

Jorieke Rutgers

Linnaeus in the Netherlands

Linnaeus lived for three years in the Netherlands, from 1735 until 1739. This was an important period in his life. Within no time, he became a household name in the Dutch scientific community and managed to publish several important books. It is worth asking what Linnaeus did to get recognition in the scientific world. After all, when he came to the Netherlands to take his doctoral degree, he was but a poor, young and unknown student, who had just finished his studies in medicine. To understand the fame of Linnaeus, we should not focus on Linnaeus alone, but also on the people who helped him to realise his work. Linnaeus was poor. He was in need of financial support to be able to publish anything in the Netherlands. How did he manage to get others interested in his work? The actor-network theory developed by John Law, Michel Callon and Bruno Latour offers a helpful tool to get an answer to this question. During my study, I mainly used Latour's work, so there will be a focus on his theories in this article.

Latour, a sociologist by profession, claims that the success of a science or an individual scientist depends on the building of a stable network, containing both human and non-human resources, which he calls *actors* and *actants*. We also have to take writing and

imaging craftsmanship into account, so says Latour.¹ Thus, he focuses on rhetoric and representation. Scientists dispute with each other using prints, paper, diagrams, drawings and so on. To explain the success of Linnaeus, we need to find out which people he met and was friends with and which people he did not like or argued with, and which people did not like him. But we also have to find out which non-human resources he used. To do this, we have to travel back in time and try to place ourselves in Linnaeus' shoes. How did he act? Which instruments did he use? How did he talk or write? Which knowledge did he spread and in what way? Did he make drawings? How did he manage to attract attention to himself?

The ideas of Linnaeus were innovations, and not all scientists thought they were good ones. Linnaeus had to convince others. Innovations need a way to 'travel' into society. They need a strong network to develop from just doubtful ideas to self-evident products. There are four different phases in Latour's model.² First, there is a problem or a gap in knowledge, which the scientist wants to solve or claims to have a solution for. For example, in the eighteenth century, there was a shortage of medicinal plants in Sweden. It was, thus, important to find out more about plants all over the world, and a system was needed to categorize them. At that time, there were several systems for classifying plants and some were very complex. What was needed was an easier system that could be used everywhere, a system that could cross boundaries. Linnaeus had a new system, based on counting pistils and stamens, but he still had to interest other people in it. That is the second phase. One can, for example, interest others by writing down your ideas and showing your manuscripts. The next step is to enrol others, for example, to work together on a project. And the last phase is to

¹ Latour, 'Drawing things together', 1990, p. 21.

² Avango, *Sveagrnan*, 2005, p. 21.

mobilise them: other scientists had to support Linnaeus at critical moments.

In the eighteenth century, Sweden was a poor country. It had a larger surface than nowadays: Finland and some parts of Germany belonged to Sweden until the early nineteenth century. But, if we count inhabitants, then Sweden was insignificant, just a little bit more than two million people. Sweden was an agricultural country and was desperately looking for resources to benefit from. In science, this resulted in a focus on the natural sciences: new technical, mathematical and mechanical knowledge should help to improve Sweden's industry. The purpose of science was to discover, use and control nature.³ In Europe, universities grew and the number of scientific societies and circles increased. Scientists met each other at special meetings, published their ideas in journals, and wrote letters to each other. The universal language was Latin. Especially these letters held together the network of scientists all over Europe. Sometimes, the correspondence between important scholars was even published. But writing each other was not without social rules or conventions. If you wanted to take part of this correspondence, you had to agree to some implicit norms and values.⁴ For example, the exchange should be free of political connotations and independent of country borders. Participants had also obligations of reciprocity and had to show gratitude. A third rule was to always speak the truth. A striking principle was that all participants were, in principle, equal. Of course, in reality, this was never true. Scientists were dependent on each other and had different positions in the network. Some had power and resources, others were poor but had knowledge to offer. In that way, scientists could develop a patron-client relationship. This type of relationship was especially im-

³ Fors, *Mutual Favours*, 2003, p. 36.

⁴ Fors, *Mutual favours*, 2003, pp. 8-10.

portant for Linnaeus. In the Netherlands, Linnaeus started his international correspondence. A lot of these letters were saved. Nowadays it is possible to read them or translations of them on the Internet.⁵ Reading them, we can get a notion of Linnaeus' network, and of the way he promoted his ideas.

When Linnaeus came to the Netherlands in June 1735, almost no one had heard of him. But Linnaeus did not find it difficult to attract a lot of attention. He had something special to show: Lapland. In 1732, Linnaeus travelled to Lapland, as a student. It is important to know that Lapland was almost undiscovered at that time and was considered to be very exotic. Almost no-one dared to travel to this far-away, desolate and barren area, with 'strange' people living there. Linnaeus investigated Lapland and took home several objects: a Sámi boat, Sámi shoes, a belt, a woman's beret, a Sámi drum and winter clothes. He took them with him to Holland and it is known that he loved to give performances in this special equipment.⁶ In 1737, the painter, Martin Hoffman, even made a portrait of Linnaeus wearing the Sámi costume. You could say that this equipment was an important non-human actant in the network of Linnaeus. Other scientists wrote about Linnaeus in their letters as a Swede who 'has travelled over Lapland'.⁷ It opened doors for Linnaeus that otherwise would have stayed closed. The Sámi equipment became a symbol for the wisdom of Linnaeus, even though Linnaeus did not always show things in the right way. It was said that he drummed with two sticks on the Sámi drum, something the Sámi people never do.⁸ But actually it does not matter that Linnaeus was not right. What matters is that other people,

⁵ The Linnaean Correspondence, <http://linnaeus.c18.net/Letters/index.php>.

⁶ Von Sydow, 'Linné och de lyckliga lapparna', 1978, p. 72.

⁷ Blunt, *The compleat naturalist*, 2001, p. 119.

⁸ Lundmark, 'Linnés samiska trumma', 1983, p. 80.

other scientists believed he was right. Scientific facts are always constructions.

Linnaeus stay in the Netherlands started the 2nd of June, 1735, when he landed in Amsterdam.⁹ There he stayed at least three days and met Johannes Burman, an excellent botanist and naturalist, who was only one year older than him. Socially, they were very different in rank. Burman had been professor of botany since he was twenty-one, and was the head of the botanical garden. This difference in rank offered a possibility of developing a patron-client relationship, but this would take some time. At first, Burman was not particularly interested in Linnaeus. He was a busy man and did not have much time for this unknown student. From Amsterdam, Linnaeus sailed to the little fishing town Harderwijk. In the eighteenth century, there was still a small university where you could get a doctoral degree for which only a very short residence was required. The whole procedure of graduation could be completed within a week and it did not cost much money. Here, Linnaeus turned in his thesis, already written in Sweden and on the 23rd of June he became Doctor of Medicine.

After this, Linnaeus left Harderwijk and moved to Leiden. The University of Leiden was at that time one of the most prominent universities in Europe and an important cultural centre in the Netherlands. There, Linnaeus attended several lectures but, after a while, his money ran low and he made plans to travel back to Sweden. But first, he wanted to visit the famous physician, Dr. Herman Boerhaave. This turned out to be difficult without any letter of introduction. Luckily, Linnaeus got to know another renowned botanist in Leiden, Johan Gronovius. Linnaeus presented Gronovius his manuscript of *Systema Naturae*. In this work, he introduced a plan for the classification of the three kingdoms of nature, the ani-

⁹ Or the 13th of June by the New Style, which was in use in the Netherlands.

mal kingdom, the plant kingdom and the mineral kingdom. In Gronovius' opinion, this work had to be published immediately. Together with a Scottish doctor, Isaac Lawson, he proposed to have it printed at their expense. Besides, Gronovius gave Linnaeus a letter to Boerhaave. Obviously, Linnaeus had managed to enrol Gronovius by showing him the manuscript. By funding the publishing, Gronovius was mobilised at a critical moment. Otherwise, Linnaeus might have returned to Sweden because of lack of money. A patron-client relationship had developed. Linnaeus, now armed with this letter from Gronovius, went again to Boerhaave. Now Boerhaave was willing to receive him, several visits took place and they became good friends.

One problem was not solved: Linnaeus was still in need of money and he decided to return to Sweden. On his way back he paid another visit to Burman in Amsterdam. This second meeting with Burman went much better, but Linnaeus still had to convince Burman that he had something to offer. Burman showed Linnaeus a specimen of a rare plant and asked him to name it. Linnaeus declared it to be a *Laurus* and a *Cinnamomum* and explained why the two genera had become one.¹⁰ Burman was impressed by Linnaeus' knowledge and asked him to help him with a book about plants on Ceylon (nowadays called Sri Lanka). Linnaeus would get free board and lodging. Linnaeus promised to stay with him during the winter. However, this promise would soon be broken. In August, 1735, Linnaeus and Burman paid a visit to the famous country estate 'De Hartekamp', owned by George Clifford, a fervent zoologist.

'De Hartekamp' was an amazing place. It consisted of different types of gardens, a zoo and several hothouses. Linnaeus would love to work at this outstanding and inspiring place, and he asked Gronovius to help him. Gronovius did so with considerable tact:

¹⁰ Blunt, *The complete naturalist*, 2001, p. 100.

he made a suggestion to Clifford about Linnaeus working for him, and pretended that it was his own idea, and that Linnaeus did not know anything about it. Here we see Linnaeus as a very smart and active actor, a director, busy mobilising others. Clifford asked Linnaeus to become his house physician and superintendent of the garden. There was only one problem. Linnaeus had agreed to stay with Burman and could not just leave. When Burman heard about the proposal, he was not amused. Happily, this dilemma was solved in a peaceful manner. In Clifford's library, Burman saw a costly book. It was the second volume of Hans Sloane's *Natural History of Jamaica*. It was clear that Burman liked the book, and Clifford offered it to him if he was willing to let Linnaeus go.¹¹ Burman agreed.

In September, Linnaeus moved to 'De Hartekamp'. Here, he would stay more than two years. Burman and Linnaeus started to write each other and this correspondence turned out to become lifelong. During Linnaeus' visit in the Netherlands, these men wrote at least twenty-two letters to each other, but some letters might have been lost.¹² The first letter was sent to Linnaeus on the 27th of September, 1735. Three days earlier, he had moved to Clifford's. Burman wrote that he had contacted a publisher in Amsterdam who was willing to publish Linnaeus' *Flora Lapponica*. In the next letter, Burman wrote that the publishing of *Flora Lapponica* was in full progress. He also wrote that he received a letter from Gronovius about publishing Linnaeus' *Generera Plantarum*, in which Burman was asked to take responsibility for eighty copies. Burman showed himself unwilling to do so, because, in his opinion, the price was too high.¹³ Here we see that a limit was crossed. The

¹¹ Blunt, *The compleat naturalist*, 2001, p. 101.

¹² Feltenius, 'Linné i Holland', 2001, p. 49.

¹³ Feltenius, 'Linné i Holland', 2001, p. 50.

rules of reciprocity are not easy to determine, but this had obviously asked too much of Burman.

If you want to know how scientific facts are constructed, you have to analyse their production, says Bruno Latour. You have to travel back in time and to visit those places where scientists actually worked.¹⁴ The scientist should be placed in a context, in his study at a certain time, surrounded by books, instruments and colleagues. If scientists disputed with one another, it is important to know what elements they recruited to convince their colleagues. At 'De Hartekamp', Linnaeus finished his *Systema Naturae*, *Fundamenta Botanica*, *Generera Plantarum*, and *Flora Lapponica*, and he wrote and published *Critica Botanica* and the magnificent work called *Hortus Cliffortianus*. How was it possible that Linnaeus could publish that many works? To answer this question we have to 'slink in' at this place, in the garden and the zoo, in Linnaeus' study and look over Linnaeus' shoulder. How did he act, what letters did he send and receive, which scientists did he dedicate his books to, whom does he thank in his forewords? Which people were his enemies? Which people his allies? Of course, we cannot really slink in at this place, but we are able to do so figuratively by means of written sources, both from Linnaeus' hand and as written by others about Linnaeus' life and work.

According to Latour, it is important to enrol others and to make them predictable.¹⁵ To enrol human beings, you need non-human resources which can keep people interested. How did Linnaeus interest other scientists? An important material actant was, believe it or not, a banana. In Clifford's hothouse grew a banana-plant (*Musa Paradisiaca*) and Linnaeus made this plant flower. This was an amazing event at that time: in the Netherlands no one had ever suc-

¹⁴ Latour, *Science in action*, 1987, p. 63.

¹⁵ Latour, *Artefaktens återkomst*, 1998, p. 168.

ceeded in making a banana-plant flower or bear fruit.¹⁶ Linnaeus managed this when he and Clifford's gardener planted the banana in rich soil and gave it no water at all for several weeks. Thereafter, they almost drowned it in warm water, trying to imitate a tropical storm.

The procedure turned out to work very well, and Linnaeus wrote all his friends about the miracle that had happened. One of these letters was sent to Burman on the 24th of February, 1736. Linnaeus' enthusiasm and haste are reflected by the grammatical errors in this letter.¹⁷ Two days later, Linnaeus got a letter in return. Burman announces that he will pay a visit next Saturday, together with three other interested men. Prominent botanists from all over the Netherlands gathered at 'De Hartekamp'. Within four weeks, Linnaeus wrote an illustrated treatise about the banana: *Musa Cliffortiana florens Hartecampi 1736*.¹⁸ Linnaeus' quick way of working was a successful strategy. By sending these letters immediately, botanists could actually come to see the plant flower. If this message had been delayed, the flowers might already have been gone and there would be nothing to show or see, and a trip to the Hartekamp would have been in vain. Bruno Latour claims that a scientist is a spokesman: he speaks on behalf of the material elements that cannot speak for themselves.¹⁹ A banana-plant cannot speak, and Linnaeus was the one who informed others about what to see, learn and know. In this way, the banana-plant can be seen as an ally in the network of Linnaeus. In the eighteenth century, the banana was much more than just a tropical fruit: scientists debated if the banana could be the forbidden fruit in the Paradise and if Adam and

¹⁶ Blunt, *The compleat naturalist*, 2001, p. 105.

¹⁷ Uggla, 'Linné och bananen', 1959, p. 82.

¹⁸ Uggla, 'Linné och bananen', 1959, p. 83.

¹⁹ Latour, *Science in action*, 1987, p. 71.

Eva might have covered their nakedness with help of banana-leaves.

Shortly after Linnaeus had moved to Clifford, a German botanical draughtsman paid a visit there. His name was Georg Dionysius Ehret. He had already made several paintings for different clients in France and England and would become the greatest flower painter of his age. Ehret stayed at 'De Hartekamp' for a while and he and Linnaeus became good friends. Ehret became an important actor in Linnaeus' network. He made the ideas of Linnaeus visible in a very persuasive way. Linnaeus explained to Ehret his new sexual system, based on pistils and stamens. This system classified all the plants in the world into twenty-four groups. Ehret privately decided to bring out a *Tabella* of that. He published the plate in Leiden and almost all the botanists in Holland bought it.²⁰ Later on, the plate appeared in several editions of Linnaeus' work. In this situation it is difficult to know who mobilised or enrolled whom. Was it Linnaeus who enrolled Ehret or was it the reverse? The answer is not really important here. It is quite clear that they needed each other. Linnaeus' and Ehret's relation was quite equal, compared to all the patron-client relationships Linnaeus had. Linnaeus' drawing and painting talents were nothing compared to those of Ehret. The flower painter made the work of Linnaeus flourish. In botany, images are extremely important, because the shapes and colours of flowers and plants are very difficult to describe with only words. In his work, Bruno Latour also stresses the importance of visualisation. He writes: 'Every time there is a dispute, great pains are taken to find, or sometimes to invent, a new instrument of visualisation, which will enhance the image, accelerate the readings [...].'²¹ Ehret's drawings are extremely beautiful. The paintings

²⁰ Blunt, *The compleat naturalist*, 2001, p. 105.

²¹ Latour, 'Drawing things together', 1990, p. 39.

made it easier to understand Linnaeus' thoughts and writing. The attractive appearance of these flower paintings was of special importance for those who collected books or had botany as a hobby or interest. These people could become patrons, something Linnaeus was dependent on. Besides, the drawings were very mobile; they could be copied and were easy to spread all over Europe. There was one other innovation that Linnaeus learned to use in the Netherlands that 'enhanced the image': Antoni van Leeuwenhoek's microscope. Linnaeus got hold of a simple microscope, similar to a strong magnifying glass.²² This one was easy to take into the field to examine flowers. It made it easier to count pistils and stamens, even with very small flowers.

In the correspondence of Linnaeus and other scientists, they often dispute about botanical questions and they give each other practical information about important books, plants and colleges. In November or December 1736 (there was no exact date on the letter),²³ Linnaeus wrote to Olof Celsius, the elder, a Swedish pastor and professor at the university. Linnaeus met him in 1728 when he was a student in Uppsala. As a student Linnaeus was very poor, and Celsius had helped him financially and allowed him to live under his roof for a while. The letter reflects some of the social rules involved in writing. It starts with Linnaeus offering his apology, since he had not written for a while. Besides, he had not yet thanked Olof Celsius for helping Linnaeus to write a dedication and he apologises for that. As I said before, those who corresponded had obligations of reciprocity and had to show gratitude to each other. Sometimes scientists even gossip about each other. Linnaeus wrote about his visit to England, where he met Johan Jakob Dillenius, a professor of botany. The first meeting between

²² Ahlmström, 'Carl von Linnés mikroskop', 1948, p. 114.

²³ <http://linnaeus.c18.net/Letters/index.php>, L0110.

these two men was a bit stiff. Dillenius thought of Linnaeus as 'the man who had thrown all botany into confusion' and disputed Linnaeus' new system.²⁴ Gronovius had sent Dillenius a copy of Linnaeus' *Genera Plantarum* and in Dillenius' opinion the genera were false. Linnaeus wrote to Celsius that Dillenius was angry with him because he [Linnaeus] tried to be better than him. Linnaeus also gossips about another English scientist, the physician Sir Hans Sloane. This man had almost become a legend in England. Linnaeus had been allowed to see Sloane's collection of curiosities and mentioned to Celsius that he found the collection in a state of chaos. Of course, he never spoke these words to Sloane. Instead he thanked him for showing him his 'incomparable museum'.²⁵ Tact was very important in the scientific world.

Another social rule was to always speak the truth. This can be illustrated by a letter of Clifford to Linnaeus, dated the 27th of December, 1737.²⁶ Linnaeus had, by then, left 'De Hartekamp' because he intended to return to Sweden. He went to Leiden to say farewell to some friends, but, while there, he was persuaded to stay a bit longer. Adriaan van Rooyen offered Linnaeus very good terms if he would stay in Leiden to classify the plants in the botanic garden and Linnaeus agreed. By doing that he hurt Clifford, who sadly saw Linnaeus leave the Hartekamp.²⁷ He felt that Linnaeus had not been honest with him and in the letter he asked Linnaeus why he deserved this treatment. Had he not always been generous to Linnaeus?

The correspondence can indeed give us information about which connections between scientists were strong, and which were

²⁴ Blunt, *The compleat naturalist*, 2001, p. 113.

²⁵ Blunt, *The compleat Naturalist*, 2001, p. 110.

²⁶ <http://linnaeus.c18.net/Letters/index.php>, L0219.

²⁷ Blunt, *The compleat Naturalist*, 2001, p. 123.

weak. A lot of personal contact was involved. The role of scientists like Burman, Gronovius, Boerhaave and Clifford must not be underestimated. There were strong connections between these men, and Linnaeus made thankful use of them. Linnaeus played an active and intelligent role; he was like a spider in a web, he knew how to interest and enrol these men of science. To do that, he used many non-human resources, like Sámi clothes, a Sámi drum, a banana, all the resources at 'De Hartekamp', instruments such as a microscope, and he was happy to meet Ehret, whose work was of great importance for the spreading of Linnaeus' ideas. In return, Linnaeus shared with his knowledge, solved several problems, and was able to give solutions for gaps in the botanical knowledge of eighteenth century scientists. After a three-year stay, Linnaeus left Holland as a famous and respected scientist.

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