

Thunberg, Linnaeus and the Linnaean Tradition

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The concept Linnaean tradition is often used, but what is its real meaning? It may stand for a variety of subjects. It may express the strict scientific method which Linnaeus used. It may reflect the inspiration and zeal to explore Nature, as far as that is considered as emanating from Linnaeus. It may characterize a literary and stylistic tradition based in Linnaeus' narratives or personal documents. One of the most self-evident ways to use the concept is in connection with Linnaeus' disciples, in particular the travelling apostles who may be said to incarnate Linnaean tradition. These travellers were, however, personalities in their own rights, mostly original, in a few cases, front-breaking scientists.

Nobody appears more of a Linnaean than Thunberg – strictly working along his master's methods, traveller and narrator, founder of a botanic garden, and active on Linnaeus' chair at Uppsala University for 44 years.

Thunberg's diligence is unsurpassed with about 2000 species described from his hand, descriptions which he to the very greatest extent founded upon his own collections. His method of description is strictly Linnaean. His capacity for learning and memorizing was apparently very high, not only as to the methods but about the plants and animals themselves. His success in Holland among Linnaeus' old friends as the Burmanns, father and son, which led to the offer of the great voyage to South Africa and finally Japan, would firstly be due to his solid knowledge of his science, the

competence he demonstrated.

There is a biographical essay over Thunberg read to his memory in the Swedish Academy of Sciences the year after his death by Carl Adolph Agardh, the founder of algology, and subsequently a bishop in the Church of Sweden, and I quote a part of his comparison between Linnaeus and Thunberg (Agardh 1829).

Linnaeus everywhere looked for laws and unity; Thunberg saw specialization and diversity. Linnaeus went far ahead into times to come; Thunberg remained within the needs and spirits of his own. Linnaeus hardly discovered one plant; Thunberg discovered a thousand. One – Linnaeus – arranged the Chaos he saw at his feet according to permanent laws; The other – Thunberg – gave those laws a wider application and so got them legislated.

Thunberg of course, then as well as in our days, appears as the Linnaean epigone, but at the same time, and that is of significant importance, as one of the first and foremost to apply in practice Linnaeus' method and system upon a large new material, thus demonstrating its usability within a rapidly expanding field of knowledge.

It seems not possible to learn how Thunberg adopted his erudition – how his relations to Linnaeus were during his study years in Uppsala (cf. Svedelius 1944). As concerns some other pupils we are fairly well informed, among those Löfling and Solander since they both had a certain affiliation to Linnaeus' home and family. In the 1760-ies when Thunberg

studied for Linnaeus in Uppsala the latter seems not to have discovered his capacity, as is obvious from some lines in a letter from Linnaeus to the Cape of Good Hope:

“Never had I more pleasure and reward from any botanist. I can frankly confess that I never thought you, my dear Doctor, about so much of obligance, but rather considered you to be rather reserved, but now I have got another experience”.

All letters between Linnaeus and Thunberg were exchanged within the first half of the 1770s – the last one was sent on 20th November 1774 – when Thunberg was abroad first in Holland and France, and then in the Cape Province. During these years Linnaeus’ health was seriously declining and he found himself more and more isolated from the learned world, both factually and mentally, and he suffered from it.

We just heard that Linnaeus came to appreciate Thunberg fully only after he in the Cape had shown himself capable of making important discoveries in nature and setting up impeccable descriptions according to the Linnaean method – much of the new material was indeed described in the Cape, descriptions sent home and published in his absence. So he even won the degree of Doctor of Medicine at Uppsala University in absentia.

Thunberg’s ambition to fulfill the expectations Linnaeus might have had upon him are expressed in a letter from Amsterdam on the eve of his departure to South Africa, 14th December 1771:

“No time during the whole of my journey could be more pleasant than when I find something meriting to appear before your eyes, which have so accurately beheld so infinitely much of the works of the Creator, and by which were arisen everyone’s respect and admiration. The sun does not keep its rays to herself but lends thereof to the other planets. You have not only been shining over the whole world, but your pupils have because of their great teacher obtained reputation before others. This happened to others; it

also happened to me”.

But his relation to the great teacher was not without its complications. Thunberg sent material to and discussed problems with other Swedish scientists, among those Peter Jonas Bergius in Stockholm and Lars Montin in Halmstad, probably without imagining that it would hurt Linnaeus. Thunberg is constantly reported about as an open, candid nature free from intrigues, so no deliberate side-stepping of Linnaeus may be suspected. All the same the issue seemed to arise jealousy with Linnaeus, who probably felt his isolation accentuated. A letter from Linnaeus filius to Thunberg in 1776 tries to repair what is said to have been a misunderstanding. Thunberg of course got information from various Swedish sources down to the Cape and was comparatively well informed about what was on in Sweden.

In the same letter Linnaeus filius tells that his father now has got another stroke – “he can hardly walk, talks only a little, writes nothing”. Less than two years later Linnaeus was dead.

It is interesting to observe that the teacher Linnaeus continued to give his pupil lessons in the letters he sent to the Cape. One is about the principle of naming genera after scientists: “Do not name after others than those who have distinction in science. Otherwise will science suffer, as well as your own authority and esteem, my dear Doctor”. *Sparrmannia*, *Retzia*, *Montinia* and other names were in due course given by Thunberg to South African plants.

It is true that the faithful Linnaean Thunberg without any equal of his time, increased the knowledge of the plants of the world, but it is generally said that he never questioned the systematic principles, all those problems wrestling Linnaeus as long as he was at good health. This is not absolutely true. Indeed, he proposed a well founded reduction of the number of classes in the sexual system but gained no response. It was not either possible to move any step towards a ‘natural system’ by revisions of the sexual one – what

Linnaeus had realized already in the 1730s as evident from the 'Classes Plantarum' (Linnaeus 1737).

But in one of his letters to Thunberg in the Cape Linnaeus does suggest that those two together with Abraham Bäck, Anders Sparrman, Lars Montin and a few more should work further on such a system. What Linnaeus here has in his thoughts is probably the system of 'ordines naturales' which we know he taught on Hammarby in the 1760s. Thunberg must have been present, but seems never to have taken an interest in this field.

Seen from a general point of view Thunberg's greatest achievement was that this great Flora works, those over the Cape and Japan in first hand (Thunberg 1784, 1807–1820), demonstrated that the Linnaean system was up to standard as a tool for handling, ordering, and determination of a large material, including lots of vegetative and floral forms completely beyond what Linnaeus had had before him when elaborating his system for practical usage. One may say that Thunberg demonstrated a degree of predictability, from a practical point of view, in the sexual system. He also brought to mastery the Linnaean method of description, performed with utmost care and clarity. His only equal, and maybe even superior in that field may have been Daniel Solander, whose beautifully written descriptions for the floras of a number of Pacific islands however remained unpublished, many to the present day. Thunberg like Linnaeus was a man to press his works to finality, till they were printed and published – and was of course in this matter helped by a long life.

On the other hand it must be confessed that his long service as professor conserved botany in Sweden, and particularly in Uppsala, confined it to deal with mechanical or routine sides of Linnaean botany – and endless series of describing. Except for the great narrative from his journey (Thunberg 1788–1793) Thunberg hardly wrote any other kind of papers in his long life, and of course all disputations *pro exercitio*

or *pro gradu* in his discipline theses of that kind were defended. The concept 'Linnaean', previously used of someone observant and curious in Nature herself, was beginning to stand for an adherer of the sexual system (Eriksson 1962). The image of Linnaeus in the herbarium cupboards was overriding the memory of the sharp-sighted observer in living nature. There were, however, those botanists even more faithful to Linnaeus' every word and letter than Thunberg. The period of Linnaean epigony can roughly be said to last from the 1780-ies to about 1810 – nearly two decades before Thunberg's death, at a time when new great names appeared, influenced not only by Linnaeus but by the stream of romanticism in science, first Carl Adolph Agardh (1785–1859), the algologist, and Göran Wahlenberg (1780–1851) as a plant geographer, though as a systematist he was the most conservative of all (Krook 1971), somewhat later Elias Fries (1794–1878), the mycologist. Important contemporaries of Thunberg as Erik Acharius (1757–1819) and Olof Swartz (1760–1818) contributed essentially to the systematics of lichens, ferns and orchids, for example, and were much more of forerunners to the new era than Thunberg himself.

I will briefly comment on one more of Thunberg's activities in the Linnaean spirit, his action to found a new botanical garden in Uppsala. When Thunberg in 1784 was appointed as professor on Linnaeus' chair he also became responsible for the university botanical garden, the one which Linnaeus had restored and augmented to world fame in the 1740s from its more modest start already in the 1760s in Olof Rudbeck's days.

In spite of that Linnaeus was never quite happy with that garden, situated in a moist place susceptible to frosts and floods. Thunberg immediately made efforts to obtain a new one. He was apparently clever at laying his words in the right way and could as well draw upon his fame as traveller to Africa and Japan. When the Swedish king Gustavus III spent a sojourn

at Uppsala University and often visited the famous professor in his garden, the latter in a correct but frank way asked His Majesty whether he might not donate to the university the large garden attached to the Royal Castle of Uppsala, hardly ever used by the royal family. That was approved, and not only the establishment of a botanical garden, but also the erection of botanical institution, a building for which the King let some of his architects make the drawings (Juel 1929).

Thunberg's first great day at his own university came in August 1787, when the king was present to lie the corner-stone. His second great day occurred 20 years later, when the building was solemnly inaugurated. They had deliberately postponed the ceremony several years to let it coincide with Linnaeus' hundredth birthday in May 1807. On that occasion Thunberg in his address reminded of Linnaeus' overshadowing importance, but characteristically enough with restriction to those fields of Linnaeus' work in which he had himself been active – method, terminology, naming, system. It gives the impression that Linnaean tradition in the restricted sense was not only alive, but the sole approach. This is in 1807, and at that time the new movements I mentioned above begun to get influence, but Thunberg, now 64, was by-passed.

He had still 21 years to live and act as professor – retirement was rare in those days. Although a bit joked about because of some eccentric habits he was much more respected, and his brave and fruitful travelling was not forgotten. He was for decades the only professor of international reputation at his university, which of course tells a bit of the state of affairs in Uppsala in the early 19th century – so distant from the brilliant days of Swedish science in the mid of the 18th century. With Thunberg's death just hundred years after the young Linnaeus first entered the Uppsala garden an era had passed from dawn to sunset.

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