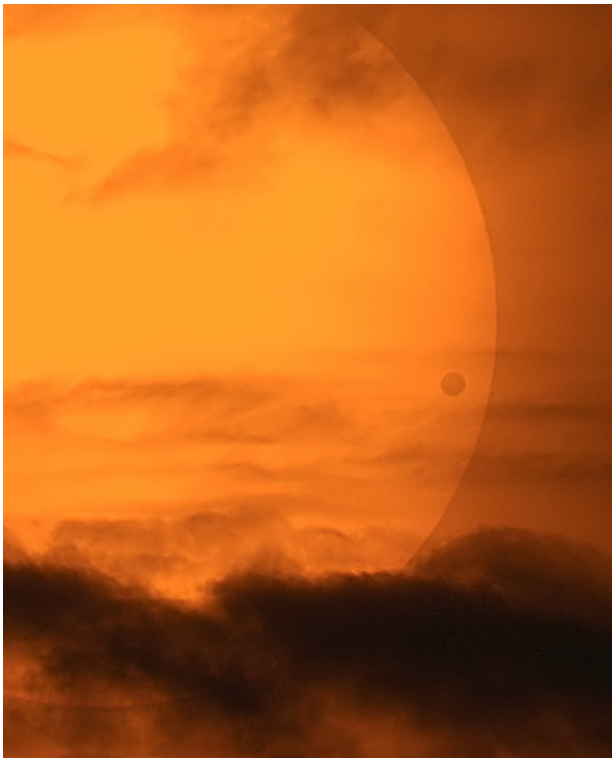
Call for Papers

Venus Transit Conference in Tromsø, 2012

A group of scholars at the University of Tromsø will host a conference on the eighteenth-century transits of Venus, in Tromsø 2-3 June 2012. The site of the conference is the Science Centre of Northern Norway, which is located at the campus of the University of Tromsø. After the conference, participants will be invited to either stay in Tromsø until the midnight 5-6 June, or take part in a "Venus Transit Tour" in Finnmark, where we will visit the historical sites Vardø, Hammerfest, and the North Cape. The post-conference program culminates with the participants observing the last transit of Venus of our century, which lends itself to be observed on the disc of the Midnight Sun in northernmost Norway, 5-6 June 2012. In Tromsø, the town's Astronomical Association will facilitate observation of the transit, whereas the other group will observe the event in or near Vardø. After the conference, a book will be edited by the organisers, based on papers presented at the conference.



Venus in transit, 8 June 2004
Photographed by David Cortner

The phenomenon

A transit of Venus in front of the Sun as seen from Earth is a rather rare astronomical phenomenon. The few transits that have been observed are landmarks in the global history of science. Since the invention of the telescope, only six transits have been observed, in 1639, 1761, 1769, 1874, 1882, and 2004. The last transit of our century will take place 5-6 June 2012.

Although the 1639 transit was only observed by two amateur astronomers in the English countryside, their observation would not have been possible without the revolutionary calculations and theories of Johannes Kepler (1571-1630). By contrast, the eighteenth-century transits entailed large-scale preparations in several countries and attracted massive interest in the entire world of learning. This widespread interest resulted primarily from an ingenious proposal by Edmund Halley (1656-1742). According to Halley, if only the transits of 1761 and 1769 were observed from stations sufficiently far apart, they would provide the key to determine the as yet insecure size of the solar system, including the coveted distance between the Sun and Earth, or 'solar parallax'. However, both transits of the eighteenth century took place during the European night or early morning hours in June, meaning that in the Old World they were only observable in their entirety from far-northern latitudes. It was therefore necessary to travel outside the metropoleis of European astronomy. By far the most famous Venus transit observation of that century took place in Tahiti during Captain James Cook's first circumnavigation of the globe. Similar expeditions organised by the French Académie des Sciences are also frequently mentioned in the historiography. Venus transit activities by other parties are mentioned far more cursory in the prevailing Anglo- and Francophone historiography.

The transits of the late nineteenth century were again used in large-scale efforts to determine the solar parallax. This time around the budding technologies of photography and radio signals were tested extensively, to no great success. These transits were not observable in the Nordic countries, however.

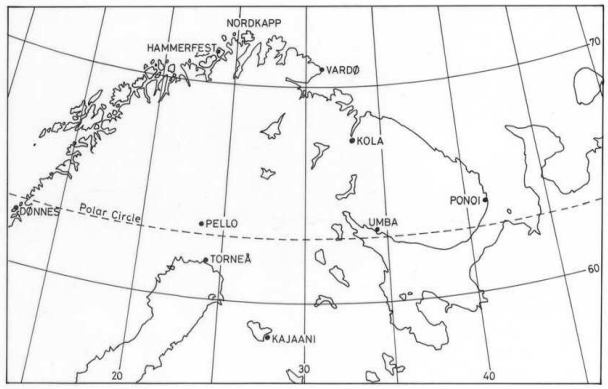
The transits of our century have no real significance to astronomy as such, although popular enthusiasm for astronomy peaked in June 2004 and the transit of 2012 is likely to attract considerable interest as well. Like the transits of 1761 and 1769, the coming transit will take place during the European night of early June, and northernmost Norway, with its Midnight Sun will be an ideal place for observations of the phenomenon.

Our approach

The significance of the eighteenth-century Venus transit enterprise to contemporary astronomy has been amply discussed by Harry Woolf in his classic, *The Transits of Venus* (Princeton, 1959). More recent contributions, including books by Eli Maor (Princeton, 2000), David Sellers (MegaVelda, 2001), William Sheehan & John Westfall (Prometheus, 2004), Christophe Marlot (Vuibert, 2004), and Jean Eudes Arlot & Jean-Pierre Luminet (EDP Sciences, 2004) have aimed at disseminating the subject to a general audience of non-specialists. More specialized scholarly works include special issues of *Proceedings of the International Astronomical Union* (vol. for 2004), *Journal of Astronomical Data* (vol. 10:7, 2004) and *Cahiers François Viète* (Numéro 11-12, 2007), miscellaneous articles by numerous authors, as well as the doctoral thesis of Jessica Ratcliff (Pickering & Chatto, 2008).

Despite this rather voluminous literature, however, the impact of actors apart from the Royal Society of London and the Académie des Sciences of Paris has received little attention. If we

take the year 1769 as an example: the fact that several expeditions went to the High North of Europe, and that these were equally important to the international enterprise of determining the size of the solar system as expeditions in the Americas, Asia, and the Pacific, has hardly been emphasized in the historical literature. Fair to say, the expedition led by the Jesuit Maximilian Hell to Vardø is often mentioned in the literature on the transits of Venus, albeit in a rather anecdotic manner. The rest of the simultaneous expeditions in the High North of Europe are more often than not passed by in silence.



Sites of observation in 1769

Courtesy of Truls Lynne Hansen,
Tromsø Geophysical Observatory

If we turn from observations proper to the task of concluding the Earth-Sun distance, or 'solar parallax' on the basis of observations assembled worldwide, we find in the historiography a similar emphasis on the 'great names' of French and British history of science. However, it is often forgotten that other centres of learning also delivered contributions that were taken just as seriously. A pupil of Leonhard Euler's that was later to take over his post as professor of mathematics at the Imperial Academy in St Petersburg, Anders Johan Lexell published several treatises on the solar parallax in Latin and Swedish that were discussed extensively in the leading scientific journals. Another academician 'from the periphery', Anders Planman at the University of Turku, likewise published treatises that received attention from peers all over Europe. One aim of the book project is to shift the focus away from the great names of history of science to actors that were important in their time, but that have for various reasons been neglected in the historiography.

The other aim of the book project is related to cultural studies. The eighteenth-century transits of Venus are not only landmarks in the history of astronomy. They also brought men of letters in contact with indigenous peoples and natural phenomena that were rarely placed under scrutiny. Captain Cook's sojourn in Tahiti is famous in this respect. A year ahead of Cook, a French expedition led by Louis-Antoine de Bougainville came across the same island. His expedition entailed a heated debate amongst French philosophes concerning the sexuality of indigenous peoples. Less known is the astronomer aboard Bougainville's ship that was supposed to have observed the transit of Venus from Asia, but passed away before the event. Another example is the Venus transit expedition of Chappe d'Auteroche to Tobolsk in Siberia in 1761, which became politically controversial because of Chappe's denigrating remarks on Russian society and culture in his travel account (cf. e.g. Michel Mervaud & Madeleine Pinault Sørensen, *Voyage en Sibérie*, SVEC, 2004). Only recently have scholars gained access to the rich material on the indigenous Sámi, natural history, meteorology, the Aurora Borealis, etc. assembled during the expeditions of the Swiss astronomers Jacques-André Mallet and Jean-Louis Pictet on the Kola Peninsula (Jean-Daniel Candaux et al., *Deux astronomes genevois* …, Ferney-Voltaire, 2005). Similar, as yet unpublished material is found in the correspondence between Pehr Wilhelm Wargentin of the Royal Academy of Stockholm and the participants at the 'Venus transit campaigns' in northern Sweden and Finland in the 1760s.

In Norway, Maximilian Hell undertook large-scale research into the Aurora Borealis, which he presented in his rarely read *Aurorae Borealis Theoria Nova* (Vienna, 1776). His assistant Johannes (János) Sajnovics presented the result of a thorough investigation of the similarities between the local 'Lappish' (Sámi) dialect and his native Hungarian language, in the classic *Demonstratio Idioma Hungarorum et Lapponum idem esse* (Copenhagen 1770, 2nd edn. Trnava 1771). This wide range of material remains to be studied in context.

Aims and scope of the project

The conference takes places Saturday 2 – Sunday 3 June 2012 and will seek to bring together scholars from Nordic countries, Russia, France, Germany, Austria, Great Britain as well as other countries. The language of the conference will be English. Part of the Sunday, however, will be reserved for lectures in Norwegian for the general public. *Nordnorsk Vitensenter* (the Science Centre of Northern Norway) will provide simulations of the coming transit in their planetarium in conjunction to this program. After the conference there will be a tour with *Widerøe* and *Hurtigruten* to Finnmark, the northernmost county of Norway. The tour will culminate just after midnight 5-6 June, when we will observe the transit itself, either from Vardø Island or from a site on the mainland, depending on weather forecasts. Another group will observe the transit from a place near Tromsø, along with the town's Astronomical Association.

Based on papers presented at the conference we will edit a volume in English aimed at an international community of historians of astronomy and its cultural aspects. The book will contextualise the history of the transits of Venus and hopefully contribute to shift the focus away from the 'great powers' of European astronomy and fill in gaps in our knowledge of the cultural history of the phenomenon.

The conference will be opened by the following keynote speakers:

1. HILMAR W. DUERBECK (James Cook University, Townsville, Australia)

   The phenomenon of Venus transits, and its use in past and present times

2. SVEN WIDMALM (Uppsala University, Sweden)

   (Title of talk to be announced)

In additions, several distinguished scholars have already agreed to present papers at our workshops (all titles are preliminary):

Steinar Thorvaldsen – *From Keplerian orbits to Halleyan trajectories: the mathematics behind the transits explained*

Simone Dumont – *The role of Paris' astronomers (Delisle, Lalande, et al.) in the international Venus transit enterprise of the eighteenth century*

Per Pippin Aspaas – *The Jesuit Father Maximilianus Hell and the eighteenth-century transits of Venus*

László Kontler – *Joannes Sajnovics and the discovery of the Finno-Ugrian language group: Regional, Imperial and Cosmopolitan contexts*

Thomas Posch – *The Jesuit observatories of Central Europe and their role in the Venus transit observations of 1761*

Osmo Pekonen – *The amateur astronomer Anders Hellant and the plight of his observations of the transits of Venus in Tornio, 1761 and 1769*

Nils Voje Johansen – *The expeditions of William Bayly and Jeremiah Dixon to Hammerfest and Honningsvåg, 1769*

Päivi Maria Pihlaja – *Nordic science in the Enlightenment: international and national contexts of the 'Venus Transit Campaigns' of the Swedish Academy of Sciences, 1761 and 1769*

Johan Stén – *The mathematician Anders Johan Lexell at the St Petersburg Academy of Sciences and his calculations of the solar parallax, 1770-1775*

Markku Löytönen – *Nordic participants in the search for the Terra Australis: Herman Spöring and Daniel Solander*

Truls Lynne Hansen – *The significance of Venus transit expeditions to the 'pre-history' of geomagnetism*

We would also like to see contributions on other aspects of the Venus transit campaigns of the past, including amateurs, 'invisible technicians', and other less explored characters, the networks of various religious orders, etc. Also papers exploring, by way of comparison, the theme of cosmopolitanism versus 'local-ness' in the history of science will be of interest. Likewise, comparative perspectives on the eighteenth-century Venus Transit enterprise vis-à-vis the observations of the seventeenth or the nineteenth centuries make up a promising theme. Proposals are welcome!

Tromsø / Ålborg, September 2011

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