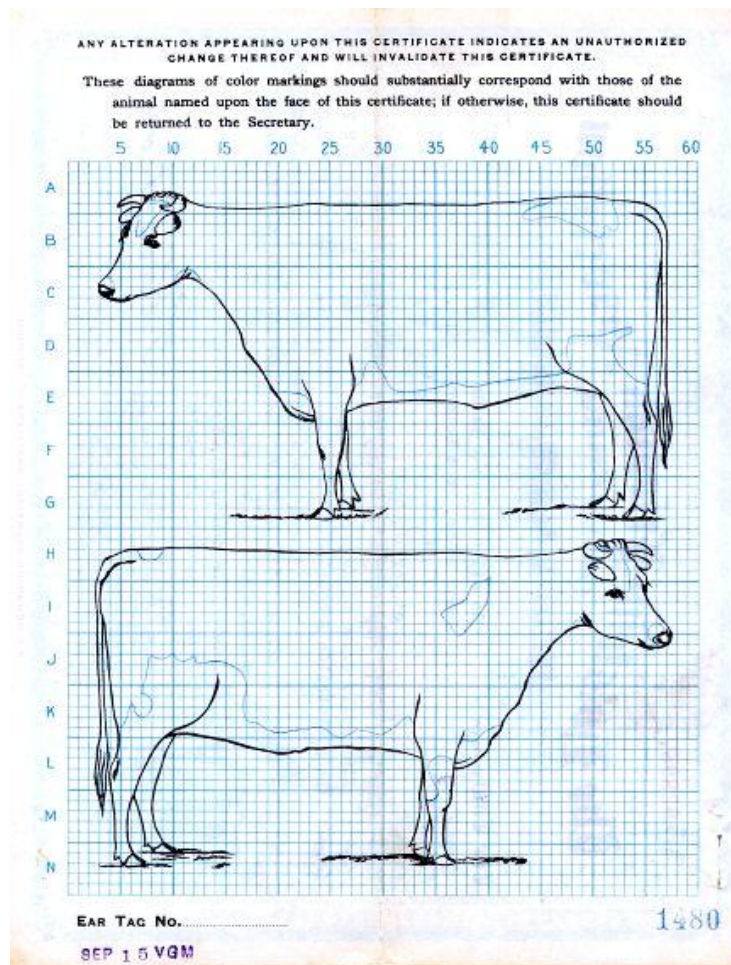


# Third Bi-Annual Dutch Conference in the History of Science

## Dutch Science – World Science



**Woudschoten, 26 and 27 June 2009**

The 'Landelijke Werkgroep Wetenschapsgeschiedenis' was established in 2004 as an informal way to unite all Dutch historians of science. The goal is the exchange of ideas and experiences and stimulation of collaboration. Previous meetings were held at Woudschoten in 2005 and 2007. <http://www.gewina.nl/werkgroepen/werkgroep/>

This year's meeting will offer you a mix of thematic sessions in which individual research will be presented, and plenary sessions devoted to the theme *Dutch Science – World Science*. The term 'Dutch' in the overall title is supposed to include the entire Low Countries.

We would like to thank the Descartes Center (Utrecht University) and the Center for the History of Philosophy and Science (RU Nijmegen) for sponsoring this event.

The organizers hope that you will enjoy this conference and welcome you to Woudschoten!

Fokko Jan Dijksterhuis

Christoph Lüthy

Geert Somsen

## **Venue**

Woudschoten Conferentiecentrum

Woudenbergseweg 54

3707 HX Zeist

Tel 0343 - 492 492

### **Public transport**

To NS-station Driebergen-Zeist, which is 3 km from the venue. Taxi 10 minutes. The station has a 'OV-fiets' facility as well. A bus from NS-station Amersfoort – change in Woudenberg – stops at the entrance gate.

### **By car**

**A28 vanuit Utrecht richting Amersfoort/Zwolle**

- Op de A28 afrit 3 Zeist-Oost/Den Dolder
- 1e Stoplicht rechtdoor richting Zeist
- Volgende stoplicht linksaf richting Woudenberg, lange weg blijven volgen
- Aan het eind van deze weg links richting Woudenberg
- Neem op de rotonde de tweede afslag
- U bent nu op de oprijlaan van Woudschoten
- Let u op het aankondigingbord in welk gebouw u moet zijn.

**A28 vanuit Zwolle/Amersfoort richting Utrecht**

- Op de A28 afrit 3 Zeist/Den Dolder
- Bovenaan afrit bij stoplichten rechtsaf, richting Zeist
- Bij volgende splitsing weer rechts
- En vervolgens bij stoplichten linksaf richting Woudenberg, lange weg blijven volgen
- Aan het eind van deze weg links richting Woudenberg
- Neem op de rotonde de tweede afslag
- U bent nu op de oprijlaan van Woudschoten
- Let u op het aankondigingbord in welk gebouw u moet zijn.

**A12 vanuit Utrecht en Arnhem**

- Op de A12 neemt u afrit 20 Zeist/Driebergen
- Onder aan de afrit Zeist aanhouden
- In Zeist de borden Woudenberg volgen, ongeveer 3 kilometer
- Neem op de derde rotonde de tweede afslag
- U bent nu op de oprijlaan van Woudschoten
- Let u op het aankondigingbord in welk gebouw u moet zijn.

## Program

### Friday June 26th

10.00-10.30 Registration

10.30-10.45 Opening by Geert Somsen, Christoph Lüthy and Fokko Jan Dijksterhuis

10.45-12.00 Keynote Lecture: Kostas Gavroglu, "Local vs. Global Scientific Knowledge: Geographical and Cultural Perspectives"

Chair: Geert Somsen

12.00-13.30 *Lunch*

13.30-16.00 Parallel Sessions I

	Early Modern Natural Philosophies	Measuring & Collecting from the 17 <sup>th</sup> to the 19 <sup>th</sup> Century
	Chair: Fokko Jan Dijksterhuis	Chair: Christoph Lüthy
1	Eric Jorink (Huygens Instituut) <i>Swammerdam, Courtier? Some Notes on Friendship, Patronage and the Circulation of Knowledge</i>	Marieke Hendriksen (Universiteit Leiden) <i>Collections of Perfection (work in progress)</i>
2	Robin Buning (Universiteit Utrecht) <i>"Only from this Will True Knowledge Result": Observation and Experiment according to two Early Seventeenth-Century Academics</i>	Hieke Huistra (Universiteit Leiden) <i>Collecting Pathological Anatomy (work in progress)</i>
3	Rienk Vermij (University of Oklahoma) <i>Christiaan Huygens as Philosopher</i>	Huib Zuidervaart (Huygens Instituut) & Tiemen Cocquyt (Universiteitsmuseum Utrecht) <i>The Hasselaer-Auction of 1776: The Transmission of Scientific Instruments from the Public to the Academic Sphere. A Double Presentation.</i>
4	Rens Bod (Universiteit van Amsterdam) <i>The Next Big Thing in the History of Science? A Comparative History of the Humanities!</i>	

16.00-16.30 *Tea*

16.30-18.00 Institutes Session: Dutch institutes relevant to the history of science give 10 minute presentations of their activities and recent developments.

Chair: Fokko Jan Dijksterhuis

1. Huygens Instituut

2. Descartes Centrum

3. Studium

4. Boerhaave Museum

5. Teylers Museum

6. Centre for the History of Philosophy and Science (RU Nijmegen)

18.00-19.00 *Drinks*

19.00- ... *Dinner*

## Saturday June 27th

9.30-10.30 Roundtable: History of Science in a Small Country

Ida Stamhuis, Raf de Bont, Christoph Lüthy, Kostas Gavroglu

Moderator: Geert Somsen

10.30-12.30 Parallel Sessions II

	Modern Science in Society (English)	Het Wetenschappelijk Bedrijf (Nederlands)
	Chair: tba	Chair: tba
1	David Nofre (Universiteit van Amsterdam) <i>The Paradox of International Cooperation: The Mathematisch Centrum and the quest for an International Computing Center, 1946-1951</i>	Timo Bolt <i>Van zenuwachtig tot hyperactief. Een geschiedenis van ADHD en aanverwanten, ca. 1900-2008</i>
2	Marijn Hollestelle (Leiden University) <i>Degeneracy in Quantum Physics</i>	Ad Maas (Museum Boerhaave) <i>Uitblinken in opportunisme</i>
3	Ab Flipse <i>Science and Religion in Local and Global Perspective: the Case of the Dutch Calvinists</i>	David Baneke (Leiden Observatory) <i>Hoe word ik astronoom?</i>
4	Martin Weiss (Leiden Observatory) <i>"A Writer of Popular Science as Curator" – T.C. Winkler at Teylers Museum</i>	Dirk van Delft (Museum Boerhaave) <i>Leidse koude en de Internationale Temperatuur Schaal</i>

12.30-13.30 **Lunch**

13.30-15.30 Parallel Sessions III

	Wiskunde in de Gouden Eeuw (Nederlands)	Philosophy and the Historiography of Science (Engels)
	Chair & commentary: Fokko Jan Dijksterhuis	Chair:
1	Steven Wepster (Universiteit Utrecht) <i>Ludolph van Ceulen in Hollandse kringen</i>	Ilksen Icen (Universiteit Leiden) <i>On the Resistance of the World</i>
2	Arjen Dijkstra (Universiteit Twente) <i>Instrumentenverkeer: Adriaan Metius, Denemarken en Engeland</i>	Jouni-Matti Kuukkanen <i>Autonomy and Delocalisation of Knowledge</i>
3	Jantien Dopper (Universiteit Utrecht) <i>Van vestingbouw naar analytische meetkunde: de onderwijsactiviteiten van Frans van Schooten de Jongere</i>	Bart Karstens <i>Can it Be an Error not to Speak about Errors?</i>
4	Tim Nicolaije (Universiteit Twente) <i>Abraham de Graaf en de 'Geheele Mathesis'</i>	James McAlister <i>Conceptualizing Contingency in History of Science</i>

15.30-15.45 **Tea**

15.45-16.45 Keynote Lecture Karel Davids "The Dutch and the World"

## Abstracts

### David Baneke. Hoe word ik astronoom?

In de afgelopen twee eeuwen is de astronomie fundamenteel veranderd. Dat gold natuurlijk voor de inhoud en de gebruikte methoden en technologieën, maar ook voor de materiele cultuur en de structuur van de nationale en internationale astronomische gemeenschap. Minstens zo belangrijk, maar op het eerste gezicht minder opvallend, was de verandering in de pedagogische cultuur.

Tot ver in de twintigste eeuw was een promotie in de sterrenkunde niet standaard, zelfs niet voor de top van de astronomische gemeenschap. De astronomische gemeenschap was een soort gilde: jonge astronomen, zelfs zij met een universitaire graad op zak, leerden het vak in de praktijk, onder leiding van een erkende autoriteit.

Dit veranderde in de loop van de eerste helft van de twintigste eeuw, toen universiteiten op grotere schaal opleidingen sterrenkunde gingen aanbieden, waarin ook de waarnemingspraktijk aan bod kwam. Uiteindelijk werd een doctoraat in de astronomie het gangbare toegangsbewijs tot de sterrenkundige gemeenschap.

De opleiding van nieuwe generaties wetenschappers vormt het hart van de identiteit van een vakgebied. De nieuwe pedagogische cultuur betekende dan ook een herdefiniëring van wat het betekende om 'astronoom' te zijn.

**David Baneke** is als historicus verbonden aan de Leidse Sterrewacht, waar hij zich bezighoudt met de inventarisatie van het Sterrewachtarchief. In 2008 was hij de eerste promovendus van het Descartes Instituut te Utrecht, met een proefschrift over het maatschappelijke en culturele engagement van Nederlandse natuurwetenschappers en ingenieurs tussen 1900 en 1940. Hij studeerde Geschiedenis in Groningen.

### Rens Bod. *The Next Big Thing in the History of Science? A Comparative History of the Humanities!*

While the historiography of science stems from at least the 19<sup>th</sup> century, an historical overview of the humanities is still a conspicuous gap in intellectual history. This project investigates the comparative history of the humanities from their inception in antiquity onwards. We define the humanities in a rather traditional way as the disciplines that investigate the productions of the human mind, such as linguistics, logic, rhetoric, the cultural disciplines and the historical disciplines. As a comparative approach we aim at identifying the underlying methodological *principles* across the humanities and the *regularities and patterns* that have been discovered in the empirical material (literary productions, musical pieces, works of art, historical texts). We will illustrate our project by going into some of the common principles and patterns that have been found in the ancient humanities from Greece, China and India:

1. *The search for rule-based systems* is found in all humanities disciplines: grammars in linguistics (e.g. Panini, Dyscolus), rules for handling sources in historiography (Herodotus, Polybius, Sima Qian), heuristics for text-reconstruction in philology (Zenodotus, Shu Xi), melodic grammars in musicology (Aristoxenus, Bhara Muni, Liu An), just proportions in art theory (Pliny, Xie He), deductive and inductive systems in logic (Aristotle, Nyaya, Mozi) and narrative rules in poetics (e.g. Dionysius of Halicarnassus, Liu Xie).

2. *Parallel discoveries*: with the rule-based systems above, some remarkably parallel discoveries have been made in the humanities. The historical cycle of rise, glory and fall is discovered in both Greece and China (and later also in the Arabic world), the “law” of consonant intervals has been independently discovered in Greece, China and India. Numerical proportions in the visual arts have been found both by Sadanga and Pliny. The logical laws of non-contradiction and excluded middle have been discovered both by Aristotle and the Mohists.

3. A *process from descriptive to prescriptive*: the derived regularities and “laws” are initially descriptive but quickly become prescriptive in nature. This process from description to prescription seems to be a common feature across all humanities: empirically found regularities are transformed into normative rules. We will discuss whether this feature distinguishes the humanities from the sciences.

**Rens Bod** is full professor in Cognitive Science at the University of Amsterdam and the University of St Andrews. He has recently obtained a VICI grant and has widely published in linguistics, musicology and cognitive science. He has also written three monographs, one on the history of language models (*Beyond Grammar*, CSLI/CUP). In 2008 he organized with Jaap Maat and Thijs Weststeijn the “First International Conference on the History of the Humanities”, and in January 2009 he initiated the national Huizinga Working Group “History of the Humanities”.

### **Timo Bolt. Van zenuwachtig tot hyperactief. Een geschiedenis van ADHD en aanverwanten, ca. 1900-2008**

Het aantal kinderen met de diagnose ADHD (Attention-Deficit Hyperactivity Disorder) is sinds het midden van de jaren negentig spectaculair gestegen. Dit wordt door verschillende commentatoren toegeschreven aan het ‘drukke moderne bestaan’, anderen spreken van een modeverschijnsel. De bezorgdheid over hyperactief gedrag, impulsiviteit en aandachtstekort (de drie hoofdsymptomen van ADHD) is echter allesbehalve nieuw. Sinds ongeveer 1900 zijn er een groot aantal ‘voorlopers’ van ADHD beschreven in de medische en psychiatrische vakliteratuur. De steeds wisselende terminologie correspondeert met veranderende opvattingen over het ontstaan en de behandeling van deze stoornissen. Daarnaast zijn er enkele opvallende continuïteiten aan te wijzen in de geschiedenis van ADHD en aanverwanten. Zo kan, aan de hand van de (vroegere) vakliteratuur over deze concrete ziekteconcepten, een fascinerende schets gegeven worden van ruim een eeuw van wetenschappelijke en professionele bemoeienis met ‘drukke kinderen’. Tevens kunnen een aantal dominante opvattingen over de historische ontwikkeling van de kinderpsychiatrie kritisch tegen het licht worden gehouden. Dat geldt bijvoorbeeld voor de populaire notie dat de geschiedenis van de kinderpsychiatrie verloopt volgens een ‘pendel’- of ‘getijdebeweging’ tussen enerzijds een biologische en anderzijds een psychologische oriëntatie.

**Timo (T.C.) Bolt** (1973) is ergotherapeut in ruste en studeerde tevens geschiedenis aan de Universiteit Utrecht, waar hij in januari 2009 *cum laude* de research-master *Historical and Comparative Studies of the Sciences and Humanities* afrondde. Zijn eindschrift (met dezelfde titel als deze presentatie) ging over de geschiedenis van ADHD, waarover later dit jaar een publicatie volgt. Daarnaast publiceerde hij samen met historica dr. Leonie de Goei een boek over de geschiedenis van de kinderpsychiatrie: *Kinderen van hun tijd. Zestig jaar kinder- en jeugdpsychiatrie in Nederland, 1948-2008* (Assen 2008).

## **R.O. Buning. "Only from this Will True Knowledge Result": Observation and Experiment According to two Early Seventeenth-Century Academics**

Apart from his professorship, the Utrecht professor of philosophy Henricus Reneri (1593-1639) was engaged in experiments and inventions in a wide range of fields, in particular thermometry and optics. In the first half of the seventeenth century this was not a common combination. One of the other rare examples in the Republic is the Amsterdam professor of mathematics Martinus Hortensius (1605-1639), who built his own telescopes and camera obscura. Both Reneri and Hortensius wanted observations and experiments to be part of the academic curriculum. Furthermore, both suggested the government to provide the financial means to enable systematic observations. However, neither of them met with much enthusiasm for his plans. This was more than 30 years before the Leiden municipality in 1669 constructed a chemical laboratory for the purpose of medical instruction. Were Reneri and Hortensius ahead of their time? In my paper I examine the nature and purpose of the observations and experiments Reneri and Hortensius actually conducted, the meaning they attached to observation and especially experiment (whether they were didactic illustrations or part of a methodological strategy in the investigation of nature), the reason why their plans were not carried through, and what differences there were between them.

**Robin Buning** studied classics at Leiden University and did a minor program in editing and publishing at the University of Amsterdam. He specialized in Neo-Latin and wrote his master's thesis on Joannes Meursius' *Rerum Belgicarum liber unus* of 1612. He currently is doing a PhD within the project "Descartes and his network", supervised by prof. Theo Verbeek, on the seventeenth century professor of philosophy Henricus Reneri.

## **Dirk van Delft. Leidse koude en de Internationale Temperatuur Schaal**

De oprichting van het Bureau International des Poids et Mésures in 1875 en de ontwikkeling van de standaardmeter en standaardkilogram leidde tot een dringende behoefte aan precieze thermometers en daarmee aan een nauwkeurige temperatuurschaal om ze te ijken. Metingen in Sèvres met gasthermometers door Pierre Chappuis resulteerden in 1887 in de Normale Waterstof Schaal, met als vaste punten smeltend ijs (0 °C) en kokend water (100 °C). Die schaal was geldig tussen -25 en 100 °C.

Na de Eerste Wereldoorlog resulteerden initiatieven van de Physikalisch Technische Reichsanstalt (Berlijn), de National Physics Laboratory (Londen) en de Bureau of Standards (Washington) in een verbeterde temperatuurschaal. Deze Internationale Temperatuur Schaal, in 1927 ingevoerd, liep aan de koude kant tot -193 °C en kwam tegemoet aan behoeftes bij wetenschap en industrie.

Bij het nauwkeurig vaststellen van deze 'onderkant' van de temperatuurschaal was de hulp van het Leidse cryogeen laboratorium van Heike Kamerlingh Onnes en zijn opvolger Willem Keesom onontbeerlijk. Als voorzitters van de commissie voor thermometrie van het Institut International du Froid beschikten ze over het juiste netwerk om het Leidse koudelaboratorium op dit vlak een vooraanstaande rol te laten spelen. Spil in dit netwerk was Charles-Edouard Guillaume, directeur van het BIPM én actief lid van de IIF-thermometrie-commissie. De Leidse bemoeienis met de ITS versterkte het aanzien van Leiden als internationaal centrum voor lage temperaturenonderzoek en legde het laboratorium ook financieel geen windeieren.

**Dirk van Delft** (1951) is directeur van Museum Boerhaave en bijzonder hoogleraar Materieel erfgoed van de natuurwetenschappen aan de Universiteit Leiden. In 2005 promoveerde hij op het proefschrift *Heike Kamerlingh Onnes. Een biografie* (Bert Bakker). In 2007 verscheen bij Edita / Aksant de Engelse editie: *Freezing Physics. Heike Kamerlingh Onnes and the Quest for Cold*.

## **Ab Flipse. Science and Religion in Local and Global Perspective: the Case of the Dutch Calvinists.**

In his article 'Science, region, and religion: the reception of Darwinism in Princeton, Belfast and Edinburgh'<sup>1</sup>, the historian of science, David Livingstone, has shown that Calvinists in different local contexts responded quite differently to the theory of evolution. The Dutch Calvinists could be added to his record. In 1899, Abraham Kuyper delivered a comprehensive rectorial address at the Calvinist 'Free University' in Amsterdam about *Evolution*. Kuyper was critical of the 'mechanistic, a-teleological' character of Darwinian evolution, because his neo-calvinist philosophy of science conflicted with this form of 'naturalistic' science. Nevertheless, in contrast to most of his Dutch fellow-believers, he did not exclude the possibility of organic evolution as such. This attitude can be explained by his intensive contacts in this period with US Calvinist theologians, who were willing to reconcile faith and some theory of evolution.

The next generation of both Dutch and US Calvinist theologians, however, moved to a more fundamentalist approach to the Bible. For them the Genesis account of creation became the major obstacle to the acceptance of evolution. Notably, already in the 1920s, the so-called 'flood geology' of George McCready Price was discussed in Dutch Calvinist circles. While some of the theologians were sympathetic to this young-earth creationism, the majority of Calvinist scientists judged it too speculative. It was not until the late 1950s that Darwinian evolution was completely accepted by both Calvinist scientists and theologians. However, in the course of the 1960s it became clear that a considerable minority of ordinary Calvinists was still receptive to anti-evolutionistic ideas and the US resurgent 'scientific creationism' became very popular in those circles. According to the historian of science Ronald Numbers 'the Dutch took the lead in propagating flood geology' in continental Europe in this period.<sup>2</sup>

In this paper I explore the national and international character of the debate among Dutch Calvinists and scientists by focusing on the local context of the debate and the international orientation of the participants

## **Marieke Hendriksen. Collections of Perfection (work in progress)**

This project aims at an analysis of how the early modern anatomical collections (mainly 18<sup>th</sup> century) of Leiden University were rooted in ideals of perfection in different fields of knowledge and expertise. It starts from the premise that collections (institutional as well as private) generally represented and generated knowledge. Anatomical exhibits were made objects. They were meant to show the anatomy of the body (according to contemporary physiological ideas), but are at the same time portraits of their makers, of their image of the ideal body and of the intimate experience of their own body.

For the eighteenth century Leiden anatomists Rau, Albinus, Van Doeveren, Bonn and Brugmans perfection was at the core of their decisions. Aesthetically, the objects had to be presented according to fixed proportions, perspectives and other aesthetic conventions. Technologically and scientifically, the anatomical collections were aimed at showing ever more perfect methods of revealing and preserving nature. Ethically, the collections functioned like mirrors and helped in the educational and therefore ethical perfectibility of man. There was

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<sup>1</sup> David N. Livingstone, 'Science, region, and religion: the reception of Darwinism in Princeton, Belfast, and Edinburgh', *Disseminating Darwinism: The Role of Place, Race, Religion, and Gender*, eds. Ronald L. Numbers & John Stenhouse (Cambridge, UK: Cambridge University Press).

<sup>2</sup> Ronald L. Numbers, *The Creationists. From Scientific Creationism to Intelligent Design* (Cambridge, MA & London, UK: Harvard University Press).



even a theological meaning of perfection as some collectors sought to represent the perfect order of creation.

The project will result in a better understanding of ideals of perfection, and will enhance our understanding of the contemporary quest for the perfect body as a cultural phenomenon. It discloses the origin of many contemporary (and public) images of the perfect body. The project Collections of Perfection, in short, shows that the quest for the perfection of man is no newcomer to our culture and can therefore historically inform the current debate on the perfectibility of the human body. At Woudschoten, you will be given an overview of the results of the project thus far.

**Marieke Hendriksen** (1982) obtained her MA in Cultural Studies with a specialization in aesthetics from Utrecht University in 2005 and an MRes with merit in Humanities and Cultural Studies from the London Consortium, University of London, in 2007. She was an intern at the Dutch institute for Time Based Arts, Montevideo (2002) and Tate Britain (2007). After working as an education administrator and developer she started a PhD at Leiden University in 2008. Her research is part of the bigger NWO project “Cultures of Collecting: The Leiden Anatomical Collections in Context”.

### **Hieke Huistra. Collecting Pathological Anatomy (work in progress)**

This project investigates the historical and educational import of the nineteenth-century pathological collection at Leiden University. In the nineteenth century, anatomy focused more and more on pathology. At the same time, anatomical collections became less accessible to the public, artists became less involved in the construction of anatomical objects and both the education and the practice of medicine changed. Boerhaavian medicine was replaced by a medicine more concerned with practical knowledge of pathology and healing than with theoretical knowledge of old anatomy and physiology.

The project researches how these changes are reflected in the university's pathological collection. It is concerned with how technological and medical developments influenced the way specimens were no longer exhibited in their ideal form; how ideas in anatomy determined the formation of pathological anatomy as an academic discipline; how pathological collections related to the perception of the body and its diseases; how the anatomical museum was shut off from the public view; and how educational values determined the exhibition of particular specimens. At Woudschoten, you will be given an overview of the results of the project thus far.

**Hieke Huistra** (1982) obtained a bachelor in physics, with a minor in philosophy, and a master in history and philosophy of science, both at Utrecht University. Her master thesis discussed the collection of gas discharge tubes owned by the Museon (science museum, The Hague). During her studies, she worked as an educator, guide and researcher in several science museums. Her research is part of the NWO project “Cultures of Collecting: The Leiden Anatomical Collections in Context”.

### **M.J. Hollestelle. Degeneracy in Quantum Physics**

Paul Ehrenfest (1880-1933) is known for some important contributions to quantum theory, of which several were made in the years Ehrenfest spent in Leiden. I will focus on the many other ways Ehrenfest was engaged with the topic of quantum theory. I will argue that the way the complicated quantum theory developed was considered by Ehrenfest as a tell tale sign of the problems the world faced in modern times.

Ehrenfest struggled to get his arms around the difficulties in quantum mechanics. He complained that physicists like Einstein, Bohr and himself were becoming rapidly obsolete and that no one of the younger and mathematically more masterly physicists ever bothered to look for the deeper foundations and consequences of the rising quantum theory. The almost esoteric mathematics expanded so rapidly, that he equated it with a machine, which killed anyone unfit to keep up with it. He quoted H.G. Wells in saying that mathematics, working like a machine, would always lead to the inhumane. Ehrenfest himself almost seems to be a victim of the problems of modernity. He struggled with the role of modern science, but no less with modern life as a whole. Burdened by the rise of Nazism and crushed by the mathematical machinery, he took his own life.

**Marijn Hollestelle** studied History and Philosophy of Science at Utrecht University. He is currently working at Leiden University, where he is writing a dissertation on the theoretical physicist Paul Ehrenfest, which is to be completed by the end of 2009. His most recent articles deal with the tension between pure and applied science and the international development of theoretical physics.

### **Ilksen Icen. On the Resistance of the World**

Virtually every historian of science working today acknowledges that the world plays a part in determining scientists' conclusions. There is less clarity and consensus about the ways in which the resistance of the world to scientists' proposals can and should be conceptualized in historiography of science. The idea that nature simply shouts "No" to some hypotheses has been superseded. Today, instead, Andrew Pickering proposes that resistance denotes the failure to achieve an intended capture of agency in practice, and accommodation an active human strategy of response to resistance. By contrast, according to Steven Shapin and Simon Schaffer, any institutionalized method for producing knowledge has its own foundations in social conventions. These can be conventions about what is normally expected and what counts as an anomaly (or resistance), etc. In my analysis, I present a comparative investigation of diverse conceptualizations of the resistance of the world. I base my survey on articles published in the *British Journal for the History of Science* since 1985. The issue is interesting because any substantial contribution to historiography of science must necessarily be based on a conception – explicit or implicit – of the recalcitrance of the world to scientists' proposals.

**Ilksen Necati Icen.** I have been a PhD fellow at the Institute of Philosophy of the University of Leiden since October 2008. I am a member of the NWO-funded research group on "Philosophical Foundations of the Historiography of Science", led by Dr. James W. McAllister. My PhD research focuses on ways in which historians of science conceptualize the resistance of the world to scientists' theories and hypotheses. I hold a BA (with honors) and MA (with highest honors) in philosophy from Bogazici University, Istanbul - TURKEY.

### **Eric Jorink. Swammerdam, Courtier? Some Notes on Friendship, Patronage and the Circulation of Knowledge.**

According to a legend which goes back to Herman Boerhaave, the Dutch microscopist Johannes Swammerdam (1637-1680) was a mystical and paranoid figure, who lived like a hermit. However, a closer study of contemporary sources reveals a completely different picture. My paper will demonstrate that Swammerdam played an important role in two, partly overlapping networks. From the early 1660's onwards, Swammerdam was an active member of an Amsterdam group of *virtuosi* ('liefhebbers') interested in the study and representation of nature, especially in optics and the problem of procreation. Some years later, *via* his life-long friend Nicolaus Steno, Swammerdam came in contact with the Medici-court. As is well-known,

Cosimo de' Medici visited Swammerdam during his tour through the Netherlands in 1669. I will demonstrate that the contacts were much deeper and more intimate than is often assumed. The penniless researcher Swammerdam sought after patronage, and Cosimo would play an unexpected role in the Dutchman's much discussed religious crisis of 1673-1676.

**Eric Jorink** is attached as cluster coordinator to the 'Circulation of Knowledge' research group of the Huygens Institute. He will soon publish a biography of Johannes Swammerdam, and is closely involved with two other projects: the *Digital History of Science Centre*, and the NWO-funded *Circulation of knowledge and learned practices in the seventeenth-century Dutch Republic. A web-mastered humanities laboratory on correspondence*.

### **Bart Karstens. Can it be an Error not to Speak about Errors?**

Contemporary historians of science tend to refrain from judging past contributions to science. It is generally thought that such verdicts lack justification on the one hand and are not very insightful on the other. The historian typically wants to understand how certain scientific findings or views came about; which factors were involved, which ideas were dominant and what all this says about the mentality of the people or possibly the period under study. Whether someone was right or wrong does not interest him in most cases. Philosophically this approach is underpinned by Donald Davidson's idea of a principle of charity and Ludwig Wittgenstein's idea of different but essentially equal life forms.

Thus there are good arguments to refrain from judging the past and indeed the ghost of Whig historiography is better kept at bay. Nevertheless I would like to address the theme of mistakes in science since I believe historians of science unnecessarily restrict themselves on this point. I will approach the theme from the perspective of diverging from the ruling norms, the relation between making mistakes and being human and the distinction between bad mistakes and good mistakes. My presentation will be based on recent literature and in the end provide arguments why it is useful for historians of science to pay more attention to the theme of making mistakes.

**Drs. Bart Karstens** (1975) studeerde Kunstmatige Intelligentie in Utrecht. Daarnaast volgde hij de opleiding Geschiedenis in Utrecht met specialisatie in de Vergelijkende Wetenschapsgeschiedenis dat hij studeerde in Utrecht, Amsterdam en Berlijn. Hij was verbonden aan het Instituut voor Geschiedenis in Utrecht als docent (2007). Sinds september 2008 werkt hij in Leiden als promovendus bij het NWO programma "Philosophical Foundations of the Historiography of Science" aan een historiografisch onderzoek naar het vellen van oordelen in de wetenschapsgeschiedenis.

### **Rina Knoeff. Cultures of Collecting. The Leiden Anatomical Collections in Context**

The general aim of the project is a description and analysis of anatomical collections from a humanities perspective. The project investigates how historical and cultural practices and concerns have shaped anatomical preparations and how exhibitions of the anatomical body have informed cultural imagery of the body. The programme consists of three interrelated (art- and medical) historical projects investigating the cultural and academic embedding of the collections. Moreover, on a meta-level the synthesising project (3) analyses the dynamics of anatomical collections as public history. Since anatomical collections are today increasingly viewed not only as a specialists' affair but also as cultural heritage relevant to the public at large, the anatomical past must be taken into consideration. It does not do to dismiss public interest in the anatomical body as mere 'popularisation' or 'entertainment', but it is necessary to develop new positions on the relationships between academic anatomy and public interest in

the body. This will (a) importantly contribute to a better understanding of today's tensions accompanying the public display of human remains and (b) help with the practical question of how to exhibit the anatomical past in today's museum.

### **Jouni-Matti Kuukkanen. Autonomy and Delocalisation of Knowledge**

Current historiography of science is faced with a dilemma. On one hand, it has been persuasively argued that scientific knowledge and the products of science are local, i.e. both their emergence and application depends on local skills, instruments, methods and practices. On the other hand, it has been widely observed that the locally born products of science often become decontextualised, i.e. they find forms of application beyond their local contexts, sometimes globally. The problem is that this kind of 'universalisation' implies getting rid of dependences that tie the products to their local contexts. Therefore, if the products of science are local, they are dependent on their local conditions of production; and if they are universal, they cannot be dependent on such conditions. Several responses have been suggested which all in effect put forward the idea that certain skills, practices, techniques, materials and methods become standardised. In my paper, I attempt to re-characterise this process in a way that manages to conjoin both the ideas of locality and delocality of knowledge. My suggestion is that the notion of autonomy, when understood as relational as in recent feminist literature, offers a fruitful way to re-conceptualise the problem. In brief, when the products of science become decontextualised they become relationally autonomous. They become 'globally local' in the sense that they retain their dependence relation on some networks, although they also get rid of some inherently local dependencies and features.

**Dr. Kuukkanen** received his doctorate in Philosophy from the University of Edinburgh in 2006. His dissertation is published as *Meaning Changes. A Study of Thomas Kuhn's Philosophy* (VDM Verlag Dr Müller, 2008). Since October 2008, Kuukkanen has worked as Postdoctoral Fellow in the project "Philosophical Foundations of the Historiography of Science" at the University of Leiden.

### **Ad Maas. Uitblinken in opportunisme**

Wetenschapshistorici die zich tot nu toe aan de Tweede Wereldoorlog hebben gewaagd leggen een voorkeur aan de dag voor de technologische en wetenschappelijke ontwikkelingen die het verloop ervan hebben bepaald. Bekende voorbeelden zijn radar, rakettechnologie, antibiotica en de atoombom. Nederlandse natuurwetenschappers duiken zelden op in deze verhalen. Zij werden voor het grootste deel in mei 1904 door de binnenvallende Duitsers overrompeld in hun laboratoria, waarmee hun rol in het oorlogsverloop feitelijk meteen al was uitgespeeld.

Wat een blik op de Nederlandse natuurwetenschappers onder het Duitse juk desondanks de moeite waard maakt - zo zal ik betogen - is de wijze waarop ze met de gewijzigde omstandigheden zijn omgesprongen. Ze zagen zich voor morele dilemma's gesteld, die hen tot handelingen aanzetten met soms paradoxale gevolgen. Daarnaast bracht de bezettingstijd in toenemende mate allerlei beperkingen met zich mee. Het stilvallen van het academische leven en van fabrieken, de schaarste aan grondstoffen en het verlies van contacten, betekenden echter allerminst het einde van het wetenschappelijke onderzoek. De geleerden sloegen noodgedwongen al improviserend nieuwe wegen in. En dit leverde soms verrassende uitkomsten op.

**Ad Maas** ([admaas@museumboerhaave.nl](mailto:admaas@museumboerhaave.nl)) is conservator in Museum Boerhaave en is onder meer een van de redacteurs van: *Scientific Research in World War II: What Scientists did in the War* (Routledge: London, New York, 2009)

### **James W. McAllister. Conceptualizing Contingency in History of Science**

To what extent is the historical development of science contingent, and how should contingency or its absence be conceptualized? Every school in historiography and social studies of science offers its own answers to these questions. For example, idealist and Whiggish historiography interpret the progress of science as determined by the inner logic of ideas and by the present state of science respectively. Some currents in social history of science deny that the development of science is determined by cognitive factors, but believe that it is determined by social factors. Contextualist historiography is usually taken to interpret scientific practice as wholly contingent. Scientific biographies, on the other hand, are led to account for scientific careers by reference to the self-expression of the individual, which reintroduces a form of determination. In this talk, I will discuss the degree and form of contingency implicit in these currents by putting forward a taxonomy of factors that might be considered to determine the development of science. I will conclude by discussing the relation between determination, explanation, and understanding in historiography of science.

**James W. McAllister** is senior lecturer in the Institute of Philosophy, University of Leiden, president of the Dutch Society for Philosophy of Science, and editor of the journal *International Studies in the Philosophy of Science*. He leads an NWO-funded research programme on “Philosophical Foundations of the Historiography of Science”.

### **David Nofre. The paradox of international cooperation: The Mathematisch Centrum and the quest for an international computing center, 1946-1951**

In the early years of the Cold War, Western-European computing centers sought to promote international cooperation to overcome the extraordinary costs of computing machines, the partial circulation of information, and the shortage of manpower. The Mathematisch Centrum in Amsterdam, established in 1946 to provide Dutch research institutions and industry with modern computing facilities, played a leading role in such cooperative efforts. In my paper, I will focus on the attempts of the Dutch center to convince Unesco of electing Amsterdam as the seat for the forthcoming International Computing Center. After exploring a possible collaboration with France and Belgium, the Dutch center mounted a major diplomatic action to bring the Unesco's center to Amsterdam. Working in close collaboration with the ZWO, the Ministry of Foreign Affairs, and the Ministry of Education, Arts and Science, the board of the center deployed all its energies to mobilize the Dutch scientific community, and its representatives in international organizations. However, in November 1951 Unesco, in a very controversial decision, chose Rome as the seat of the future center. This case shows the limits of international cooperation and the prevalence of national agendas in the development of computing projects during the Cold War.

Dr. **David Nofre** works at the FNWI/Instituut voor Informatica of the University of Amsterdam

### **Rienk Vermij. Christiaan Huygens als filosoof**

Christiaan Huygens staat niet bekend vanwege zijn filosofische inslag. Niettemin zette hij aan het einde van zijn leven een aantal gedachten op papier over God, het heelal, en de oorsprong der dingen. Deze notities werden duidelijk met het oog op publicatie gemaakt. Niettemin, in het werk zoals dat uiteindelijk gedrukt werd, *Kosmotheoros* (1698), zijn de filosofische aspecten maar zeer gedeeltelijk terug te vinden. De inhoud van de aantekeningen, alsook het feit dat Huygens ze uiteindelijk kennelijk liever niet publiceerde, roept vragen op over zijn vermeende filosofische desinteresse.

## **Martin Weiss. “A Writer of Popular Science as Curator” – T.C. Winkler at Teylers Museum**

When Tiberius Cornelis Winkler translated Darwin's *Origin of Species* into Dutch in 1860, just one year after it had first been published in English, he was already making a name for himself as one of the most prolific Dutch writers of what we would today call “popular science”. Some years later, in 1864, Winkler became the curator of the paleontological and mineralogical collection at Teylers Museum in Haarlem, a position which he held up until his death in 1897. He was no stranger to Teylers, where he had already conducted research the years before. As curator, he not only compiled a detailed and systematic inventory of the collections that fell under his purview, but was also responsible for their display in Teylers newly constructed museum building, which was opened to the public in 1885. In contemporary terms, he “designed the exhibition”.

In my presentation I would like to focus on Winkler's work at Teylers Museum and concentrate especially on the institution's public role at the time. I intend to pursue the question of what purpose Winkler himself ascribed to the Museum. I thereby hope to throw some light on the more general issue of the changing status of museums in the late 19<sup>th</sup> century.

**Martin Weiss** is currently working on his PhD-thesis on the history of Teylers Museum in the 19<sup>th</sup> century at the University of Leiden. He graduated from the University of Utrecht with a Master in “History and Philosophy of Science”, before which he studied Physics at the RWTH Aachen.

## ***Wiskunde in de Gouden Eeuw***

**Steven Wepster. Ludolph van Ceulen in Hollandse kringen.**

**Arjen Dijkstra. Instrumentenverkeer: Adriaan Metius, Denemarken en Engeland.**

**Jantien Dopper. Van vestingbouw naar analytische meetkunde: de onderwijsactiviteiten van Frans van Schooten de Jongere.**

**Tim Nicolaije. Abraham de Graaf en de 'Geheele Mathesis'.**

Wiskunde was een belangrijk onderdeel van de Gouden Eeuw. Ingenieurs van de Republiek trokken door heel Europa om forten, steden en polders aan te leggen. Haar uitgevers publiceerden leerzame, gezaghebbende en veelbegeerde boeken en kaarten. Docenten trokken studenten uit alle windstreken aan. En ondertussen ontwikkelde het Nederlands als taal van de wiskunde. De Republiek was een toonaangevend knooppunt in de verwerving, verwerking en verbetering van wiskunde. Dit alles roept interessante vragen op zoals: in welke zin verwierf de wiskunde in de Republiek een eigen karakter, waarin verschilden de wiskundige praktijken met die in andere Europese streken, en wat was de wisselwerking tussen de wiskunde hier en elders?

In deze sessie combineren de Utrechtse en de Twentse onderzoeksgroepen hun eigen invalshoeken om gezamenlijk hun blik te werpen op de Nederlandse bijdrage aan de geschiedenis van de wiskunde. De kern bestaat uit vier voordrachten over Ludolph van Ceulen, Adriaan Metius, Frans van Schooten de Jongere, en Abraham de Graaf. Deze omspannen zo ongeveer de Gouden Eeuw, met speciale aandacht voor de onderwijscontext van Nederlandse wiskunde. De voordrachten gaan in het bijzonder in op manier waarop bewegingen van studenten, instrumenten en boeken naar en van Leiden, Franeker en Amsterdam vorm en inhoud gaven aan de beoefening van wiskunde. In een samenvattend commentaar wordt ingegaan op vragen ten aanzien van de kenmerken van Nederlandse

wiskunde in de Gouden Eeuw en de manier waarop de geschiedenis daarvan bestudeerd kan worden.

**Steven Wepster** promoveerde in 2007 aan de Universiteit Utrecht. Hij is momenteel universitair docent geschiedenis van de wiskunde aan diezelfde instelling. Hij doet onderzoek naar leven en werk van Ludolph van Ceulen.

**Arjen Dijkstra** studeerde geschiedenis aan de Universiteit van Groningen. Met zijn scriptie over Lieuwe de Graaf's methode voor lengtebepaling op zee won hij dit voorjaar de scriptieprijs van de Fryske Akademy. Hij is momenteel promovendus aan de Universiteit Twente en doet onderzoek naar de cultuurgeschiedenis van wiskunde in Friesland.

**Jantien Dopper** combineert een MSc in wiskunde (2006) en een MA in geschiedenis (2007), beide aan de Universiteit Leiden. Zij is promovenda aan het Mathematisch Instituut van de Universiteit Utrecht en doet onderzoek naar de wiskundige activiteiten van de familie Van Schooten, waarvan de leden hoogleraar Duytsche Mathematique in Leiden waren van 1615 tot 1679.

**Tim Nicolaije** studeerde aan het University College in Utrecht en behaalde zijn master in de wetenschapsgeschiedenis aan de Universiteit Utrecht. Hij is momenteel promovendus aan de Universiteit Twente waar hij werkt aan een proefschrift over de Amsterdamse rekenmeesters van de late zeventiende eeuw.

### **Huib Zuidervaat en Tiemen Cocquyt. The Hasselaer-Auction Of 1776: The Transmission Of Scientific Instruments From The Public To The Academic Sphere. The Historical, Biographical & Contextual Part; The Instrumental & Material Part**

In 1776 in the Dutch city Utrecht an auction was held in which a large collection of scientific instruments and a library was sold, which was brought together in mid-18th-century by the Amsterdam Burgomaster and East India Company Director Gerard Aarnout Hasselaer (1698-1766). In this sale a large portion of the instruments was bought by scientific professionals *avant la lettre*. In at least two cases instruments were actually acquired by academic institutions, rather than by individuals. This illustrates an increasing tendency towards institutionalization of Dutch instrument cabinets in the late eighteenth century. Because these institutional instrument collections were the breeding ground for the physical laboratories of the nineteenth century, a detailed survey of Hasselaer's cabinet is more than justified.

Between the buyers of the Hasselaer collection were *inter alia* academics like the Utrecht professors Rossijn, Hennert and Luchtman and the Deventer professor Chernac. Quite some instruments were also bought by scientific lecturers as Martinus Van Marum (who soon afterwards would become the founder of the famous Teyler Instrument Collection) and Henricus Aeneae (in the next year becoming the Physics Lecturer of the Amsterdam Society 'Felix Meritis'). Nowadays some of these Hasselaer-instruments can be identified in the present instrument collections of the University Museum at Utrecht; the Museum Boerhaave at Leiden, the Nationaal Scheepvaart Museum in Amsterdam and the Teylers Museum at Haarlem.

In this dual-presentation the history of the contemporary use and function of the Hasselaer-collection and its dispersion will be sketched as a case study of the transmission of scientific instruments from the public to the academic sphere. The importance of a combined approach in the study of scientific instruments will be underpinned. By combining archival sources with information presented by the preserved instruments, the history of popular and professional science, as well as the cultural value of these scientific instruments can be enhanced.

## List of Participants

Mark	Aalderink	Utrecht University	<a href="mailto:Mark.Aalderink@phil.uu.nl">Mark.Aalderink@phil.uu.nl</a>
Azadeh	Achbari	Vrije Universiteit Amsterdam	<a href="mailto:a.achbari@few.vu.nl">a.achbari@few.vu.nl</a>
Gerard	Alberts	University of Amsterdam	<a href="mailto:G.Alberts@uva.nl">G.Alberts@uva.nl</a>
David	Baneke	Leiden University	<a href="mailto:baneke@strw.leidenuniv.nl">baneke@strw.leidenuniv.nl</a>
Annemarieke	Blanckesteijn	Descartes Centre	<a href="mailto:a.a.j.blanckesteijn@uu.nl">a.a.j.blanckesteijn@uu.nl</a>
Rens	Bod	Univ. of Amsterdam	<a href="mailto:rens.bod@gmail.com">rens.bod@gmail.com</a>
Timo	Bolt	Universiteit Utrecht	<a href="mailto:anti.bolt@ziggo.nl">anti.bolt@ziggo.nl</a>
Robin	Buning	Utrecht University	<a href="mailto:Robin.Buning@phil.uu.nl">Robin.Buning@phil.uu.nl</a>
Tiemen	Cocquyt	Utrecht University	<a href="mailto:t.cocquyt@phys.uu.nl">t.cocquyt@phys.uu.nl</a>
H. Floris	Cohen	Universiteit Utrecht	<a href="mailto:h.f.cohen@uu.nl">h.f.cohen@uu.nl</a>
Meagan	Curtis	Universiteit Utrecht	<a href="mailto:m.j.curtis@students.uu.nl">m.j.curtis@students.uu.nl</a>
Jeanine	Daems	Universiteit Leiden	<a href="mailto:jdaems@math.leidenuniv.nl">jdaems@math.leidenuniv.nl</a>
Raf	De Bont	KULeuven	<a href="mailto:raf.debont@arts.kuleuven.be">raf.debont@arts.kuleuven.be</a>
Riet	Decuyper	Kon. Bibliotheek België	<a href="mailto:riet.decuyper@gmail.com">riet.decuyper@gmail.com</a>
Fokko Jan	Dijksterhuis	University of Twente	<a href="mailto:f.j.dijksterhuis@utwente.nl">f.j.dijksterhuis@utwente.nl</a>
Arjen	Dijkstra	Universiteit Twente	<a href="mailto:a.f.b.dijkstra@utwente.nl">a.f.b.dijkstra@utwente.nl</a>
Jantien	Dopper	Universiteit Utrecht	<a href="mailto:j.g.dopper@uu.nl">j.g.dopper@uu.nl</a>
Sven	Dupré	Ghent University	<a href="mailto:Sven.Dupre@UGent.be">Sven.Dupre@UGent.be</a>
Patricia	Faasse	Utrecht University	<a href="mailto:faasse@xs4all.nl">faasse@xs4all.nl</a>
Alette	Fleischer	Universiteit Twente	<a href="mailto:alette.fleischer@gmail.com">alette.fleischer@gmail.com</a>
Ab	Flipse	Vrije Universiteit Amsterdam	<a href="mailto:AC.Flipse@few.vu.nl">AC.Flipse@few.vu.nl</a>
Kostas	Gavroglu	University of Athens Greece	<a href="mailto:kgavro@phs.uoa.gr">kgavro@phs.uoa.gr</a>
Marieke	Hendriksen	Leiden University	<a href="mailto:m.m.a.hendriksen@hum.leidenuniv.nl">m.m.a.hendriksen@hum.leidenuniv.nl</a>
Marijn	Hollestelle	Leiden University	<a href="mailto:mijhollestelle@hotmail.com">mijhollestelle@hotmail.com</a>
Hieke	Huistra	Leiden University	<a href="mailto:h.m.huistra@hum.leidenuniv.nl">h.m.huistra@hum.leidenuniv.nl</a>
Ilksen Necati	Icen	University of Leiden	<a href="mailto:i.n.icen@phil.leidenuniv.nl">i.n.icen@phil.leidenuniv.nl</a>
Eric	Jorink	Huygens Instituut	<a href="mailto:eric.jorink@huygensinstituut.knaw.nl">eric.jorink@huygensinstituut.knaw.nl</a>
Bart	Karstens	Leiden University	<a href="mailto:b.karstens@hum.leidenuniv.nl">b.karstens@hum.leidenuniv.nl</a>
Saskia	Klerk	Utrecht University	<a href="mailto:saskiaklerk@hotmail.com">saskiaklerk@hotmail.com</a>
Jouni-Matti	Kuukkanen	University of Leiden	<a href="mailto:j.kuukkanen@phil.leidenuniv.nl">j.kuukkanen@phil.leidenuniv.nl</a>
Chunglin	Kwa	University of Amsterdam	<a href="mailto:c.l.kwa@uva.nl">c.l.kwa@uva.nl</a>
Christoph	Lüthy	Radboud University	<a href="mailto:luethy@phil.ru.nl">luethy@phil.ru.nl</a>
Ad	Maas	Museum Boerhaave	<a href="mailto:admaas@museumboerhaave.nl">admaas@museumboerhaave.nl</a>
Tim	Nicolaije	University of Twente	<a href="mailto:t.j.h.nicolaije@utwente.nl">t.j.h.nicolaije@utwente.nl</a>
Ilja	Nieuwland	Huygens Institute	<a href="mailto:ilja.nieuwland@huygensinstituut.knaw.nl">ilja.nieuwland@huygensinstituut.knaw.nl</a>
David	Nofre	University of Amsterdam	<a href="mailto:d.nofremateo@uva.nl">d.nofremateo@uva.nl</a>
Lodewijk	Palm	Utrecht University	<a href="mailto:l.c.palm@uu.nl">l.c.palm@uu.nl</a>
Lissa	Roberts	Universiteit Twente	<a href="mailto:l.l.roberts@utwente.nl">l.l.roberts@utwente.nl</a>
Nienke	Roelants	Universiteit Gent	<a href="mailto:nienke.roelants@ugent.be">nienke.roelants@ugent.be</a>
Alexis	Smets	Radboud Universiteit	<a href="mailto:a.smets@phil.ru.nl">a.smets@phil.ru.nl</a>
Geert	Somsen	Maastricht University	<a href="mailto:g.somsen@maastrichtuniversity.nl">g.somsen@maastrichtuniversity.nl</a>
Ida H.	Stamhuis	Vrije Universiteit	<a href="mailto:stamhuis@few.vu.nl">stamhuis@few.vu.nl</a>
Bert	Theunissen	Universiteit Utrecht	<a href="mailto:l.t.g.theunissen@phys.uu.nl">l.t.g.theunissen@phys.uu.nl</a>
Dirk	van Delft	Museum Boerhaave	<a href="mailto:dirkvandelft@museumboerhaave.nl">dirkvandelft@museumboerhaave.nl</a>
Frans	van Lunteren	Leiden University	<a href="mailto:vlunteren@strw.leidenuniv.nl">vlunteren@strw.leidenuniv.nl</a>
Rienk	Vermij	University of Oklahoma	<a href="mailto:rienk.vermij@ou.edu">rienk.vermij@ou.edu</a>
Henk	Wals	Huygens Institute	<a href="mailto:henk.wals@huygensinstituut.knaw.nl">henk.wals@huygensinstituut.knaw.nl</a>
Daan	Wegener	Descartes Centre/UU	<a href="mailto:f.d.a.wegener@uu.nl">f.d.a.wegener@uu.nl</a>
Martin	Weiss	Universiteit Leiden	<a href="mailto:weiss@strw.leidenuniv.nl">weiss@strw.leidenuniv.nl</a>
Steven	Wepster	Universiteit Utrecht	<a href="mailto:s.a.wepster@gmail.com">s.a.wepster@gmail.com</a>
Huib	Zuidervaart	Huygens Instituut (KNAW)	<a href="mailto:Huib.Zuidervaart@huygensinstituut.knaw.nl">Huib.Zuidervaart@huygensinstituut.knaw.nl</a>