented research and academic research around those metrics was particularly successful for a long time. In terms of organization, the relationship between CWTS BV, our small business unit, and the academic institute was very successful, and if I had to describe it, I would say that our empirical work fed the academic work, which in turn led to improved techniques for supporting research evaluations. For a long time, the theoretical framework supporting all this mainly consisted of concepts inspired by natural sciences or computer sciences, and little use was made of social sciences or humanities knowledge. This was strange, because what we studied and still study consists of people’s behavior, in scientific communication, collaboration and interactions, both within and outside of science.

Since 2010, with the arrival of Paul Wouters at CWTS, the institute gained a broader profile, shifting from a purely bibliometrics research institute to one oriented towards broader science studies. With the arrival of colleagues with different scholarly backgrounds, a more explicitly critical perspective emerged regarding the application of research metrics in evaluation procedures, inspired by social sciences and humanities research thinking. This process has continued

into the present, with active contributions from CWTS staff in, for example, CoARA, the Coalition for Advanced Research Assessment, aimed at more fair and inclusive methods of research evaluation, but certainly also the Barcelona Declaration, which focuses on using data from the public domain to base research evaluations on instead of relying on expensive subscriptions with market parties, which results in universities and other research institutions ending up in a position where they are completely locked in a contractual situation with one information provider, what we call locked in. In the more recent period, CWTS continues to reinvent and redefine itself, with our mission reflecting the ambition to improve science itself and the relationship of science to society through our contributions.

Open science

4 As already indicated, my chair pertains to open science, and thus I will focus on open science in this inaugural lecture, highlighting a few specific aspects within the development of open science as we are currently experiencing it. My first encounter with the phenomenon of open science dates back to a symposium organized by the LUMC in the late 1990s. I remember that symposium well because it was the first time I was confronted with a man who, in my eyes, had a rather dogged stance regarding the topic he came to tell us about, namely Open Access publishing of the results of scientific research. Steven Harnad, for that was the man in question, was ahead of his time, and his arguments were mostly lost on few back then, not even on me. Now, in June 2025, the world looks very different, and the spirit of the times is such that we are now in the midst of the development towards a different, more open way of academic work. This development still needs to be fought for, but the arguments for why we should move towards a different way of working in academia are at least recognizable to many, as they touch on issues that affect the foundation of science.

Since the 1950s and 1960s, with logical positivism as the dominant paradigm, particularly in the natural, life, and biomedical sciences, rationalism can be seen as dominant in society. The rationalization of research management and science policy since the mid-1990s has led us to witness significant changes in how scientific work is evaluated. This rationalistic undercurrent focused solely on the instrumental rationality of scientometrics/bibliometrics, as a value-free set of methods and techniques in evaluations. As previously indicated, it is due to the ignoring of social science and humanities theories in the field of quantitative science studies that the study of power relations, among other topics, has been excluded as a subject of study. Rationalism is further characterized by excluding other forms of academic behavior and attitudes, such as intuition, common sense, practical and experiential knowledge, and contextualization. Due to the increasing complexity of the science system, but also science itself, consider the growing degree of inter- and multidisciplinary in addressing major societal problems, combined with a limitation of the budgets available for science, there arose a need for more 'objective' measures to assess scientists. These were found in so-called bibliometric indicators and measures, tools that quantitatively assess science based on the perceived quality of science based on numerical values. Due to a growing distance between science policy and research management to the workplace, the so-called peer review, in which colleagues assess each other, was no longer seen as sufficiently reliable. Here we see a distrust emerging, which previously played hardly any role in the way science was managed and assessed.

Until the 1990s, science and its evaluation were based on certain norms and values, but these increasingly came under pressure starting from the 1990s. With the increasing commercialization of the scientific publishing process, combined with a strong concentration of journals in the hands of only a limited number of scientific publishers, an ever-growing portion of the new scientific knowledge produced

became hidden behind a paywall: expensive subscriptions to journal portfolios from large commercial publishers that scientists in the Western world had access to, but where researchers from Low & Middle Income Countries and non-academics in the Western world had no access. The idea that science is a universal place where everyone can contribute has also proven to be a naïve idea: the gap between the wealthy West and the aforementioned Low & Middle Income Countries has continued to widen in recent decades, and as of 2025 we are still talking about an unequal distribution of the highest academic ranks, that of professor, between men and women (I should also note that the situation in the Netherlands is worse than in many other European countries). Furthermore, the certain degree of commonality and detachment required to conduct proper scientific research has also proven to be unsustainable: we increasingly see interference in research agendas by industrial and governmental research funders, raising the question of who determines what is important, what is of value, and for whom? Furthermore, science should be able to rely on some critical self-reflection, but we see that due to the emerging publication culture, and the corresponding pressure on publications in so-called top journals, it has indeed proven to be manipulable, as evidenced by the increasing number of fraud cases, of an ever more serious nature, which regularly shocks science and society.

Is there something that can be done about this? The Universal Declaration of Human Rights, as proclaimed by the United Nations, suggests that with a different form of organization of science, science can better serve humanity. Open Science is a collection of principles and practices that aim to make knowledge from various scientific fields accessible to everyone, with the aim of enabling science and society, on a global scale, to benefit from scientific developments. Finally, Open Science not only aims to make the end products of scientific work openly available but also to make the entire process more inclusive, fairer, more just, and more sustainable.

My agenda

This brings me to two specific points that I would like to address this afternoon, both related to this other way of organizing science and conducting science, namely open science.

But before I get to that, I want to take you back to the degradation of science and the way it has led to the assessment of science. This has resulted in, and I refer to the work of Sabina Leonelli here, a technocratic approach to open science. In her book “Elements of the Philosophy of Open Science,” Sabina Leonelli demonstrates how this technocratic method of organizing open science leads to a totalizing approach to open science, primarily focused on sharing everything: the unrestricted sharing of various forms of output, in digital form, so that everything becomes traceable, an almost endless list of digital items, publications of all types, research data, software, codes, which gives everyone access, based on equality, literally to everything! It goes without saying that this can potentially lead to major problems, especially regarding sustainability: all those digital objects stored in large data warehouses, often with multiple versions of the same digital object being saved, and the associated societal costs, for example concerning energy and water, not to mention the human inability to identify the really important matters within that enormous amount of digital objects. I give as an example the Web of Science database, the database of scientific literature that I and other colleagues in the field regularly consult, which already contains about 60 million publications. Another database that is being used increasingly more often, OpenAlex, already has more than 200 million entries. And consider that many of the objects that arise from scientific research, such as research data, software and code, logs, peer review reports, etc., are not yet all available digitally. This poses a risk of information overload for all those people in the scientific system who are expected to utilize this information. Against this comprehensive approach to open science, Sabina Leonelli places the so-called *judicious connection*, let’s say, the human scale. This approach centers on

the human, the social, where the relational aspect is important, and where the responsibility for the choice of what should be made open, what can be shared, lies with the researcher and their academic and non-academic partners to make the choice for the right, the most relevant, the most valuable...

Then there are those two points I would like to discuss with all of you this afternoon.

6 Firstly, the composition of an Open Science agenda. Often you see that this is organized around certain aspects of scientific work. For example, in Open Science programs, you often see Open Access publishing and Open Research Data recurring. This is also true here in Leiden, where the local Open Science program initially focused on Open Access publishing, whether or not making scientific publications openly available for a fee, Open Data, which refers to making the datasets resulting from scientific work openly available whenever possible, either to facilitate the work of others to make it more efficient, or to make scientific work reproducible, thereby increasing the reliability of the outcomes. Furthermore, our Leiden Open Science program focused on Open Software, which is necessary to access that open data, and lastly on Citizen Science, an approach where non-academic stakeholders collaborate with academics to design research, executing, interpreting and utilizing the results, in short aimed at a more intensive relationship between science and society where non-academic insights are also considered to be valuable. One aspect of open science that I believe could, perhaps should, have been added here concerns open governance of science. This means that at various levels within science, decision-making is organized to be more transparent and, where possible, more democratic. The CWTS has made significant strides in this area, for example, in the way we already established an institutional open science policy in 2018, where the outcome was a result of co-creation by the staff members of the institute, but was in principle approved by the CWTS board from the very beginning of this process.

Another example concerns how the current board was formed. Of course, we still follow the more traditional pattern of an institute led by a scientific director, but the way in which the board was formed came through an internal round of applications in which the entire staff played a role in the preceding consultations. A similar method has recently been followed for the colleagues who provide guidance and leadership to our thematic groups, as they were also selected through internal consultations and applications. Yet another example is the application of the so-called Deep Democracy methodology, in which, around important topics, the search is for the greatest possible consensus concerning institutional decision-making, thus aiming for the broadest possible support for decisions within the institute. A recent application of this method within the CWTS regarding a change in our travel policy towards a more ecologically responsible approach has led to a more transparent decision-making process that has gained broader support, in which the diverse opinions and visions of staff members have genuinely contributed to a widely supported change process.

Due to the aforementioned developments in science, which have introduced other forms of management and assessment, often driven by distrust during various accountability procedures, consider the level of detail required from scientists, for example in time-tracking systems, but also regarding reimbursements for business trips, where you even have to provide your boarding passes to prove that you were indeed at a conference elsewhere in the world. A major challenge lies here in the fundamental differences in underlying principles between the academic workforce and the administration and management of the university. Scientists are guided by trust, in collaboration with other scientists, when assessing each other's work or research proposals, and in all of this, we assume that what we see is reliable. The challenge is to make that trust the guiding principle for the entire organization again, while of course I am fully aware of the fact that not everything can be open, due to various sensitivities and privacy aspects.

Referring back to that division based on the work of Sabina Leonelli, we can say that a strictly technocratic approach to open science is an expression of the exercise of power: if the prescription states that everything we conceive, create, publish must preferably be made openly available digitally, we see how power is exercised in a top-down manner. In contrast, there is the judicious connection, the human scale dimension, where we observe a form of counter-power based on selectivity and choice for relevance. By advocating for a more selective form of practicing open science, it can also be prevented that open science is experienced by researcher communities as an all-encompassing scientific Panopticon, the 18th-century prison design where everyone in the prison can be observed and controlled from a central position. Thus, this choice for a more selective approach, where relevance plays a significant role, is therefore a form of open governance, where the accountability for the selection based on relevance lies with the people on the shop floor, ensuring that policy and management do not become the tower guards in a 21st-century open science version of the Panopticon.

Then, the second point I would like to discuss with you this afternoon concerns the potential renewal of the academic promotion process. For all those not familiar with the academic world, in science, promotion has a double meaning. Firstly, of course, the steps you take in a career, in which case there is talk of a promotion, as in an advancement. However, the other meaning of promoting pertains to the development of a young researcher into a full member of the international academic community, with the process in which this occurs being called promotion. After successful completion of this process, one is expected to be an independent young researcher.

Last year I spoke with Ludo Waltman after a meeting at the Rapenburg with the Academy in Motion team, where we expressed our concerns about the way we publish in science, particularly the costs associated with it. Publishing is still

the main way to earn your Brownie points on the path to the next phase of an academic career in many places. Previously I referred to the Web of Science database, based on which we at CWTS perform all those analyses. After having that conversation with Ludo, I consulted that database, and what did I find? In 2023 alone, 2.5 million articles were published worldwide. Now you might say, okay, so what, but keep in mind that all those articles also have to be read. And that's just the output from one year... and it's continually increasing in volume. My next thought was, who write all those publications? Now we can also determine the age of the individuals who have produced these publications in the field of quantitative science studies, and by this, I mean the so-called 'academic age.' As a rule of thumb, we say that the year in which an author's first publication appears is considered 'the academic moment of birth.' Thus, I can determine the academic age of the first authors, often the primary author, but also the author with the most stakes: being the first author means that such a publication can contribute to the dissertation of a doctoral candidate. By looking at the academic age, I saw that of all 2.5 million articles published in journals in the Web of Science, 33% of those publications were written by researchers for whom this was their first publication, while the population that falls within the first four years of an academic life accounted for a total of 54% of all publications in 2023. These four years often concern the PhD track, although it often becomes 5 years. Looking further, also considering the two following phases in an academic career, the so-called postdoc period, which often spans periods of 2 years, I concluded that 72% of all publications in 2023 were written by researchers in the first 8 years of their scientific career! And of course, there are remarks to be made about the methodology of this approach, but those limitations do not completely alter this alarming picture: the overwhelming flow of publications is annually generated by young researchers, with all the consequences that entails, in terms of workload, publication costs, sustainability aspects, etc.

What should happen if we are seriously concerned about the consequences that this large number of publications brings with it? Then that number must decrease, and drastically so! What is a potential solution for that? That publications no longer constitute the primary, or indeed the only, component of a completed PhD. So instead of asking PhD candidates to achieve a certain number of publications in journals, we ask them to do less, perhaps even to halve that number. After all, performing the same trick 6 times does not add much in terms of learning, at some point, and therefore you could better spend this precious time. When it comes to learning in a PhD trajectory, and that is ultimately the central goal in a PhD trajectory, it is probably better to experiment with other forms of scientific communication, such as posting a preprint instead of a journal article, with the possibility for it to already be reviewed by peers, but also to allow interested non-academics to read faster, and possibly also to assess the work. Moreover, writing a good blog post or a policy brief are skills that a PhD candidate will most likely need after completing the doctoral training, as many PhD candidates find jobs outside the academic world, so why not prepare better for that? Now, there will be people who say, yes, but what about the quality control of the work that a PhD candidate produces, such as blog posts or preprints? After all, scientific publications in journals are subject to quality control through the peer review process, that process where peers review each other's work. We all know that the latter process certainly does not work flawlessly, as evidenced by the large number of publications that have issues and must later be retracted from the literature. But in a certain sense, this criticism does have a point: quality control is an important part of the scientific enterprise, which we cannot ignore! However, it is a misunderstanding to think that other forms of scientific communication take place without quality control; in most scientific blogs and policy briefs, your text is meticulously analyzed and evaluated by editors, and moreover, keep in mind that the format of such types of communication is already quite directive, which means that the message often has to be conveyed clearly. Furthermore, most blogs also have

a comment section, which accelerates academic debate, but also highlights any differences in viewpoint! Additionally, you could see this as a form of impact: a blog post with a lively discussion as a result is evidently a piece of work that shakes things up considerably, and therefore has an influence on the environment. Yet another important consequence of a different organization of the promotion process is that we do not strive for a list of items that ultimately lead to a booklet (again, think of the work of Sabina Leonelli), but that we aim for an orientation of the promotion process as a process: it is not just those five or six items (read: publications!) that matter, but the entire process of learning during a promotion trajectory. It should also concern the research practices themselves, how do you conduct research, what norms and values underlie it, and can you make that tangible in some way? For example, when conducting research, you can pre-register your research, which is a process in which you establish in advance what you think your research will yield, to prevent you from later, or during the research, tinkering with your assumptions and starting points, but establishes a transparent process in advance, including the expected outcomes of the research. Another form of open science research practice concerns the so-called registered report, which goes a step further than pre-registration, namely that you also document that your results, regardless of what is found, even if they are negative outcomes, will still be made publicly available through publication. And this is an important development because negative outcomes are not well received in science; they do not contribute to progress and publishers and their editors do not want to publish them, as it is detrimental to the status and reputation of their journals. If you agree in advance that even negative outcomes are important and will be made public, then you could be aware of which approaches have already been tried, and you prevent duplicate work in advance. Furthermore, to assess the quality of the research practice, you might consider involving others in your research, performing the research together, building a measurement setup together, and also making joint decisions about what is important and relevant

from the results to include in the reporting, either in a report or in the form of a scientific publication. Additionally, you now see that the final product, the final thesis document, is submitted for evaluation to a small group of academics in senior positions, often professors. The crucial question now is whether they are truly the best evaluators of the research documented in the thesis in every case. I speak from personal experience that many of the more contemporary techniques in quantitative scientific studies require a significant level of technical-digital skill, which I often find myself struggling to keep up with. Should I be the one to assess such research? I think it is better for the doctoral candidate if this is done by a clear peer, and by that I mean a peer, someone who also has a good grasp of that research. The major advantage of such an assessment process is that it provides the doctoral candidate with direct feedback that is useful, but also, unlike current practices, younger researchers are involved in the assessment of research work, thus learning to do so early on. This also means that the final assessment consists of various delegated components, for which ultimately one or two individuals must remain responsible. What will such a thesis document look like? There will, of course, still be components that we can characterize as scientific communication, but with much more variation than we currently know. Furthermore, reflection of the doctoral candidate on the different stages in which something has been learned, what has been learned, what went differently than expected, and also certainly important, what went wrong? So where we have introduced the narrative in the context of curriculum vitae documents and research evaluation procedures, this also comes into play here. This way, a dissertation actually becomes the documentation of the process of becoming an autonomous researcher.

What is next?

The new chair “Monitoring open science policies and practices” is embedded in both the research program on open science and as part of the Academy in Motion program

at Leiden University, which focuses on open science and alternative ways to view and value academic work, as well as in the Open Science Lab of the CWTS. It is with the help of the great team in the OS Lab that I want to further elaborate on both mentioned agenda points regarding open governance of science and a different approach to the PhD trajectory. The informed listeners among you have probably heard that I implicitly let the norms and values of Merton pass by. Robert King Merton, one of the most prominent sociologists from the US in the 20th century, described the norms according to which science should be practiced. I will not go into that further in this address, but I would like to point out that his last norm, Organized Skepticism, the OS in CUDOS, can also be read in the contemporary context as Open Science. This could be understood, inspired by Deborah Stone’s book titled ‘The Policy Paradox’, as a critical view of everything that tries to influence open science, but also of what is influenced by the open science movement, keeping a keen eye on all the issues that also go wrong in the development and implementation of new policies: for instance, conversations with academic librarians teach you that the total costs of scientific publishing, even after adjusting for inflation, are higher than what we spent before. But, you may say, wasn’t the aim to ensure that publications from the wealthy Western world would also be made accessible to researchers from Low & Middle Income Countries? That is indeed true, and it has worked out, but because publishing has become so expensive, these researchers can no longer publish. The irony is that these colleagues could not read from the international scientific library due to the paywall for reading, and now it is made difficult, if not impossible, for them to contribute, because the costs associated with open access publishing have become so high that they are now excluded from scientific publishing.

In short, there is still a lot of work to be done!

Words of thanks

I would like to express my gratitude to the sadly prematurely deceased former colleague Henk Moed, who taught me a lot about the application of bibliometrics, and who, despite being a mathematician himself, instilled a social scientific or humanities perspective on research evaluation in me and others

Then I would like to thank Paul Wouters, who initiated the process surrounding this special chair, and above all, Sarah de Rijcke, without whose perseverance this might not have happened at all, with Sarah also continuously managing to keep me positively engaged about the progress of the process. I also need to thank Mara Steffen for keeping this position administratively on track.

10 Furthermore, I want to thank all my colleagues at CWTS as well as beyond, for the support and trust I have always felt. In particular, I would like to mention Ed Noyons, a colleague from the very beginning; we have experienced a lot since 1989, and certainly Tjitske Holtrop, from whom I have learned a great deal in recent years and with whom I have achieved some beautiful research outcomes in a number of projects.

At this point, I would also like to thank the board of the Leiden University Fund for making this special chair possible.

To the PhD candidates of the CWTS present here, I would like to say, feel free to stop by my office, the door is always open in principle, and I will always try to help where I can.

I want to express a special word of thanks to my mentors in a very different field of life. This involves Jan Perquin and Mike de Leeuw, my training partner from the very beginning who both taught me the basics of Pentjak Silat. Then James ter Beek and GeorGe Sirag, who initiated me into the secrets of Wing Chun kung fu. And lastly, Aad van Polanen, who kindly

welcomed me into his Jiu Jitsu classes, after he had taught my children judo for years. You have given me so much, and your lessons have meant a lot in my life.

Then, returning to the crossroads mentioned in the title of this lecture. This gathering, in connection with this lecture is the third crossroads that we will pass this afternoon. For many of the family and friends present here, my working life has always played out a bit at a distance; I think this is true for many scientists. In recent times, I have noticed how this recent development in my career has also affected you; I felt the pride, and I am very happy that this afternoon I was able to give you all a glimpse of what I am so busy with during the day.

Then, ultimately, great thanks and love to my wife Cris, and my children Lisa and Max. I owe a lot, if not everything, to you. There have been periods in my career where I have absolutely not done right by you, but you have never complained about that. I am glad that you have always believed in me, even during times when I didn't believe in myself anymore ... So much thanks and love for that; I owe you so much!

I have spoken!

PROF. DR. THED VAN LEEUWEN (1963)



1987	Drs Political Science (Universiteit van Amsterdam, Amsterdam)
1989-1999	Researcher (Center for Science & Technology Studies (CWTS) , Universiteit Leiden)
1999-2004	PhD candidate (Center for Science & Technology Studies (CWTS), Universiteit Leiden)
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2018	Professor Science Studies (department Science & Technology Studies, University Vienna)
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Thed van Leeuwen graduated in 1987 as political scientist at the UvA. The then economic situation caused some period of unemployment, and with some delay Thed started in February 1989 as junior researcher to a life-long learning process via an appointment at the Center for Science & Technology Studies (CWTS). Thed Graduated in 2004 on a PhD thesis that focused on the use of bibliometric instruments and indicators in the organization of research evaluation procedures. As of 1999 until 2011 Thed coordinated the services part of CWTS. Over the last ten years, his research agenda is determined by assessment of research, academic conduct and research integrity and open science, which was also noted internationally, leading to an appointment in 2018 as professor at the University of Vienna. In 2024 Thed was appointed as professor by special appointment at CWTS, with the title of the chair “Monitoring Open Science Policies and Practices”.

