Universiteit Leiden
The Netherlands

# Hora est! On dissertations

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# Hora est!

## On dissertations

Kleine publicaties
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Nr. 71

DISPUTATIO PHILOSOPHICA
INAUGURALIS
DE
SPATIO VACUO
QUAM,
ANNUENTE DEO TER OPT. MAX.
*Ex Auctoritate Magnifici Rectoris,*
D. JOHANNIS JACOBI VITRIARII,
J. U. D. ET JURIS PUBLICI AC PRIVATI
PROFESSORIS ORDINARII.
NEC NON
*Amplissimi* SENATUS ACADEMICI *Consensu, & Subtilissimæ*
FACULTATIS PHILOSOPHICÆ *Decreto,*
PRO GRADU DOCTORATUS IN PHILOSOPHIA
ET LIBERALIUM ARTIUM MAGISTERIO,
summisque Honoribus, & Privilegiis
rite, ac legitime consequendis,
*Publico, ac Solenni Examini subjicit*
GUILIELMUS AB IRHOVEN, Sylvaducensis.
*Ad diem 7. Julii, 1721. Horâ locoque solitis.*



Guilielmus ab Irhoven, *Disputatio philosophica inauguralis de spatio vacuo* […]. Dissertation Leiden 1721.
This title page includes an illustration of a dissertation defence ceremony.

# Hora est!

## On dissertations

With contributions by
Douwe D. Breimer, Jos Damen,
Joseph S. Freedman, Marten Hofstede,
Jet Katgert, Trudi Noordermeer
& Olga Weijers

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The exhibition Hora est! On dissertations can also be viewed on the internet: http://ub.leidenuniv.nl/bc/tentoonstelling/Hora_est

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Hora est! W. van Beelen, Mace-bearer of Leiden University (Oct. 2005)
[Photo by K. van Ommen].

# Leiden dissertations

Prof. Dr Douwe D. Breimer, Rector Magnificus

Opposite my desk in my office there is a very ample bookcase. Many people would find more than enough room there to store all their books. And yet a considerable part of this enormous case is taken up by dissertations which over the past four years under my authority as rector magnificus have led to a doctoral degree. There are nearly 1000 of them! This clearly indicates the major importance of the dissertation in academic life here in Leiden. And that is hardly surprising. Leiden University sees itself as an institution which has research – and, obviously, the publication of its results – as one of its major missions and which for its teaching always tries to find inspiration in its research. Much of that research is carried out by people who are working to obtain their doctoral degree. I can also speak from my own experience in this respect. Since my appointment as professor of pharmacology in 1975, I have supervised more than fifty Ph.D. students and I have always regarded this as one of the most important and most inspiring parts of my job.

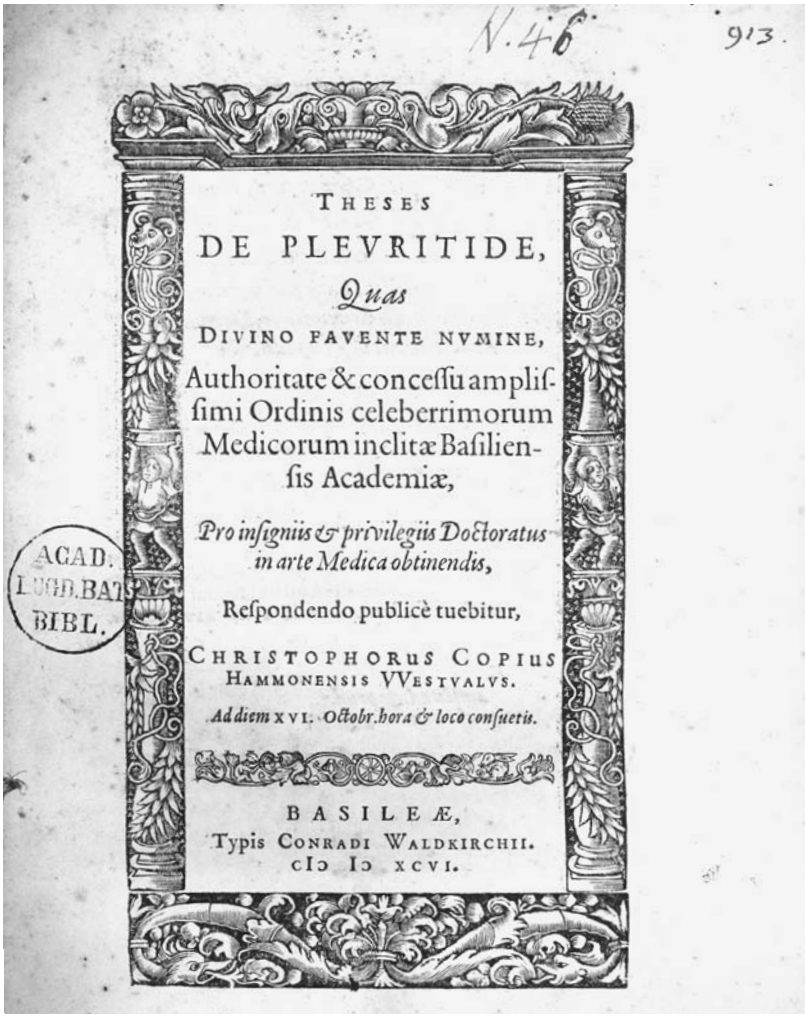
Less than a century ago a dissertation was not always required to obtain a doctorate. Successfully defending a number of theses sufficed. However, over time the demands became ever more stringent and dissertations expanded to occasionally huge proportions. Especially in the humanities the dissertation sometimes turned into a life's work whose completion took several decades, so that only in the twilight of their years did candidates achieve their goal. We should by no means be disparaging about that: these were frequently standard works of a very high quality, which maintained their value for many decades and without any doubt constituted an important contribution to the discipline in question. In the sciences a doctoral research project of such dimensions was less usual, but even there completing a dissertation often took a decade or longer.

The pendulum swung back, as pendulums tend to do. The conviction gained ground that a dissertation should first and foremost be seen as proof that candidates were able to do their academic work independently, proof which should normally be provided in four years. We obviously hope that talented researchers continue to write the standard works I referred to earlier, but then after they have obtained their doctorate. Leiden University has also set limits to the size of the dissertation, in order to emphasize that we are dealing with a first test of competence in independent academic work.

A dissertation defence ceremony in the Senate Room at Leiden University, 1977.

However, the most important thing remains that the quality of dissertations must be preserved, also because that defines the value of the Leiden doctoral degree. So our motto is: possibly faster and slimmer, but still as good and preferably better than in the past. This was also the position of the national committee of Dutch universities which I chaired and which in 2004 published its report, entitled *Hora est*, about future routes towards a doctorate. I venture to say that dissertations produced in The Netherlands are, on average, of a higher quality than those from countries such as Germany, France or the UK, and I think we should put in a lot of effort to keep it that way. This would mean, among other things, that the major part of the four year period I mentioned earlier should indeed be reserved for original research. The expertise required for that should be gained in the Master phase, preferably in the M.Phil. program. There have been some initiatives abroad to come to a 'taught doctorate', i.e. a doctorate that can be acquired by coursework. I would not see that as the proper approach. In the current discussions about the possible development of a professional doctorate we should also stick to the demand that doing research is the main requirement for obtaining a doctoral degree.

Now that the bachelor-master structure has been introduced, Leiden University wishes to put even more emphasis than before on training researchers, by offering as many good research-master (M.Phil.) programs as possible and by increasing the number of doctorates. Our Governing Body would like to give more people the opportunity to obtain their doctoral degree in Leiden and also intends to make that route attractive for very talented students from abroad. Even now the vast majority of Leiden dissertations are published in English. Ph.D. students and dissertations will continue to be a crucial part of university life in Leiden and will also provide a major contribution to the international character of Leiden University and to its strong international reputation.



N. 46

913.

THESES
DE PLEVRITIDE,
*Quas*
DIVINO FAVENTE NVMINE,
Authoritate & concessu amplissimi Ordinis celeberrimorum Medicorum inclitæ Basiliensis Academiæ,
*Pro insigniis & privilegiis Doctoratus in arte Medica obtinendis,*
Respondendo publicè tuebitur,
CHRISTOPHORUS COPIUS
HAMMONENSIS VVESTVALVS.
*Ad diem* XVI. *Octobr. hora & loco consuetis.*
BASILEÆ,
Typis CONRADI WALDKIRCHII.
CIↃ IↃ XCVI.

ACAD. LUGD. BAT. BIBL.

Christophorus Copius. *Theses de pleuritide* […]. Dissertation Basel 1596.

# Five centuries of dissertations in Leiden
# A mirror of academic life

Jos Damen
(Leiden University Library)

If you attend a doctoral ceremony at a Dutch university these days, you witness a ritual which concludes a research and writing process of several years. Over the past century these ceremonies have always centered around a dissertation. Many people are unaware of the fact that the dissertation in its current form[1] had eight centuries of predecessors. Various names were used in this long period, *disputatio* being one of them.

We know how this ceremonial developed at universities in the Middle Ages. *Lectiones* (lectures) were frequently concluded with a scholastic *disputatio*. From the end of the thirteenth century the *questio disputata*, which had started out as a report of the discussion, acquired a more independent character. This meant that the *disputatio*[2] was institutionalised. 'After the initial arguments *pro* en *contra* [presented by the *magister*] a *respondens* took the floor to formulate and defend his position and subsequently refute the counterarguments which the *opponentes* put forward against his argumentation.'[3] In the *determinatio*, which followed later, the viewpoints, arguments and lines of reasoning were laid down. The *disputatio* as a concept changes its form and character in later centuries. It basically remains a public academic debate about a clearly defined subject on the basis of a text at hand, including – until the 21st century – a character acting as the *opponens*.

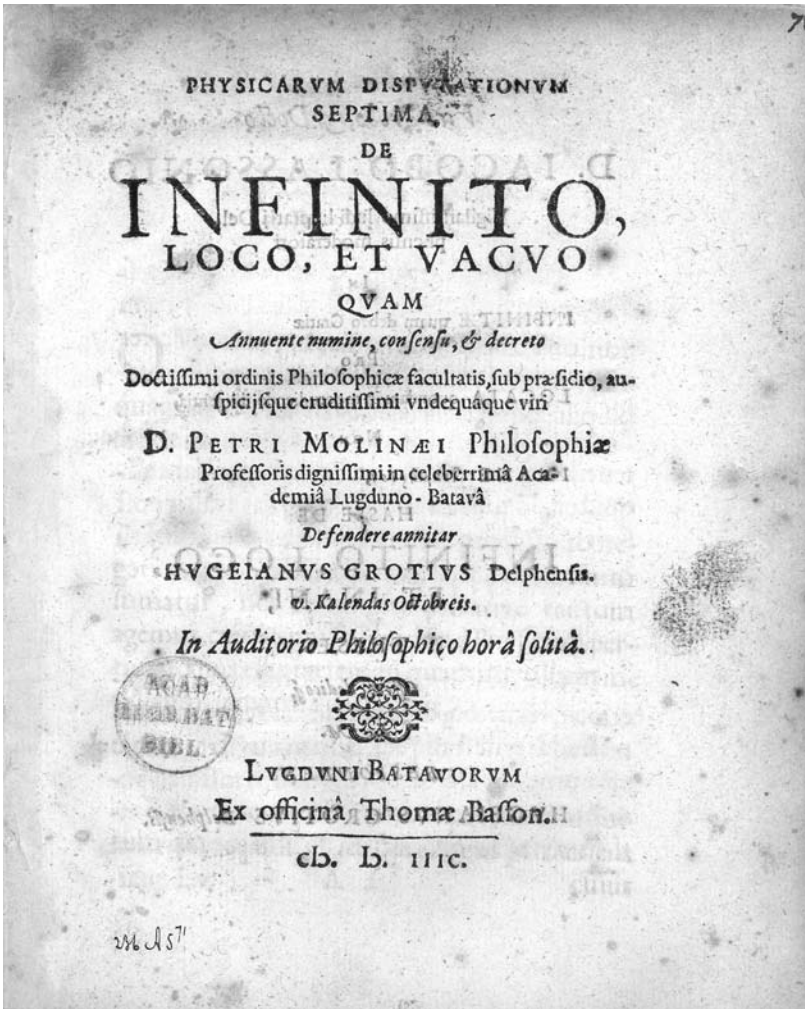
The texts of the dissertations handed down over the past five centuries show a wide diversity. They range from one sheet of paper with around ten propositions to volumes of over a thousand pages. Authorship is often ambiguous; a *disputatio* dating from the seventeenth century or earlier cannot always be attributed with certainty to a specific author, even if it

---

1 I use the word *dissertation* here as a generic term, also covering the German *Inauguraldissertation* and *Habilitationsschrift*, the French *thèse* and the Dutch *proefschrift* and their predecessors, even though I am aware that these terms have different meanings.

2 In the same way *disputatio* is not the only word used to describe this phenomenon: alternatives include *dissertatio*, *excercitatio* and *thesis*.

3 Olga Weijers: *Begrip of tegenspraak? Analyse van een middeleeuwse onderzoekmethode*. [Understanding or contradiction? Analysis of a medieval research method] (Mededelingen KNAW, NR 65 no. 6, Amsterdam (2002).



PHYSICARVM DISPVTATIONVM
SEPTIMA,
DE
INFINITO,
LOCO, ET VACVO
QVAM
*Annuente numine, consensu, & decreto*
Doctissimi ordinis Philosophicæ facultatis, sub præsidio, auspiciisque eruditissimi vndequaque viri
D. PETRI MOLINÆI Philosophiæ
Professoris dignissimi in celeberrimâ Academiâ Lugduno-Batavâ
*Defendere annitar*
HVGEIANVS GROTIVS Delphensis.
*v. Kalendas Octobreis.*
*In Auditorio Philosophico horâ solitâ.*

LVGDVNI BATAVORVM
Ex officinâ Thomæ Basson.
cIↃ. Ↄ. IIIC.

Petrus Molinaeus (praes.) & Hugeianus Grotius (resp.), *Physicarum disputationum septima de infinito, loco, et vacuo* […].
Dissertation Leiden 1597.
See also page 50, note 27.

does have a title page. Well, even at the end of the twentieth century the lament could be heard that the supervisor had completed the dissertation, but that the Ph.D. student had not yet written it up. In that respect there is nothing new under the sun.

For ages authors of dissertations have put their thoughts on paper. As fledgling scientists or scholars they thus contributed to the innovation of their discipline. Some of them were even awarded the Nobel Prize (Marie Curie-Skłodowska in 1903). Universities collected these writings and university libraries added them to their collection. Moreover, they often used copies of dissertations defended locally to trade them for dissertations, book series or journals from other cities or countries, and hence acquire academic expertise from elsewhere.[4]

Leiden University library was no stranger to this custom of exchanging books. It lasted until 2004, when the joint Dutch university librarians terminated the exchange of printed editions. The Leiden collection contains an estimated 600,000 dissertations, which is around 20% of the total number of books. (For this calculation I have put the total number of titles at roughly two million and the total number of volumes at three million.) An estimated 400,000 of these dissertations – mainly those defended at universities abroad – have not been catalogued.[5]

Almost 100,000 of these 600,000 dissertations are works defended at Dutch universities between 1575 and 2005. The Leiden collection of Dutch dissertations is made up of 15,000 dissertations from Leiden, 12,000 from Utrecht, 10,000 from the University of Amsterdam, 5,000 from the Free University in Amsterdam, 8,000 Groningen, 6,000 Nijmegen, 3,500 Delft, 3,500 Rotterdam, 1,800 Wageningen, 1,500 Maastricht, 1,200 Tilburg, several hundreds from Franeker, Harderwijk, Breda, Bandung, Apeldoorn, Deventer, Kampen and Batavia/Jakarta. Several thousands of these nearly 100,000 dissertations have never been catalogued in Leiden. These are mainly dissertations from the seventeenth, eighteenth and nineteenth century from the university cities of

4 I use the past tense since Dutch university librarians decided at one of their joint meetings in 2004 to terminate the exchange of Dutch dissertations in book form. The automatic exchange with universities abroad had come to an end in 1990, although some universities still send each other lists of dissertations from which specific items can be ordered on an exchange basis.

5 These enormous numbers and percentages are the more remarkable since the various histories written about Leiden University library – most recently *Magna Commoditas* in 2001– largely ignore this collection of dissertations. In this latest jubilee book the word dissertation is not mentioned once.

| | |
|---|---|
| אֲגַנִּיָּא Fossæ in vineis agrisque ad recipiendas aqvas superfluas. | أَجُن Saporem & colorem amisit, fætuit *aqva.* |
| אֲגַס Pirum, prunum. | اجّاص *coll.* Vulgò انجاص *à Perf.* اجاس Pruna. |
| אֲגַר Mercede conduxit. | أَجَر Mercedem dedit. 2. Mercede conduxit. 3 Mercede meruit. |
| אֲגִיר & אֲגִירָא mercenarius. | أَجِير & مُؤَجِّر |
| אֲגַר & אֲגָרָא merces. | أَجْر |
| אֲגַר & אֲגָרָא Tectum. | اجّار Vulgò انجار *Ab* أَجَّر lateres coxit. |
| | أَجُر & آجُر later coctus. |
| אֲדַהֲכִי Interea. | اذّاك Tunc, eo tempore. |
| אָדָם Homo. | أَدَم *Ab* أَدَم Conjunxit, amore junxit. Antistes & dux fuit. |
| אָדַם Rubuit. | أَدُم Fuscus evasit. |
| אֹדֶם Ruber. | أَدْم *pro* أَدُم |
| אֲדַמִּימוּת, אֹדֶם Rubedo. | أُدْمَة Color fuscus. |
| אַדְמָתָא, אֲדָמָה Terra. | أَدِيم & أَدَم Superficies terræ. |

אידנא

Sebastianus Rampseck, *Centuria thesius ex universa philosophia* […].
Dissertation Heidelberg 1663.
The disputation includes word lists: Hebrew-Latin and Arabic-Latin.

Groningen, Utrecht, Amsterdam, Harderwijk, Deventer, Apeldoorn and Franeker.

The collection of international dissertations in Leiden cannot be characterized in just a few sentences. Some 100,000 dissertations from Germany, France, the United States and various other countries have been catalogued normally and can be found among the other books in the university library. It would not be easy to recognize them as dissertations.

A major part of the international dissertations have been placed separately in the central repository of Leiden University library. It is a huge quantity: exactly 700 bookcases, amounting to a four kilometer row of books.[6] I would estimate their number at around 400,000. Only 6,000 of these have been catalogued and put back into this huge collection of dissertations; most of the 400,000 have never been catalogued.

In summary, the Leiden collection contains some 600,000 dissertations; of the 100,000 dissertations defended at Dutch universities 95% have been catalogued and hence can be found in the on-line catalogue by title, author, subject, discipline or university; of the 500,000 dissertations defended at universities in other – mainly European – countries only an estimated 20% have been catalogued.[7]

The situation described above raises five questions: Where did these international dissertations originate and from which centuries do they date? How did they arrive in Leiden? Why is it that so many of these dissertations have never been catalogued? How complete are these collections for each university concerned and how is the situation in other Dutch libraries? What is the importance of the collection and are there any treasures hidden among these enormous quantities? In the following I will try to answer those questions.

## City and period of origin

The dissertations are from about 170 cities. Twenty of these are outside Europe (e.g. Algiers, Baltimore and Johannesburg). Most dissertations are from Germany (70 universities) or France (35 universities). Virtually absent are dissertations from Italy, Spain and England.

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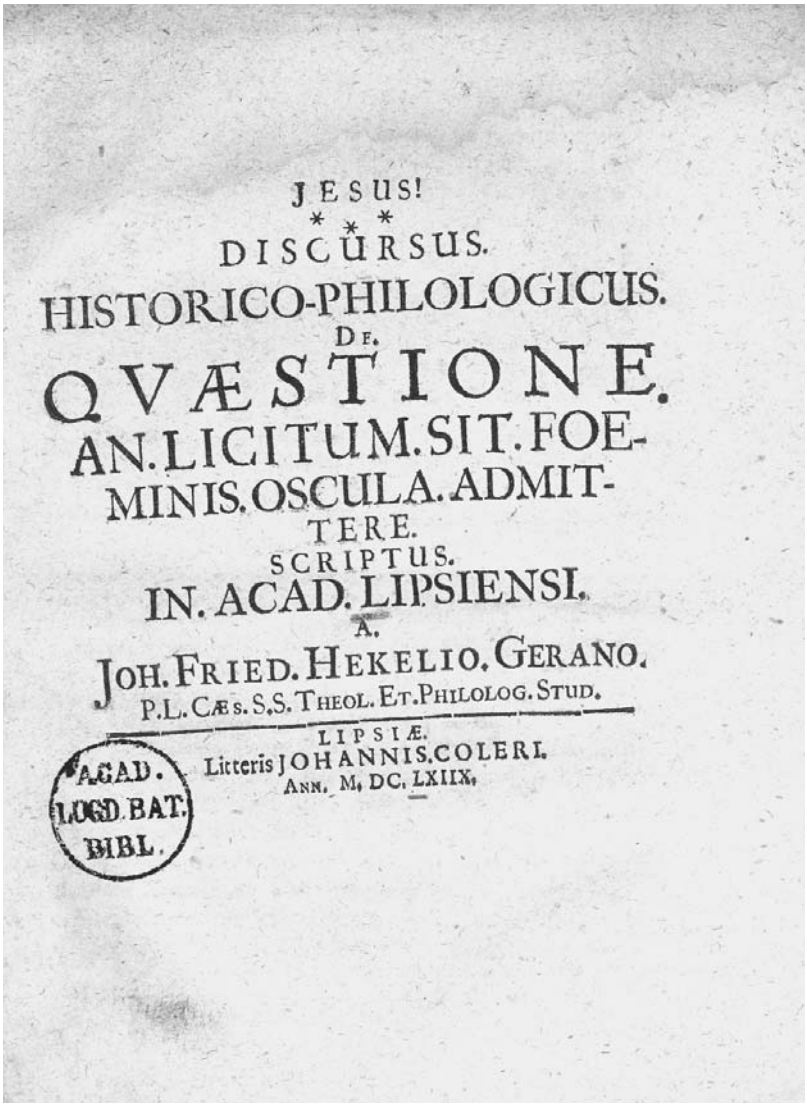
6 They are located in the closed repository of the university library, cases 4334–4483 and 5178–5729.

7 On the website of Leiden University library you can find a list of the cities (plus the periods covered) from which uncatalogued dissertations are available: http://ub.leidenuniv.nl/bc/wgw/coll/beschr.html#diss



JESUS!

* * *

DISCURSUS.

HISTORICO-PHILOLOGICUS.

DE.

QVÆSTIONE.

AN. LICITUM. SIT. FOEMINIS. OSCULA. ADMITTERE.

SCRIPTUS.

IN. ACAD. LIPSIENSI.

A.

JOH. FRIED. HEKELIO. GERANO.

P.L. CÆS. S.S. THEOL. ET. PHILOLOG. STUD.

LIPSIÆ.

Litteris JOHANNIS. COLERI.

ANN. M. DC. LXIIX.

ACAD. LUGD. BAT. BIBL.

Joh. Fried. Hakelius, *Discursus historico-philologicus de quaestione an licitum sit foeminis oscula admittere* […]
Dissertation Leipzig 1668.
(See also note 14, page 45)

The oldest dissertations in this uncatalogued collection go back to the late sixteenth century (Basel, Strasbourg). Thousands of them date from the seventeenth and eighteenth century: from Duisburg, Erfurt, Frankfurt (a/M), Freiburg (i.Br.), Geneva, Giessen, Göttingen, Heidelberg, Jena, Kiel, Königsberg, Louvain, Marburg, Paris, Prague, Rostock, Tübingen and various other cities.

**To Leiden**

How these dissertations found their way to Leiden is not a complete mystery. Several nineteenth century annual reports of Leiden University library refer to the acquisition of dissertations as part of an exchange with other universities in- and outside the country. In view of the numbers concerned the large majority of dissertations acquired in the nineteenth and twentieth century must have been obtained through exchange programs with other universities. I would not rule out that this is also the case for many of the dissertations from the previous centuries. There may well have been such an exchange even under a librarian like Fredericus Spanheim (1672-1701). However, it stands to reason that part of these works have entered the library as part of a bequest or as a donation from professors, especially in the seventeenth and eighteenth century.[8]

**Uncatalogued**

Why did the Leiden library keep these hundreds of thousands of dissertations without ever cataloguing most of them? That is probably due to four factors. First of all, the huge numbers pose a problem. Besides, in the sixteenth and seventeenth century these works were not considered to be of great importance, barring the *dissertatio pro gradu* (for an academic degree). Thirdly, once a certain procedure ('do not catalogue separately unless otherwise indicated') had been established there was a tendency to follow it for centuries. That may have been the case in Leiden, too. And finally, the dissertations had always been stored by city and by year, so you could easily find one if you knew who had written it and in what city and what year the doctorate had been obtained. At the end of the nineteenth century the status of the dissertation changed and the titles of the Dutch

8 This assumption was made by R. Breugelmans (september 2004). It is supported by, e.g., the inscription 'Ex legato Wepferi' in the Heidelberg disputation by Johannes Ott from 1670: *Cogitationes physico–mechanicae de natura visionis*. The 1754 Paris dissertation by Chaupin (*De partium externarum generationi inservientium in mulieribus naturali, vitiosa et morbosa dispositione, theses anatomico–chirurgicae*) contains an ex–libris of Corn. Henr. Â Roy, medicinae doctor.

Medicinæ cum Sapientiæ ſtudio neceſsitudinem intercedere longè maximam, eumq; demum
Medicum operam Hippocrate dignam arti impenſurum, qui & animum Philo-
ſophiæ præceptis imbuerit, & ad normam ejus vitam ſuam, moresq;
compoſuerit, firmiſsimis rationum momentis conficit
Galenus, *lib. Iſagog.*
Hoc ipſum cùm animo volutâſſent
Viri genere & doctrinâ præcellentes,
D. HENRICVS SCRETA à ZAVORZIZ, } ambo Scaphuſa-Helvetij,
D. IOHANNES OTT,
(quos aperta ſors, citra ullum eruditionis præjudicium ita locavit) jactis à prima juventa
Philoſophiæ fundamentis, non ſolùm rerum præclariſsimarum, Sacræ comprimis Medicinæ,
cognitionem ſuperſtruxerunt, ſuperſtructamq; longo rerum uſu, multiplici peregrinatione
PER CELEBERRIMAS GERMANIÆ, GALLIÆ, ANGLIÆ, BELGIIQVE ACADEMIAS,
aſsiduo ſtudio & indefeſſo labore confirmârunt: ſed & bene vivendi præcepta, pari induſtriâ,
ad uſum ita tranſtulerunt, ut editis ſpeciminibus quà publicis, quà privatis, non minùs
vitæ morumque probitatem, quàm eximiam, in rebus medicis & philo-
ſophicis juxtà, ſcientiam,
INCLYTO NOSTRO ATHENÆO,
luculenter comprobârint.
Vt igitur
Virtuti pariter & eruditioni ſuum conſtet præmium,
DECRETO
GRATIOSI MEDICORVM BASILEENS. ORDINIS,
IOHANNES HENRICVS GLASERVS,
Art. & Med. D. Bas. rite deſignatus,
præfatos Viros Clariſsimos,
poſteriorem quidem
SVMMO IN PHILOSOPHIA, ſeu MAGISTERII GRADV,
quem honeſtas ob cauſas ambiit,
ANNVENTE ET APPROBANTE
SAPIENTISSIMO PHILOSOPHOR. ORDINE,
poſtquam de CONVENIENTIA VISVS ET AVDITVS diſſeruerit,
dein utrumque junctim,
cùm pari ritu,
prior quidem DE VSV MVSICES IN MEDICINA,
poſterior DE NATVRA PHILTRORVM, ET QVID ILLA IN AMATI CORPVS FACERE POSSINT,
verba fecerint,
SVPREMI DOCTORATVS MEDICI
titulo & privilegiis,
AVTORITATE PRINCIPALI,
more veteri, ornabit,
*Prid. Non. Iunij.*
Omnes proin & ſingulos Academiæ noſtræ Proceres, Cives & Mecœnates, ad ſolemnem
hanc honorum renunciationem, quanto poteſt opere, quâ decet humanitate,
INVITAT, ROGAT.
RECTORE ACAD.
VIRO MAGNIFICO ET CONSVLTISS. D. IACOBO BRANDMYLLERO, I.V.D.
DECANIS SPECTATISS.
D. IOHAN. RVDOLPHO BVRCARDO, MED. D.
D. MAGISTRO HENRICO KISSELBACHIO,
illo Medicorum, hoc Philoſophorum.
BASILEÆ TYPIS IACOBI WERENFELSII, A.C. clɔ Iɔc LXXI.

From: Ioannes Ott, *Cogitationes physico-mechanicae de natura visionis* […] Dissertation Heidelberg 1670.
The illustration shows the invitation to the disputations of Henr. Screta Zavorziz and Ioannes Ott at the University of Basel on June 4, 1671.

dissertations (and of a selection of the international ones) were properly entered into the catalogue. In our day and age the academic significance of dissertations is viewed in diverse ways. On the one hand there is criticism about the huge quantities produced (250 per university per year is not exceptional); on the other hand there is appreciation for the high standard of the research.[9]

**How complete is the Leiden collection of international dissertations for each university represented?**

Despite the huge quantities it is still better to speak of the degree of incompleteness. Numbers vary enormously between universities: from around a dozen dissertations (Annaberg, Buenos Aires, Ingolstadt, St. Petersburg) to several dozens of bookcases full of them (Basel, Berlin, Duisburg, Greifswald, Heidelberg, Jena, Kiel, Marburg, Montpellier, Strasbourg, Tübingen and Würzburg). The *thèses* from Paris fill no fewer than 120 bookcases. Obviously these are not all masterworks, but in 2004 we found fifteen gems among this mass, including the dissertation of Marie Curie, which in the year of its publication brought her the Nobel prize. It was filed under the S among the Paris dissertations of the year 1903. In the hundred years that had passed since then nobody had taken the trouble of looking under her own name (Skłodowska).

Other Dutch university libraries have pursued widely varying policies on international dissertations. In Groningen all dissertations are regular items in the collection and in the catalogue. The Utrecht university library has between 750,000 and one million international dissertations, most of them uncatalogued.[10] They are from Germany, France, Belgium and Scandinavia.

The University of Amsterdam library held a clearance operation some years ago: the collection of international dissertations (total shelf length 2.5 km) was inspected first by their own subject librarians and then by staff members of the Koninklijke Bibliotheek (Dutch national library). Whatever was seen as important in the year 2000 was included in the respective collections – totaling some tens of thousands of dissertations. The rest was disposed of (in library terms: deselected).

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9 Lars H. Breimer & D. Breimer: *A computer-based international 'Thesis-Line'?* In: Trends in biochemical sciences, vol. 20 (1995), pp. 175-176.

10 Information from J. van Kooten Niekerk of Utrecht University library (e-mail, May 9, 2003).

Joh. Nicolaus Reineccius, *Principe principum annuente, de consecratione principum* […].
Dissertation Jena 1675.

8

Principe Principum annuente,

*DE*

# CONSECRATIONE PRINCIPUM,

ex

Consensu Inclytæ Facultatis Philosophicæ,

*publicè disputabunt*

PRÆSES

M. CHRISTIANUS GRÜBELIUS,

Ampl. Fac. Phil. Adjunctus,

RESPONDENS

JOH. NICOLAUS REINECCIUS,

Mœno - Francofurtensis

*A. R. S. cIↃ IↃc LXXV.*

*ad diem Januar.*

H. L. Q. C.

ACAD. LUGD. BAT. BIBL.

JENÆ

*Literis Joh. Jacobi Bauhoferi.*

**What is the importance of the Leiden collection?**

The importance of the collection of international dissertations in Leiden cannot be overestimated. It could be used for various types of research. Per city, per region or per period a researcher can see how a specific field developed; how research in a certain specialty reached a deadlock or, conversely, made huge advances; what issues were considered of academic interest in a specific decade. If you want to do research on German dissertations from between, say, 1750 and 1936, you can come browsing in Leiden. It is possible to research the development of medical science in France between 1900 and 1920. The thousands of dissertations from the sixteenth and seventeenth century in particular open up huge possibilities. The American historian Joseph Freedman did research in these works in 2004 and came to some surprising conclusions about changes in the academic process in the sixteenth and seventeenth century.[11]

There is also a significance that goes beyond the Dutch national borders. Some collections from university cities kept in Leiden are no longer present at their place of origin. This may be simply because not all old dissertations were retained (the Leiden collection of dissertations defended in Leiden is also incomplete!), because the universities no longer exist, because the library in question was destroyed (some German cities in World War II), or because owing to geographic changes preserving the 'old' cultural legacy was not given priority (Breslau/Wrocław, Königsberg/Kaliningrad).

A search for well-known authors in this collection frequently leads to the discovery of real gems. This happens on a weekly basis following requests from researchers in Leiden, but findings also occur in other ways. In 2004 Leiden University library staff members held a targeted search for around a hundred named authors among the uncatalogued dissertations. This led to dozens of discoveries: the first steps on the research path of eminent scientists and scholars, including Nobel laureates, such as Bergson, Bohr, Curie-Skłodowska, Durkheim, Einstein, Hahn, Lewin, Planck, Plessner, Pirandello, Stresemann, Warburg, Weber, Wegener, but also of a controversial researcher like Carl Gustav Jung. It should be noted that these are in fact new acquisitions for the Leiden library from an extant collection.

A similar search should actually be repeated every ten years. In 2015, certain authors, fields and types of research will be viewed differently. In the decades to come, frequent systematic research in this enormous collection will presumably yield more than hundreds of highlights from the academic world.

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11 See the contribution by Joseph Freedman in this brochure.

# The medieval *disputatio**

Olga Weijers
(Huygens Institute, Royal Netherlands Academy of Arts and Sciences)

The disputation has its origin in the Middle Ages. The best known and most widespread form of the disputation, the 'scholastic' *disputatio*, emerged in the twelfth century.

In the Middle Ages – as in antiquity – the word *disputatio* had a number of different meanings. In a general sense it could refer to the discussion of a text or a problem. It was also one of the terms used for the dialogue, a widespread literary genre, and for a debate, e.g. debates in which arguments in favor of or against specific propositions are given, such as are often found in the works of Cicero. In the Middle Ages it denoted a variety of discussion forms, from the literary genre of the Dispute Poems to the very real religious controversies between Jews and Christians.

Within the world of schools and universities, two types of disputation are to be distinguished: the dialectic and the scholastic *disputatio*. The former is a process whose description dates back to the *Topica* by Aristotle, which one can also find in Cicero and which lived on in the Middle Ages in the schools that taught dialectics. This gave rise to the dialectic genre of the *obligationes,* which was taught in the *Artes* faculty or in the schools associated with that faculty. These were basically duels between two opponents according to strict dialectical rules, in which one tries to get the other to contradict a statement which he initially accepted, and thus to win the debate. This *disputatio* differs from the better known scholastic disputation in both purpose and structure. One of the major differences is that it aims to test logical rules and to create a winner of a debate, not to find (or teach) the truth or to solve a problem, as is the case in scholastic disputations.

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* This text is largely based on and partly identical to my publication in *Mededelingen van de Afdeling Letterkunde van de KNAW*: Olga Weijers, *Begrip of tegenspraak? Analyse van een middeleeuwse onderzoekmethode* [Understanding or contradiction? Analysis of a medieval research method] (Mededelingen, Nieuwe Reeks, Deel 65 no. 6, Amsterdam 2002). This mainly refers to education and research at the *Artes* faculty, but the general argument also applies to the other faculties (Theology, Law and Medicine).

This scholastic disputation concerns a question which can be answered affirmatively or negatively. The discussion is aimed at finding the correct answer. The questions often arise when reading the basic texts, but there are also frequent disputes about problems without any relation to those texts. The simplest form of the *questio disputata,* the written report of such a disputation, is as follows: first the question is formulated, followed by one or more arguments supporting one answer, e.g. a negative one, and then one or more arguments supporting the other answer. These arguments are not simply individual opinions: they often take the form of a syllogism proving the validity of an argument, or they are based on a proposition from one of the recognized authorities (in the *Artes* faculty notably Aristotle and Averroes), and sometimes they appeal to *experientia*, the observation of reality. After the exchange of arguments the leader of the disputation presents his solution. He may choose one of the views presented, but he may also opt for *distinctio*, i.e. distinguishing various aspects in the formulation of the question. During this *solutio* or *determinatio*, in which he defines his position vis-a-vis the problem, he indicates why he has chosen a specific solution, quotes other opinions and reacts to any objections there may be. Finally, he systematically refutes all arguments put forward in the preceding discussion that contradict his answer. This structure has become ever more complex over time, but the basic scheme has always been preserved.

The scholastic *disputatio,* which was applied in all faculties, had various functions. It was an educational method, a research method and an instrument for testing knowledge and skills. As an educational method it stemmed from the reading of texts that were part of the curriculum. Originally, the lessons (*lectiones*), which concerned the interpretation of the basic texts, were concluded by asking and solving questions according to the scheme described above. By the end of the thirteenth century the discussions of these *questiones* had wholly replaced the reading of texts (which was now done during other lessons) and the questions became more fundamental: they treated the major problems and basic principles of the discipline in question according to the rules of dialectics.

The difference with directly commenting on the text and simply answering a question is the following: instead of simply stating that something is true, the *questio disputata* also shows why it is true. The participants give the arguments that prove the correctness of the answer, but also give the counterarguments and disprove these. This leads to a much more profound understanding of the subject matter.

In addition to the discussion on questions regarding a text during the les-

sons, the various faculties also held discussions on questions that were often unrelated to the texts. This was the independent *disputatio*, a comprehensive and regulated discussion with several actors: the *magister*, who presented the question, presided over the session and gave the final answer, and at least two advanced students, viz. the *respondens*, who gave an initial answer, and the *opponens*, who raised arguments against this viewpoint. It was also possible for more students to participate and formulate provisional opinions before the *magister* settled the dispute and refuted the initial arguments that ran counter to his view. These were often long sessions and in most cases the *magister* did not present his view until the next day or sometimes even the next week. This type of disputation was also part of normal teaching. University regulations stipulated that they were to take place in the afternoon. Their function was not only to teach the discipline in question, but also to train students to employ the instrument of *disputatio* and to argue in accordance with the rules of the game.

The disputation was also of major importance as a research method. At fixed times – once a week according the university regulations in Paris – the so-called *disputatio magistrorum* was held. All *magistri* and students of the faculty took part in this and all other activities were put to a halt. The *magister* who led the disputation probably announced in advance what question would be discussed. Not just his own students, but also other *baccalarii* and *magistri* took part in the discussion. These disputations usually dealt with important questions to which the answer was not known in advance. One could say that this was a kind of collective research effort, together with colleagues, concerning genuine problems. Searching for the truth, for the correct answer, is an essential element of this type of disputations and is often explicitly stated as a goal by the authors. What is also significant in this respect is that the arguments that are eventually rejected are not seen as invaluable; on the contrary, they are just as important as the arguments that are accepted, since they have contributed to the determination of the correct answer and to a better understanding of the problem. Moreover, in many cases the answer agreed upon is not presented as the definite and undisputed solution. It is merely a step into the direction of the truth. Opinions can always be revised if someone comes up with a better argumentation.

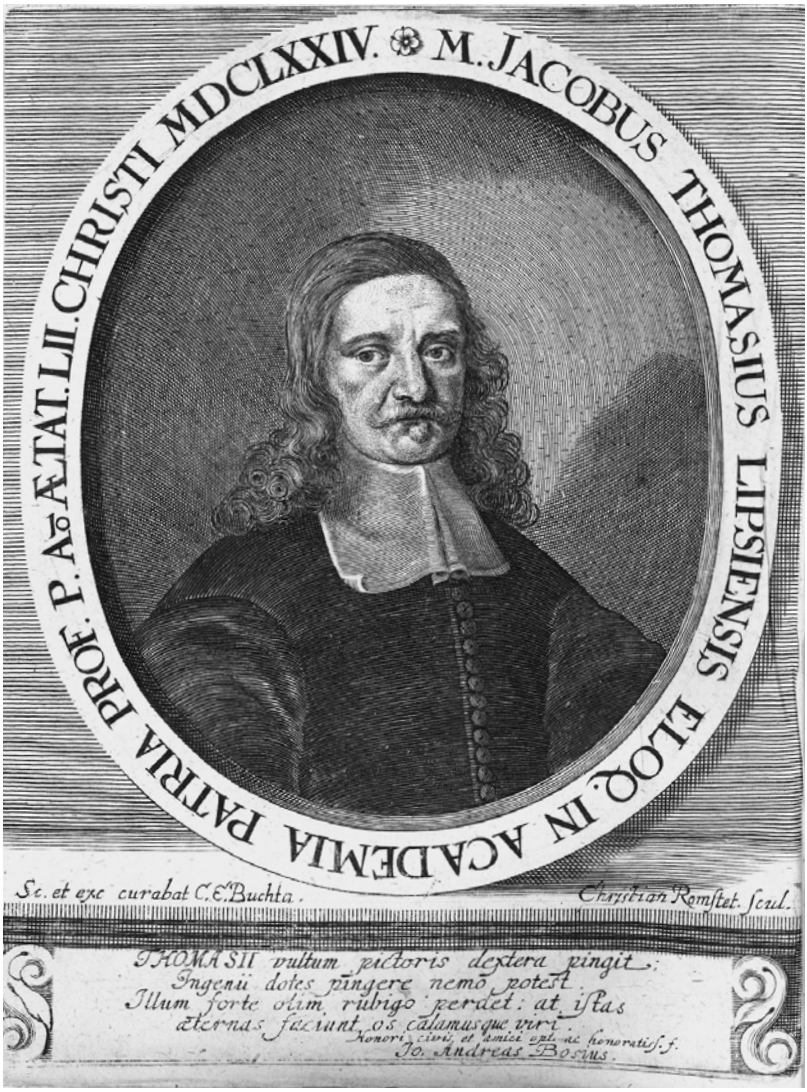
The texts containing this type of disputations may be the result of a real disputation. In that case they have been edited by the *magister* leading the discussion, who has used the report of his assistant as one of his sources. But this is not always the case. It is often difficult to discern whether the text of a *questio disputata* is based on an actual disputation or whether it is a separately edited treatise that may be partly based on earlier disputes.

In the course of the fourteenth century the *disputatio* partly changed into a literary genre. While disputations continued to be used in schools – although their significance seemed to decrease – a tradition emerged of writing fundamental, sometimes polemic treatises in the form of a *questio disputata*, maintaining the basic structure (the arguments and counterarguments, the argumentation leading to the conclusion, which can be very lengthy in this type of treatise and which contains an extensive discussion on the opinions of others and, finally, the refutation of the initial arguments that did not support the conclusion). In other words, in this case the procedure of the *disputatio* was used for personal research, to discuss a problem or to carry on polemics with colleagues. Many treatises from the late Middle Ages were written in this form.

Finally, the *disputatio* was also an examination technique. Disputations were used to test students' knowledge of the subject at hand as well as their dialectical skills. Even before their baccalaureate exam they were obliged to take part in simple disputations – led by the *magister* in his school – and play the roles of *opponens*, presenting counterarguments, and *respondens*, giving a provisional answer to the question. The baccalaureate itself consisted first of all of an exam that gave the right to 'determine', i.e. to lead disputes and to determine the answer to the questions (which is why the baccalaureate exam was also called *determinatio*). This was followed by a series of compulsory disputations in which the candidate took the role that was normally reserved for the *magister*. So in fact the emphasis was on a test of competence rather than an evaluation of acquired knowledge. After this test the *baccalarius* took part in disputes with a public character and was even expected to be the *respondens* in the important weekly disputes of the *magistri*. He completed his study by taking the licentiate exam, followed by the ceremony of the *inceptio*. This was the official start of his teaching career (*incipere* means 'to start') and he was admitted to the corporation of *magistri* of his university. The ceremony had two parts: the *vesperie,* which took place the evening, and the actual *inceptio*, on the following day. The *vesperie* was the last time the candidate fulfilled the role of *respondens,* after having done so for many years. At the *inceptio*, however, he played the role of *magister* by leading a solemn dispute and 'determining' the question. After the ceremony the new *magister* was to organize disputes for forty days before he could start his regular teaching. This *inceptio* became much more complex in the fourteenth century, especially in the theological faculty, where it consisted of various disputes, with not just the candidate taking part, but also several other *magistri*.

By the end of the Middle Ages the *disputatio* had in some cases become

an ossified technique, with the same arguments being repeated endlessly. As such it was ridiculed by the Humanists and also in later periods. Rabelais, for example, gives a parody of a dispute in the third chapter of *Pantagruel*. Elsewhere in this work he severely criticizes both the disputation itself and academic teaching as a whole, in which he saw dialectics as too dominant. On the other hand, the *disputatio* continued to exist for a long time, notably as an exam, and is clearly a forerunner of the later dissertations.




Jacobus Thomasius (praes.) & Joh. Michael Reinelius (resp.),
*Dissertatio philosophica de plagio literario* […].
Dissertation Leipzig 1679.

# DISSERTATIO PHILOSOPHICA
De
# PLAGIO
## LITERARIO,

*Quam*
Consentiente Incluto Philosophorum
Senatu
IN ALMA PHILUREA
*Sub Præsidio*

# M. JACOBI
## THOMASII,

Eloq. Prof. Publ. Facult. Philosoph. Assessoris,
& Minoris Principum Collegii Collegiati
*d. 9. Augusti Anno 1673.*
In Acroaterio Majoris Principum Collegii
consvetis horis matutinis
*respondendo publicè defendit*

ACADEMICA

## JOH. MICHAEL REINELIUS,

Gesr. Francus, Serenissf. ELECT. SAXON. Alumnus:
*nunc recusa*
& sex Accessionibus locupletata.

Sum Joh. Conradi Ulepo Dr.

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Sumtibus CHRISTOPH-ENOCH. Buchta/
ANNO M. DC. LXXIX.
Impressum Levcopetræ Literis JOH. BRüHLII,
Augustæi Typographi.

Ex Legato WEPFERI.

# Disputations in Europe in the early modern period

Joseph S. Freedman
(Alabama State University)

During the early modern period, disputations constituted a major component of the curriculum at schools and universities scattered throughout Europe. Disputations and disputation theory are the subject matter of a number of recent publications.[1] A number of recent scholarly writings on university history have also included detailed discussion of this same topic.[2] The present article intends to highlight some results of this recent research (including my own as Scaliger fellow in Leiden) and place it within the context of the abundant and valuable holdings at the Leiden University Library.

A working definition of disputation can be constructed by looking at the theory as well as the practice of disputations.[3] The disputations were frequently examined within the context of textbooks and other writings on logic.[4] Beginning in about the year 1550, writings devoted specifically to the subject-matter of disputations were published in Europe.[5] Curriculum plans, instructional schedules, and statutes frequently discuss disputations that are to be held, often mentioning genres and categories thereof.[6] And most importantly, one can examine actual extant disputations themselves, though it is possible to become almost overwhelmed by the sheer mass and variety of them which are extant in European and non-European libraries Within this complex context, disputations during the early modern period can be understood here as logical exercises – held on a very wide range of possible subject-matters – which were held by two or more participants as part of academic instruction at European schools and universities.[7]

These disputations were almost invariably held in Latin and were known by a variety of different names. *Disputatio* and *dissertatio* were especially common; *exercitatio* / *exercitationes* and *thesis* / *theses* were among other terms which was sometimes used.[8] To date, a multi-institutional or multi-regional pattern for the use of these various terms has yet to be identified. At Leiden University, the inaugural disputation in philosophy – i.e., the disputation held in partial fulfillment of requirements for the terminal degree in philosophy and the arts – apparently was known as a *disputatio philosophica inauguralis* until the 1720s, when the name seems to have changed to *dissertatio philosophica inauguralis*. [9]

Four principal purposes for the holding of disputations can be mentioned here. One purpose of a given disputation – as is evident from the previous

Q. D. B. V.

DISSERTATIONEM

DE

# THERMO-METRIS

in

Almo ad Salam Lycæo

PRÆSIDE

DN. IO. ANDREA

Schmidt/

Logices & Primæ Philosophiæ

P. P. & Ordin.

*Publicæ συζητήσει submittit*

JO. DITERICUS Winckelmann/

Cella - Lüneburgicus

*ad diem XXVI. Januar.*

A. Æ. C. M. DC. XXCIV.

Jenæ, Literis Bauhoferianis.

ACAD. LUGD. BAT. BIBL.

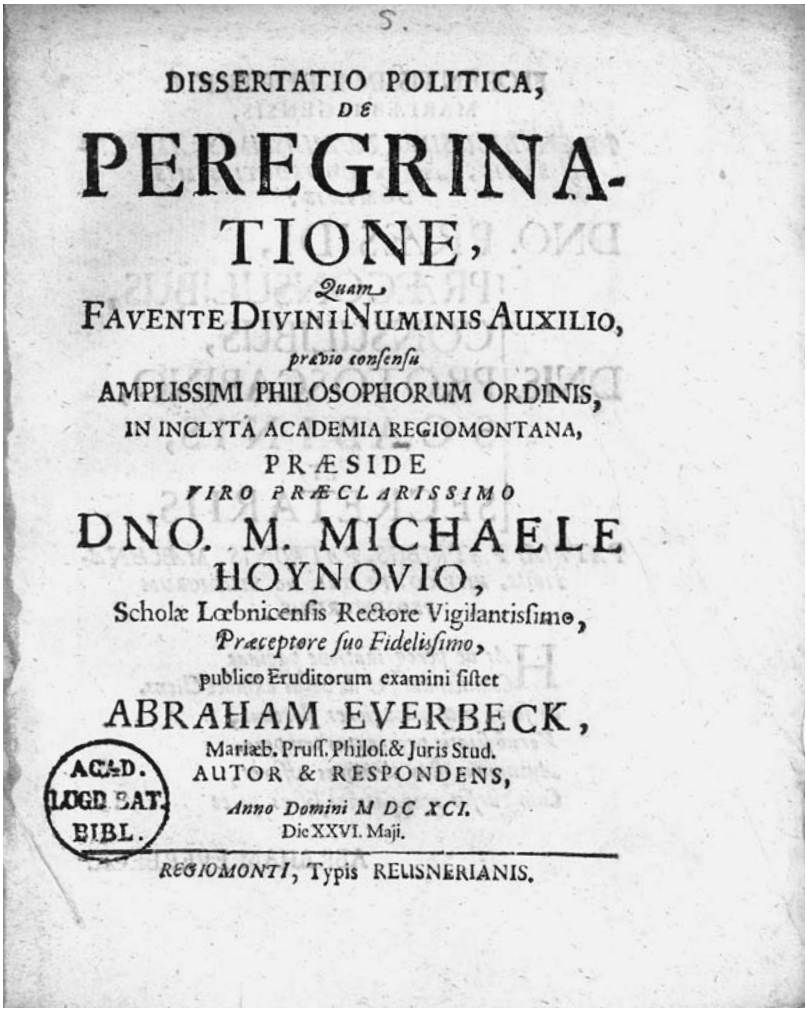
Jo[hannes] Andreas Schmidt (praes.) & Jo[hannes] Ditericus Winckelmann (resp.), *Dissertationem de thermo-metris in almo ad salam lycaeo*. Dissertation Jena 1684.

paragraph – was as a partial requirement for the completion of an academic degree. A second purpose of academic disputations was to mark the acceptance or hiring of an individual as a new colleague at a school or within a philosophy/arts, medicine, jurisprudence, or theology faculty in a university.[10] Thirdly, disputations were regularly held for purposes of practice. Instruction normally consisted of lectures and various academic exercises; the latter included disputations as well as translations, repetitions, declamations (i.e., practice orations), and 'style exercises' (*exercitium styli*), i.e., grammatical and rhetorical exercises for the purpose of learning to use the Latin language stylistically and well.[11] And fourth, disputations held for any of the three above mentioned purposes could also be used in order to examine topics which otherwise might be neglected; this fourth purpose will be returned to shortly.[12]

Disputations could range in length from a single broadsheet to a short treatise of over a 100 pages in length.[13] A single-page disputation might merely consist of a group of questions and/or theses. In longer disputations, each thesis might be accompanied by commentary; that commentary might be very brief or be a lengthier discussion itself divided up into sub-sections. Groups of theses could be organized within a rubric consisting of chapters and/or sections.[14] Disputations also could contain a dedication to a person or a group of persons, a preface to the reader, and/or one or more poems written by or dedicated to one or more of the individual participants in that given disputation.[15]

Participants in disputations normally had three distinct roles.[16] One role was that of the presider (*praeses*). The presider was the person who – as the name indicates – presided over the disputation when it was actually held and was ostensibly responsible for its overall organization. The second role was that of the respondent, also referred to in some disputations as the defendant. This role, which could be assumed by one person or by a group of persons, normally involved defending the principal thesis or theses of the disputation itself. The third role was that of the opponent; this role also could be assumed by one or more than one person. The responsibility of the opponent(s) was to counter the respondent(s) by using appropriate arguments. Theoretical discussions of disputations normally gave detailed attention to the responsibilities of presiders, respondents, and opponents. Respondents and opponents were expected to use logic well, but opponents in particular were also required to do this in an ethical manner.

The question of determining authorship of these disputations has eluded – and continues to elude – a clear and universally accepted answer. Towards the end of the 19th century, German catalogers began to intensively discuss



5.

DISSERTATIO POLITICA,
DE
PEREGRINA-
TIONE,
Quam,
FAVENTE DIVINI NUMINIS AUXILIO,
prævio consensu
AMPLISSIMI PHILOSOPHORUM ORDINIS,
IN INCLYTA ACADEMIA REGIOMONTANA,
PRÆSIDE
VIRO PRÆCLARISSIMO
DNO. M. MICHAELE
HOYNOVIO,
Scholæ Lœbnicensis Rectore Vigilantissimo,
Præceptore suo Fidelissimo,
publico Eruditorum examini sistet
ABRAHAM EVERBECK,
Mariæb. Pruss. Philos. & Juris Stud.
AUTOR & RESPONDENS,
Anno Domini M DC XCI.
Die XXVI. Maji.

ACAD. LUGD. BAT. BIBL.

REGIOMONTI, Typis REUSNERIANIS.

Michael Hoynovius (praes.) & Abraham Everbeck (autor et respondens),
*Dissertatio politica de peregrinatione* […].
Dissertation Königsberg 1691.
In this disputation the respondent is the author of the text.

the question of whether the presider or the respondent should be listed as the author of any given disputation; since then, a number of scholars have addressed this same issue.[17] The following conjecture will be ventured here: there is no simple correct answer, and it might in many cases to be best to list the presider and the respondent(s) as joint authors.

In some disputations, the presider thereof identifies himself as its author as well; in other disputations, the respondent is identified as its author.[18] But in most cases, the author is not specified. In some instances, one is able to establish authorship – with some degree of certainty or probability – on the basis of internal evidence.[19]

But in most cases, one can only postulate authorship by looking at some general trends. For example, some disputations held during the early modern period were held by a presider together with a number of respondents.[20] In such cases, it is likely that the presider had a major role in determining its content as well. As the early modern period progresses, the respondent is increasingly named as the author of disputations; it probably can be submitted that the respondent also increasingly has an authorship role even when not specifically named as such. But such trends do not necessarily apply to each individual disputation; listing the presider and the respondent(s) as joint authors is perhaps the most prudent solution in those cases where authorship is not specified more precisely.

During the course of the 16th, 17th, and 18th centuries, a number of evolutionary trends pertaining to disputations can be noted. It has already been observed that respondents were more frequently named as the authors of disputations as these three centuries progressed. In addition, it can be noted that 1. the names of opponents were not listed in disputations with any frequency until the 18th century and 2. the length of disputations generally increased in the course of the early modern period.[21] The additional general points which follow here reflect our relatively limited knowledge concerning the dissemination and scope of disputations during these three centuries.

Isolated collections of disputations held during the first half of the 16th century are extant in manuscript form.[22] From about the year 1550 onwards, disputations began to be published in limited quantities in Central Europe. Jesuit academic institutions appear to have taken the lead in doing so, though some disputations were also published in connection with academic instruction held at Protestant schools and universities.[23] Such disputations began to be published in the Protestant Netherlands and in Scandinavia beginning in the 1580s.[24] By the end of the 16th century, these disputations

DISSERTATIO POLITICA,
DE
# CURIOSITATE,
Quam
DIVINI NUMINIS GRATIA ASSISTENTE,
RECTORE MAGNIFICENTISSIMO,
*SERENISSIMO atq; EXCELSISSIMO PRINCIPE ac DOMINO,*
**DOMINO FRIDERICO WILHELMO,**
REGNI BORUSSIÆ ET ELECTORATUS
BRANDENBURGICI HÆREDE &c. &c. &c.
*AMPLISSIMA FACULTATE PHILOSOPHICA CONSENTIENTE,*
Publicæ Eruditorum disquisitioni subjiciunt:
PRÆSES
**M. CHRISTIANUS MASECOVIUS**
Regior. Alumnor. & Cummun. Convict. Insp. secund.
&
RESPONDENS
CHRISTOPHORUS Broßmann/
Gedock. Prussus,
IN AUDITORIO PHILOSOPHICO,
HORIS CONSVETIS
*ANNO MDCCIII. die Decembr.*

ACAD. LUGD. BAT. BIBL.

*REGIOMONTI,*
Typis FRIDERICI REUSNERI, SAC. REG. MAJ. & ACAD.
Typogr. Hæredum.

Christianus Masecovius (praes.) & Christophorus Groβmann (resp.),
*Dissertatio politica de curiositate* […].
Dissertation Königsberg 1703.

began to be published in larger quantities in the Netherlands and in very large quantities in Central Europe as well as in Scandinavia. Beyond these three European regions, however, disputations appear to have been published in far smaller quantities during the early modern period.

One can speak of the value of disputations from a variety of vantage points. First, published textbooks and published disputations provide us with the bulk of all extant information concerning academic instruction during the early modern period.[25] Second, disputations provide us with information not always found within textbooks. The latter normally were published concerning specific curricular subject-matters. Disputations could discuss one or more such subject-matters and/or questions which transcended individual disciplines.[26]

Third, disputations can lead us to a broader view of the instructional process. Students participated as respondents, as opponents, and sometimes also as authors of disputations; textbooks and other monographic treatises generally were written by an individual professor or other instructor. Fourth, disputations serve as a valuable source of biographical and bibliographical information concerning a large body of students. And in some cases, disputations provide information concerning the views of a major historical figure; for example, philosophical disputations in which Hugo Grotius participated as a student at Leiden University provide us with what perhaps are the best extant indications we possess to date concerning his philosophical thinking.[27]

Fifth, from about 1670 onwards, disputations appear to have served as an important vehicle for the communication of new topics of discourse. Among these new topics were 1. experimental natural science, mathematics, and medicine as well as 2. women within the realms of education, the family, and political life; the concepts of novelty/innovation (*novitas*) and curiosity (*curiositas*) also begin to receive increased attention.[28] Textbooks tended generally to communicate established and generally accepted information that fell within the context of established academic disciplines; disputations generally provided an instructional context in which topics could be discussed that were interdisciplinary, were innovative, or were otherwise not mentioned or emphasized by textbook authors.

And sixth, disputations provide us with a window through which we can understand how interactive instruction evolved uniquely at individual academic institutions. The study of early modern European academic disputations perhaps can be compared to the study of medieval architecture in a general sense. The scholarly examination of large numbers of churches, chapels, and other buildings of the Middle Ages provides a solid foundation for a meaningful understanding of medieval architecture.[29] Individual disputations taken from the collections of Leiden University Library serve

DISSERTATIO PHILOSOPHICA
INAUGURALIS
DE

# SONO.

QUAM,
ANNUENTE DEO TER OPT. MAX.
*Ex Auctoritate Magnifici Rectoris,*
D. FRANCISCI FABRICII,
S. S. THEOL. DOCT. HUJUSQUE, NEC NON
ORATORIÆ SACRÆ, IN ACAD. LUGD. BAT.
PROFESSORIS ORDINARII, UT ET EC-
CLESIÆ IBIDEM PASTORIS;
NEC NON
*Amplissimi* SENATUS ACADEMICI *Consensu,*
*& Nobilissimæ* FACULTATIS PHILOSOPHICÆ *Decreto,*
PRO GRADU DOCTORATUS IN PHILOSOPHIA,
ET LIBERALIUM ARTIUM MAGISTERIO,
Summisque Honoribus & Privilegiis ritè ac
legitimè consequendis,
*Publico ac Solenni Examini submittit*
GODOFRIDUS DU BOIS, *Cruininga-Zelandus.*
*Ad diem 6. Februarii 1725. ab hora 8. ad 10. loco solito.*

R. UNIV.
BIBLIOTHEEK
LEIDEN

*LUGDUNI BATAVORUM,*
Apud SAMUELEM LUCHTMANS, 1725.

238 A1.

Godofridus du Bois, *Dissertatio philosophica inauguralis de sono* […].
Dissertation Leiden 1725 (Febr. 6, 8-10 hr).

DISSERTATIO MEDICA
INAUGURALIS
DE

# AUDITU.

QUAM,
ANNUENTE DEO TER OPT. MAX.
*Ex Auctoritate Magnifici Rectoris,*
D. FRANCISCI FABRICII,
S. S. THEOL. DOCT. HUJUSQUE, NEC NON
ORATORIÆ SACRÆ, IN ACAD. LUGD. BAT.
PROFESSORIS ORDINARII, UT ET ECCLESIÆ IBIDEM PASTORIS;
NEC NON
*Amplissimi* SENATUS ACADEMICI *Consensu,*
*& Nobilissimæ* FACULTATIS MEDICÆ *Decreto,*
PRO GRADU DOCTORATUS,
Summisque in MEDICINA Honoribus & Privilegiis
ritè ac legitimè consequendis,
*Publico ac Solemni Examini submittit*
GODOFRIDUS DU BOIS, *Cruininga-Zelandus.*
*Ad diem 6. Februarii 1725. ab hora 10. ad 12. loco solito.*

TUTA SUB ÆGIDE PALLAS

*LUGDUNI BATAVORUM,*
Apud SAMUELEM LUCHTMANS, 1725.

Godofridus du Bois, *Dissertatio medica inauguralis de auditu* […]. Dissertation Leiden 1725 (Febr. 6, 10-12 hr).

to illustrate how a sampling of highly diverse topics were presented in accordance with the evolving norms and practices of individual academic institutions. It is hoped that the disputations preserved in Leiden University Library not only will help serve as a basis for future studies on European academic instruction during the early modern period, but also will highlight the broader cultural, institutional, and intellectual value of these disputations themselves.

**Note**

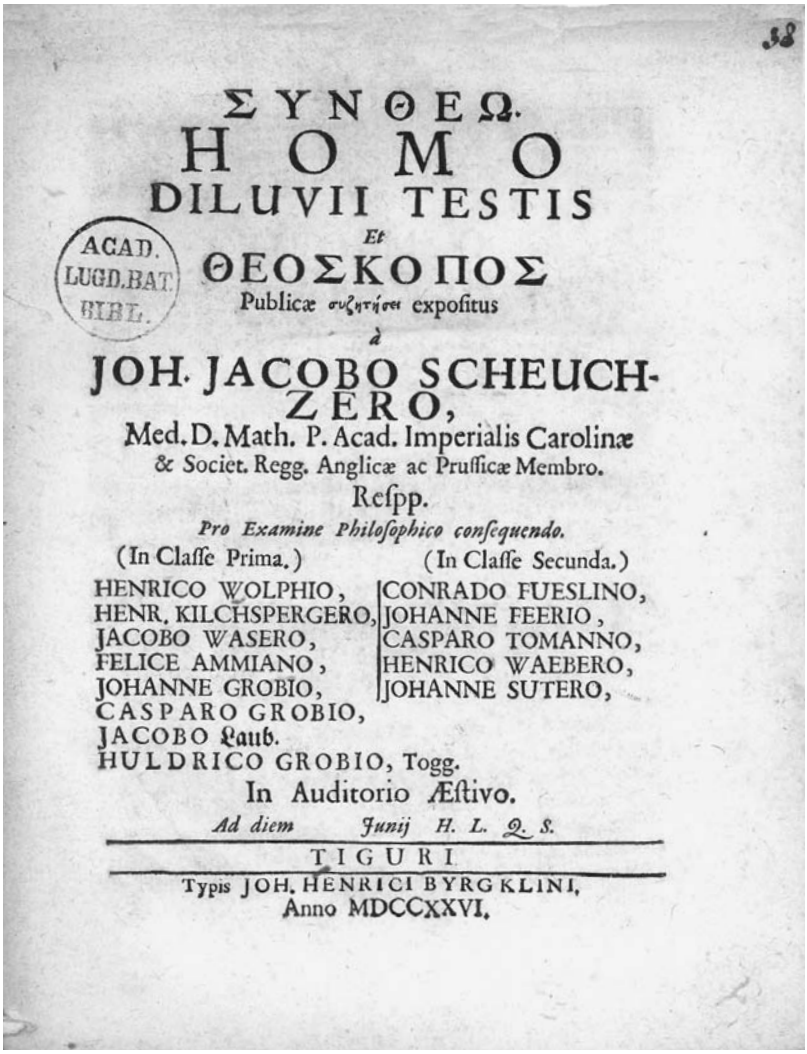
Disputations from the early modern period kept in the collections of Leiden University Library can be placed within three broad groups. The first group consists of disputations held at Leiden University itself. They begin to be published – normally in Leiden – beginning in the early 1580s and in larger quantities beginning in the 1590s. These disputations are housed in the library's special collections. Almost all of them are registered as Western Printed Works. A few Leiden University disputations – largely those containing manuscript annotations – are kept with the Western Manuscripts.[30]

The second group consists of disputations held at Dutch schools and universities outside of Leiden. These disputations can be found in the Leiden Special Collections as well as in the general stacks of Leiden University Library. A few are also located in the Bibliotheca Thysiana in Leiden.[31] The disputations from this second group date from the early 17th century into the 20th century.

The third group is a very large collection of non-Dutch disputations published in Europe, North America, and other continents. They date from the late 16th century well into the 20th century. The disputations published during the early modern period are limited to the European continent, with the German speaking area of Europe by far the most heavily represented. At this time, these disputations are almost entirely housed in the general stacks of the Leiden University Library. In contradistinction to the disputations of the first two groups, almost all of the disputations within the third group remain uncatalogued to date.

**Footnotes**

1. Among recent encyclopedia articles, books/monographic treatises, journal articles and bibliographies pertaining to this topic the following can be mentioned here: Hanspeter Marti, 'Dissertation' and 'Dissertation', Gert Ueding, ed., *Historisches Wörterbuch der Rhetorik*, vol. 2 (Tübingen: Max Niemeyer,1994): pp. 866–884; Margreet J. A. M. Ahsmann, *Collegium und Kolleg. Der juristische Unterricht an*



38

ΣΥΝΘΕΩ.

HOMO

DILUVII TESTIS

Et

ΘΕΟΣΚΟΠΟΣ

Publicæ συζητήσει expositus

à

JOH. JACOBO SCHEUCHZERO,

Med. D. Math. P. Acad. Imperialis Carolinæ & Societ. Regg. Anglicæ ac Prussicæ Membro.

Respp.

*Pro Examine Philosophico consequendo.*

(In Classe Prima.)

HENRICO WOLPHIO,
HENR. KILCHSPERGERO,
JACOBO WASERO,
FELICE AMMIANO,
JOHANNE GROBIO,
CASPARO GROBIO,
JACOBO Laub.
HULDRICO GROBIO, Togg.

(In Classe Secunda.)

CONRADO FUESLINO,
JOHANNE FEERIO,
CASPARO TOMANNO,
HENRICO WAEBERO,
JOHANNE SUTERO,

In Auditorio Æstivo.

*Ad diem Junij H. L. Q. S.*

TIGURI

Typis JOH. HENRICI BYRGKLINI,
Anno MDCCXXVI.

ACAD. LUGD.BAT. BIBL.

Joh. Jacob Scheuchzerus, Συνθεω *homo diluvii testis* […]
Dissertation Zürich 1726.
In this work the presider is the likely author of the text.

*der Universität Leiden 1575–1630 unter besonderer Berücksichtigung der Disputationen*, aus dem Niederländischen übersetzt von Irene Sagel-Grande (Frankfurt am Main: Vittorio Klostermann, 2000); Donald Leonard Felipe, *The Post-Medieval Ars Disputandi* Ph.D. Dissertation, University of Texas, Austin (USA): 1991); Hanspeter Marti, 'Die Wissenschaftsgeschichtliche Dokumentationswert alter Dissertationen,' *Nouvelles de la Republique des Lettres* 1 (1981): pp. 117-132; Ferenc Postma and Jacob van Sluis, *Auditorium Academiae Franekerensis: Bibliographie der Reden, Disputationen und Gelegenheitsdruckwerk der Universität und des Athenäums in Franeker 1585-1843* (Leeuwarden: Fryske Akademy, 1995); Hanspeter Marti, *Philosophische Dissertationen deutscher Universitäten* (München et al.: K. G. Saur, 1982). The following older study is still valuable: Ewald Horn, *Die Disputationen und Promotionen an den deutschen Universitäten vornehmlich seit dem 16. Jahrhundert,* Elftes Beiheft zum Centralblatt für Bibliothekswesen (Leipzig: Otto Harrassowitz, 1893; reprint ed.: Nendeln / Liechtenstein: Kraus Reprint / Wiesbaden: Otto Harrossowitz, 1968).

2. Disputations and their place in instruction during the 16th and 17th centuries – primarily in Central Europe – are frequently mentioned within the following collection of articles: Joseph S. Freedman, *Philosophy and the Arts in Central Europe, 1500–1700. Teaching and Texts at Schools and Universities,* Variorum Collected Studies Series CS 626 (Aldershot et al.: Ashgate / Variorum, 1999), Index 3. A very valuable discussion of disputations, together with a detailed list and analysis of philosophy disputations held at the University of Basel during the 17th Century is given in Wolfgang Rother, *Die Philosophie an der Universität Basel im 17. Jahrhundert. Quellen und Analyse* (Dr. phil. Dissertation, Universität Zürich, 1980), pp. 62-66, 97-99, 326-330, 450-451.

3. The concept of definition was itself a subject-matter that was regularly discussed as part of academic instruction on logic during the early modern period; the concept of definition – including various kinds of definitions – was also usually examined in published writings on logic. For example, refer to the following: Cornelius Valerius, *Tabulae, quibus totius dialecticae praecepta maxime ad usum disserendi necessaria breviter & summatim exponuntur, ordine perspicuo digestae* (Antwerpiae: Ex officio Christophori Plantini, 1575), pp. 27-32 [UBL 191 E 26: 2]; Johannes Rudolphus Faber, *Totius logicae Peripateticae corpus ... Nec-non totius organi Aristotelico-Ramei compendium* (Aurelianae: Apud viduam & haeredes Petri de la Roviere, 1623), pp. 537-542 [UBL 546 B 12]; Daniel Wyttenbachius, *Praecepta philosophiae logicae* (Amstelodami: Apud Caearem Noëlem Guerin, 1781), pp. 142-166 [UBL 652 B 11]. Definition itself was considered by early modern academic authors as a problematic concept. A detailed discussion of the concepts of classification and definition is given in Freedman, *Philosophy and the Arts* (see footnote 2), I: 2-7.

4. Hundreds of examples could be given in this connection, including the following: Bartholomaeus Keckermannus, *Gymnasium logicum, id est, de usu et exercitatione logicae artis absolutiori & pleniori, libri III. Annis ab hinc aliquot in Academia Heidelbergensis privates praelectionibus traditi* (Hanoviae: Apud Guilliemum Antonium, 1608), pp. 122-152 [UBL 650 D 9: 2]; Faber, *Totius logicae* [...] *compendium* (see footnote 3), pp. 537-542; P[etrus] van Musschenbroek, *Institutiones*

§. I.

De fonte primario argumenti nostrae disputationis.

MEntionem iniicit modi huius disputandi, Moses, Danielis filius, statim in fronte libelli sui his uerbis: היאך לישב קושיא שהוא בלא זאת או נירון ברניר אורענירשפורגר hoc est: *( et reperient in hoc libello uiam, ) quae occurrere possint obiectioni, ( quae dicitur )* בלא זאת, *siue modus disputandi Iudaeorum Norimbergensium et Ratisbonensium.* Aperte itaque hic dicit Moses Danielides, se esse docturum in opusculo suo etiam de disputationis genere, in quo Iudaei Norimbergenses et Ratisbonenses delectati quondam fuerint. Id uero in ipso suo opusculo praestare quibusdam non uisus est. Vnde quoque Bashuysenius in *addendis* suis *ad clauem Talmudicam maximam pag.* 510 *promittit*, inquit, *in hoc libro eum usus Nuremberger et Regenspurger expositurum, quod tamen his sub titulis non facit, et hinc uideri potest aliquid promittere, quod non praestat.* Et eadem pagina eadem de re sic pergit: *Quod attinet haec uocabula, crediderim multos etsi in Gemaricis exercitatissimos, tamen per totam uitam nihil de his usibus audiuisse, nec auctor nostri* סוגיות התלמוד *suo loco annotat, quid illi sint? Rationem si quaeris, haec*

Leonardus Appoltus, *Specimen academicum* […]
Dissertation Altdorff 1737.
Text in Latin with many passages in Hebrew.

*haec eſt, quia Iudaei Doctores Germani, has notiones, ut inuenerunt, ita facile exponere poſſunt* etc. Cum autem aliquoties attente hunc libellum perlegeremus, inuenimus, Moſen Danieliden fidem ſuam de explicando hoc diſputandi modo datam non fefelliſſe. In qua ſententia ſtabilienda ante omnia nunc elaborabimus.

§. II.

Omnis error, Moſen Danieliden nihil in libello ſuo de hoc diſſerendi modo tradidiſſe, ex titulo huius ſcripti minus recte intellecto, maximam partem ortus eſt. Quod ut eo facilius oſtendi poſſit, ipſum huc collocabimus, et interpretatione Latina colluſtrabimus, en eum: Initium confirmationis ſententiae noſtrae.

סוגיות התלמוד

בו תמצאו סוגיות ודרכים היאך ליישב דבר דבר על אופניו
ובו תרוה כל צמאוננם היאך ללמוד הסוגיא בחילוק דרבנן
והבחורי חמד החשובי ומופלגים ימצאו פתח היאך ליישב
קושיא שהוא בלא זאת או נירון כרגיר או רעגיר שפורגר
ושאר סוגיות ברשי והי כל מבקש מצא אל אחור פתח
השער ויראה בהקדמתו שכל כוונתי היה רק לזכות את
הרבים ובכן עושו גוסן חושו וקנו ואל כסבכם
אל תחוסו כי הוא נחמד למראה וטוב להשכיל.
נדפס פה קק זאלקווי בדפוס המשובח הרר אורי פייבש
בן מהרר אהרן הלוי זצל תחת ממשלת המלך האדיר
יאהנס ירה.

Latinus uero hic titulus per nos interpretes ita eſt: *Liber formularum atque diſputationum Talmudicarum. In quo inueniuntur formulae et modi, quibus ſingula (in Talmude) dicta ad fines ſuos referantur. Quo facto explebitur deſiderium eorum, qui cognoſcere cupiunt ſermones, quibus Rabbini diſſenſiones ſuas ſignificant. Praeterea illi, qui non ſine ſua ſingulari commendatione atque honore ſe ſtudio Talmudico*

*logicae praecipue comprehendentes artem argumentandi. Conscriptum in usum studiosae juventutis* (Lugduni Batavorum: Apud Samuelem Luchtmans et filium academiae typographus, 1748), pp. 197-206 [UBL 652 B 8]; Wyttenbachius, *Praecepta* (see footnote 3), pp. 235-238. The above-mentioned work by Keckermann was first published in the year 1605; refer to Joseph S. Freedman, 'The Career and Writings of Bartholomew Keckermann (d. 1609)', *Proceedings of the American Philosophical Society* 141, no. 3 (September 1997): pp. 305-364 (343).

5. These also included disputations held on the subject-matter of disputations themselves; for example, see Joh. Nagelius (praes.) & Leonh. Appoltus (resp.): *Specimen academicum* [...] *de modo disputandi*. Altorfii, 1737 [UBL 17 B 68]. The topic of this disputation – the manner in which Jewish teachers in Nuremberg and in Regensburg conduct disputations when teaching their students – is very unusual during the early modern period. The text thereof is written in Latin but contains many passages in Hebrew.

6. The following detailed discussion of disputations within a curriculum description for a school in Duisburg published in the year 1561 can be mentioned here: Henricus C. Geldorpius, *De optimo genere interpretandae philosophiae, in quo explicatur simul ratio atque ordo Scholae Dusburgensis* (s.l.: 1561) [UBL 20643 F 16]. Numerous curriculum plans in which disputations are discussed and cited within Joseph S. Freedman, 'Philosophy Instruction within the Institutional Framework of Central European Schools and Universities during the Reformation Era,' *History of Universities* 5 (1985): pp. 117-166.

7. Hanspeter Marti's definitions of *disputatio* (German: *Disputation*) and *dissertation* (German: *Dissertation*) point to the difficulties involved in any attempt to define each concept. His definitions are given here in full: 'Allgemein versteht man unter D[isputation] ein Streitgespräch oder eine Streitschrift, speziell die seit dem hohen Mittelalter bis zum späten 18. Jh., an Universitäten und anderen Schulen neben der Vorlesung *(lectio)* verbreitete, institutionell festverankerete Art des gelehrten Unterrichts. Die Vielfalt der Erscheinungsformen sowohl der mündlichen wie der schriftlichen D[isputation] lässt keine allgemeingültige Beschreibung ihres Ablaufs bzw. ihrer Gattungsmerkmale zu. Typisch für die Bedeutungsvielfalt des Begriffs <D[isputation]> ist, daß damit nicht bloß das Streitgespräch und die schriftliche Thesenbehandlung (Dissertation), sondern auch, obwohl selten, der Gegenstand des mündlichen Disputationsaktes bezeichnet wird.' Marti, 'Disputation' (see footnote 1): 866; 'Unter einer D[issertation] wird heute einzig die Inauguraldissertation, Hauptbedingung für den Erwerb des Doktorgrades an den Universitäten, verstanden. Deshalb wird hier vor allem auf sie und ihre Geschichte eingegangen. Bis ca. 1800 wurde jede Abhandlung <D[issertation]> genannt, die den Gegenstand einer mündlichen, auch bloß übungshalber veranstalteten Disputation vorstellte und in der Regel dem Streitgespräch als Einladungsschrift zugrundelag. Als D[issertation] konnte damals auch eine akademische Streitschrift bezeichnet werden, über die nicht disputiert wurde oder, seltener, eine Rede sowie der ganze Disputationsakt.' Marti, 'Dissertation' (see footnote 1): 880.

8. See the various title pages reprinted in this publication.

9. The online catalog of Leiden University Library provides with extant information concerning this transition of names. An online search conducted on January 12, 2005 provided the following information. An 'any word' search for *disputatio philosophica inauguralis* produced inaugural disputations held at Leiden University in the years 1642, 1660, 1661, 1662, 1663, 1664, 1665, 1667, 1669, 1670, 1671, 1672, 1676, 1679, 1680, 1681, 1684, 1685, 1688, 1690, 1693, 1698, 1702, 1703, 1707, 1721 and 1728. An 'any word' search for *dissertatio philosophica inauguralis* resulted in finding inaugural disputations held at Leiden University in the years 1725, 1728, 1730, 1734, 1743, 1745, 1751, 1753, 1764, 1766, 1769, 1774, 1780, 1790, 1808, 1818, 1822 and 1831.

10. For example, see two disputations of which Joannes Bernardus Koehler was clearly the author, although he was not identified as such. The disputations were held in 1782, in connection with his appointment as a professor of philosophy at the University of Königsberg. Joannes Bernardus Koehler (praes.) & Joannes Fridericus Usko (resp.): *Observationes criticae ad Ecclesiastes caput XII* […] *a.d. 28. Junii 1782*. Regiomonti, 1782 [UBL 17 B 61]. Joannes Bernardus Koehler (praes.) & Christianuss Woltersdorff (resp.): *Observationes criticae ad Ecclesiastes caput XII* […] . *a.d. 5 Julii 1782*. Regiomonti, 1782 [UBL 17 B 62].

11. This list of academic exercises has been extrapolated from curriculum plans, including those referred to in footnote 6 above. A relatively small number of known and extant writings were published during the early modern period that intended to provide comprehensive discussion of academic exercises; for example, refer to the following: (G)[eorgius](G)[umpelzhaimerius], *Gymnasma exercitiis academicorum ... Cui accessit, dissertatio de politico* (Argentinae: Supt. Eberhardi Zetzneri bibliop., 1621) [Wolfenbüttel, Herzog August Bibliothek: 577.1 Quodl. (1); Halle, Universitäts- und Landesbibliothek: an Ung IV A 196 (3)].

12. In the preface to a disputation held on 'The Pleasant Rhetoric of Women' it is noted that this topic, while not part of the main curriculum, is nonetheless an important topic which pertains to daily life; see Georgius Schultze, praes. and Johann-Heinrichus Stockhart, resp., *Dissertatio de blanda mulierum rhetorica, occasione axiomatis Richteriani publicae eruditorumcenturae & ventilationi exposita* […] *die – Octobr. 1678* (Lipsiae: Litris Johannis Georgii Georgii, 1678), fol. A2r-v (pp. 3-4) [Wolfenbüttel, Herzog August Bibliothek: xb 5328; Halle, Universitäts- und Landesbibliothek: 99 A 6930 (8)].

13. The Leiden disputation of Wilhelmus Reinders (resp.): *Positiones quadam inaugurales* (...) Lugduni Batavorum, 1673 [UBL 236 B 5: 100] is a broadsheet; the disputation cited in the previous footnote is over 100 pages in length.

14. For example, see Joh. Fried Hakelius: *Discursus historico-philologicus de quaestione an licitum sit foeminis oscula admittere scriptus in Acad. Lipsiensi*. Lipsiae, 1668 [UBL 17 B 73]. This discourse, about the question of whether (and under which circumstances) one is permitted to kiss a woman, is organized like many disputations of the late 17th century. No presider is named. A preface is followed by nine theses. These theses basically function as chapters, consisting in between 2 and 15 paragraphs each. The work concludes with short verse selections written by four different authors.

DISSERTATIO
MEDICA INAUGURALIS,
DE
SINGULTU.
QUAM,
ANNUENTE DEO TER OPT. MAX.
*Ex Auctoritate Magnifici Rectoris*,
D. BERNARDI SIEGFRIED ALBINI.
MEDICINÆ DOCTORIS, ANATOMES ET CHIRURGIÆ IN ACADEMIA LUGDUNO BATAVA PROFESSORIS ORDINARII.
NEC NON
*Amplissimi* SENATUS ACADEMICI *Consensu*, & *Nobilissimae* FACULTATIS MEDICAE *Decreto*,
PRO GRADU DOCTORATUS,
Summisque in Medicina Honoribus & Privilegiis ritè ac legitimè consequendis,
*Eruditorum Examini submittit*
QUIRINUS CAPPELLE, Medioburgo Zelandus.
*Ad diem* 14 *Novembris* 1738. *hora locoque solitis*.

Quirinus Cappelle, *Dissertatio medica inauguralis, de singultu*.
Dissertation Leiden 1738.

15. For example, see Joannes Guilielmus Mannagetta (praes.) & Joan. Chrysost. Irmer (resp.): *Disputatio medica de arthritide* […] Viennae Austriae, 1642 [UBL 17 B 60].

16. The writings cited in footnote 4 provide discussion of the roles of these participants.

17. For example, see Rother (see footnote 2), pp. 326–330, 450–451 and Ahsmann (see footnote 2): pp. 222–238.

18. Presider as author: Arnoldus Senguerdius (autor & praeses): *Collegium ethicum*. Amstelaedami, 1654 [UBL 611 G 26] and Franco Burgersdicius (autor): *Collegium physicum, disputationibus XXXII absolutum* […] . Lugd. Batavorum, 1637. [UBL 188 H 7: 2]. Respondent as author: Michael Hoynovius (praes.) & Abraham Everbeck (autor et respondens): *Dissertatio politica, de peregrinatione* […] Regiomonti, 1691 [UBL 17 B 63].

19. Presider as likely author: Joh. Jacobus Scheuzerus (praes.) & [13 respondents]: Συνθεω *homo diluvii testis* […] *publicae expositus .. respp. pro examine philosophico consenquendo* […] Tiguri, 1726 [UBL 17 B 54]. Respondent as likely author: Johannes Georgius Kieffer (praes.) & Fran. Dominicus Ignatus Comes a Pötting (resp.): *Dissertatio iuridica politica de legatis eorumque qualitatis munere et privilegiis* […]. Friburgi Brisgoiae, 1674 [UBL 17 B 66].

20. See Scheuzerus (footnote 19).

21. See two 18th-century examples of disputations where the opponents are named (footnote 10). An earlier disputation that I have found in which opponents are named is the following: Melch[ior] Laubanus, resp. & Salomon Paulli, resp., *Ad disputationem primam logicam de prolegomenis organi Melanchthonii problemata XII ... Opponentibus ordinariis: Abrahamo Schweltzero ... Friderico Tsirnesio* […] *Adreae Heilmanno* […] *1614 12 Jul. h[ora] 8 antemer[idiana]* (Bregae: Typis Cap[ari] Sigridi) [Zwickau, Ratsschulbibliothek: 5. 3. 30 (41)]. This disputation has been reprinted in full in Joseph S. Freedman, 'When the Process is Part of the Product: Searching for Latin-Language Writings on Philosophy and the Arts used at Central European Academic Institutions during the Sixteenth and Seventeenth Centuries.' Keßler, Eckhard and Kuhn, Heinrich C., eds. *Germania latina Latinitas teutonica. Politik, Wissenschaft, humanistische Kultur vom späten Mittelalter bis in unsere Zeit.* (München: Wilhelm Fink Verlag, 2003), Vol. 2, pp. 565-591 (576-578).

22. For example, disputations held in partial fulfillment of the requirements for the Master of Arts degree at the University of Leipzig during the years 1512-1527 and 1531-1545 are held by the Leipzig University Archive with the call numbers Philosophische Fakultät, Phil. Fak. Urkundliche Quellen B 066 and B 067, respectively.

23. For example, published disputations held at the University of Ingolstadt have been inventoried in Gerhard Stalla, *Bibliographie der Ingolstädter Drucker des 16. Jahrhunderts,* 2nd ed., Bibliotheca bibliographica Aureliana, 77 (Baden-Baden: Koerner, 1977).

OBSERVATIONES CRITICAE
AD
ECCLESIASTIS CAPVT XII.

QVAS
CVM AMPLISSIMI PHILOSOPHORVM ORDINIS
CONSENSV
PRO RECEPTIONE IN EVNDEM ORDINEM
AD DISQVIRENDVM PROPONIT
IOANNES BERNARDVS KOEHLER,
PHILOS. ET I. V. D. ET LL. CO. PROF. ORD.

*RESPONDENTE*
IOANNE FRIDERICO VSKO,
LYCCA BORVSSO,

*CONTRA OPPONENTES,*
FRIDERICVM ERDMANNVM EGNER, REGIOMONTO BORVSSVM,
CHRISTIANVM SALOMONEM SCHWEICHLER, FISCHHVSA BORVSS.

*A. D. XXVIII. IVNII MDCCLXXXII.*

REGIOMONTI,
TYPIS G. L. HARTVNGII, S. R. M. ET ACADEMIAE TYPOGRAPHI.

Ioannes Bernardus Koehler (praes.) & Ioannes Fridericus Usko (resp.),
*Observationes criticae ad ecclesiastis caput XII*.
Dissertation Königsberg 1782 (28 Iunii).
Koehler was clearly the author of this and the next disputation.
The two meetings were held in connection with his appointment as professor of philosophy at the University of Königsberg.

OBSERVATIONES CRITICAE

AD

ECCLESIASTIS CAPVT XII.

QVAS

PRO LOCO

PROFESSIONIS IN FACVLTATE PHILOSOPHICA

ORDINARIAE

SOLEMNITER EXAMINANDAS PROPONIT

IOANNES BERNARDVS KOEHLER,

PHILOS. ET I. V. D. ET LL. OO. PROF. ORD.

*RESPONDENTE*

CHRISTIANO WOLTERSDORFF,

PALAEOMARCHICO,

*CONTRA OPPONENTES,*

IOANNEM GODOFREDVM VLRICH, GVMBINNA LITHVANVM,

CHRISTIANVM SALOMONEM SCHWEICHLER, FISCHHVSA BORVSS.

*A. D. V. IVLII MDCCLXXXII.*

REGIOMONTI,

TYPIS G. L. HARTVNGII, S. R. M. ET ACADEMIAE TYPOGRAPHI.

Ioannes Bernardus Koehler (praes.) & Christianus Woltersdorff (resp.),
*Observationes criticae ad ecclesiastis caput XII*.
Dissertation Königsberg 1782 (5 Iulii).

24. For example, disputations held at the University of Franeker during the early modern period are extant at libraries both in and outside of the Netherlands; refer to Postma and Van Sluis (see footnote 1); extensive holdings of disputations held at academic insitutions in Central Europe, Estonia, Finland, Sweden, and the Netherlands (including Leiden) are held by the Stockholm Royal Library, though most of those disputations are uncatalogued to date.

25. For example, the requirement to hold style exercises (*exercitium styli*) appears regularly within extant early modern curriculum plans; yet published collections of such style exercises appear to have been quite rare.

26. For example, see Hakelius (footnote 14).

27. One of these two disputations is Petrus Molinaeus (praes.) & Hugeianus Grotius (resp.): *Physicarum disputationum septima de infinito, loco et vacuo*. Lugd. Batavorum, 1597. [UBL 236 A 5: 71]. This is one of the very few extant philosophical writings which can be attributed – at least in part – to Hugo Grotius.

28. A very early disputation on curiosity can be mentioned here: Michael Watsonius, praes. and Andreas Rose,, aut[or] & resp., *Exercitatio academica de curiositate, ut est affectus, virtus, vitium* […] *consensu* […] *facultat. philosoph. inclutae universitatis Francofurtanae ... publico erudtiorum examini proponit* […] *A. d. 6. Nov. horis matutin. in Audit. Majori, 1652.* Typis Erasmi Rösneri. [Greifswald, Universitätsbibliothek: Disp. phil. 32, 17].

29. The following book is among those that provide a good foundation for such an understanding: Günther Binding, *Architektonische Formenlehre*, 2nd ed. (Darmstadt: Wissenschaftliche Buchgesellschaft, 1987).

30. Two disputations kept in the Western Manuscripts collections of Leiden University Library: Antonius Trutius (praes.) & Petrus Pilius (resp.): *Disputatio physica de comitis*. Lugduni Batavorum, 1598. [UBL ASF 354 1: 18] and Geraertus Tuningius (praes.) & Simon Scotte (resp.): *Enuntiata ex illustri evictionis materia decerpta* […] . Lugduni Batavorum, 1598. [UBL ASF 354 1: 21].

31. Christophorus Scheiner (praes.) & Joh. Geo. Locher (resp.): *Disquisitiones mathematicae de controversiis et novitatibus astronomicis*. Ingolstaii, 1614 [Thysia 1306 : 2].

# Sixteen treasures: some remarkable dissertations from the 19th and 20th century found in the collection of Leiden University Library

Marten Hofstede (Leiden University Library)

Leiden University Library owns a collection of approx. 600.000 dissertations. An estimated 400.000 of these books, collected over the past four centuries, have not been catalogued to this date. Most of the uncatalogued dissertations have come from French and German universities. Hidden in this huge collection are thousands of interesting dissertations. They are important because they provide us with an idea of the shape and contents of the scientific debate in the last centuries. Furthermore, they reflect the range of ideas of young, upcoming scientists.

A quick search at the end of 2004 in the Leiden collection of international dissertations resulted in the discovery of about fifty books that have been hidden for more than a hundred years in the collection of non-catalogued dissertations. Various dissertations of interest were found: from the one by the novelist and playwright Luigi Pirandello (Bonn 1891) to those by the Curies (both Paris 1903), from the one by Max Weber (Berlin 1889) to that by Max Planck (Munich 1879), from Henri Bergson's Latin thesis (Paris 1889) to Albert Einstein's dissertation (Zurich 1903). The fact that these dissertations by famous scholars could still be found, indicates a possible wealth of other interesting dissertations in the Leiden collection. In this contribution sixteen scientists whose dissertations were 'rediscovered' in Leiden in 2004, will be highlighted. The dissertations will be discussed in the light of the scientists' personal and scientific background.

**Henri Bergson**
**Quid Aristoteles de loco senserit**
**Essai sur les données immédiates de la conscience**
**Dissertations Paris 1889**

When the French philosopher Henri Bergson, the son of a Polish-Jewish composer and music teacher and an English-Jewish mother, received his doctoral degree at the Sorbonne in 1889, he was already thirty years old. Since his graduation at the École Normale in 1881 as a teacher of philosophy, he had worked at several grammar schools in Angers, Clermont-Ferrand and Paris. In 1883 he had published a translation of texts of Lucretius with a commentary, of which a reprint would appear 70 years

QUID ARISTOTELES

# DE LOCO SENSERIT

THESIM

FACULTATI LITTERARUM PARISIENSI

PROPONEBAT

H. BERGSON

SCHOLÆ NORMALIS OLIM ALUMNUS

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BIBLIOTHEEK
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EDEBAT F. ALCAN, BIBLIOPOLA

M DCCC LXXXIX

Henri Bergson, *Quid Aristoteles de loco senserit*.
Dissertation Paris 1889.
The text of this dissertation is in Latin. Bergson's second 1889 dissertation (*Essai sur les données immédiates de la conscience*) is in French.
Bergson was awarded the Nobel Prize in Literature in 1927.

later, and in 1886 he published an article in the *Revue philosophique de la France et de l'Etranger,* in which he explained the ability of a hypnotised test subject to read thoughts by an enhanced eyesight: Bergson stated that the test subject had seen the characters in the book reflected in the eyes of the hypnotiser.

Bergson submitted two dissertations with the Faculty of Arts in 1889: one in Latin, titled *Quid Aristoteles de loco senserit*, an analysis and critical review of Aristotle's definition of the concept of 'place', and one that was to become one of his major works, the *Essai sur les données immédiates de la conscience.*

In this work, translated in English as *Time and Free Will*, Bergson distinguishes between time as an abstract concept, expressed spacially – on dials etc. – in homogeneous standard units, and 'experienced' or 'real' time (*temps vécu* or *durée réelle*); time is abstract, spacial and passive, duration is concrete, not imaginable in a spacial sense and active. The difference between time and duration has consequences for the question whether man has a free will: determinism, which argues that man has no real choice because his future actions stem from prior occurrences, makes use of a spacial concept of time that cannot be applied to the question of free will. We do not choose between static, given alternatives, that can be imagined as a intersections at which we can take one direction or another. Rather, if we do not follow conventions and habits, but act spontaneously from our total personality, we have the ability to live as free people. Time is real, living in this world is a creative process, as a result of which something new and unpredictable happens every moment, and not a film being played on a machine. Bergson will work out and refine his ideas about the difference between *temps* and *durée* in *Matière et mémoire* (1896) and will use them again in *Durée et simultanéité,* a critical review of Einsteins Theory of Special Relativity. Partly because of these works in the 1920s and 1930s Bergson was regarded as one of the most important philosophers of his time. His work was so influential amongst progressive French catholics, that the Vatican included his main works in the *Index librorum prohibitorum* in 1914. The French publication as well as the English translation of the *Essai sur les données immédiates de la conscience* is still for sale, and translations of his dissertation exist in Spanish, Polish, Japanese, Italian, Turkish, Russian, German and Vietnamese. Of Bergson's other dissertation, about Aristotle's concept of place, translations have been published in French, English and Japanese. His most famous work would become *L'évolution créatrice*. Bergson, who received the Nobel Prize in Literature in 1927, died in 1941 from pneumonia, which he caught after having queued several hours to be registered as a Jew.

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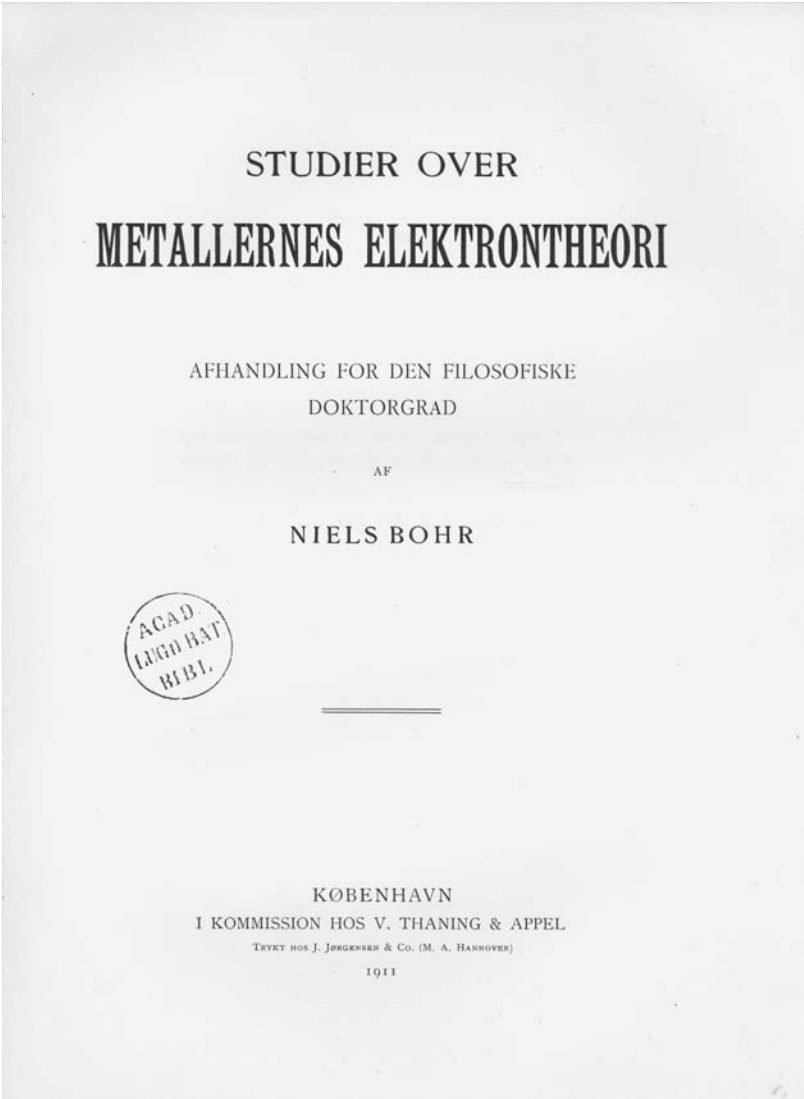

STUDIER OVER

METALLERNES ELEKTRONTHEORI

AFHANDLING FOR DEN FILOSOFISKE
DOKTORGRAD

AF

NIELS BOHR

ACAD. LUGD. BAT. BIBL.

KØBENHAVN
I KOMMISSION HOS V. THANING & APPEL
TRYKT HOS J. JØRGENSEN & CO. (M. A. HANNOVER)
1911

Niels Bohr, *Studier over metallernes elektrontheori.*
Dissertation København 1911.
Bohr was awarded the Nobel Prize in Physics in 1922.

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**Niels Bohr**
**Studier over metallernes elektrontheori**
**Dissertation København 1911**

Intellectual talent often manifests itself at an early age and in different fields. The philosopher Henri Bergson, who published a translation of texts of Lucretius with a commentary in 1883, had already, as an eighteen year old, won a prize in a competition with the solution to a mathematical problem. Nuclear physicist Niels Bohr also stood out at an early age. As a twenty year old student he won the gold medal of the Danish Academy of Sciences in 1906, with a study of the precise surface tension of liquids. Other similarities with famous scientists whose dissertations are presented in this exhibition, are notable. One of these is the intellectual background of the scientists. Max Weber, for instance, came from a family where people like Theodor Mommsen and Hermann Baumgarten were regular visitors; his younger brother, the later economist and cultural sociologist Alfred Weber also benefited from this social environment. Bohr's father, Christian Bohr, was a professor of physiology and his mother, Ellen Adler, came from a prominent Jewish family. Like the Webers, the Bohr family also had many intellectuals in its social circle: philosophers like Harald Høffding, physicist Christian Christiansen (who would become Bohr's supervisor) and philologist Vilhelm Thomsen. In this intellectual climate Niels grew up, together with his younger brother Harald, who would go on to become a famous mathematician (and as a player in the Danish soccer team won the silver medal at the 1908 Olympic Games in London!). In 1903 Niels took up studying physics at the University of Kopenhagen, and received his master's degree in 1909. His thesis, fifty pages long and written down by his mother – Niels had trouble thinking and writing at the same time – was a review of the attempts to explain the physical properties of metals (such as electrical and thermal conduction, magnetic properties etc.) from the then recent electron theory. One of the scientists that had attempted to produce such an explanation had been Lorentz, and Bohr proved in his thesis that the theoretical assumptions used by Lorentz were in coherence with neither the fundamental properties, nor the consequences of his theory.

Furthermore, Bohr came to the conclusion that magnetic properties of metals could not be explained with classical statistic physics. Until the publication of Bohr's thesis in 1972, this discovery was ascribed to J.H. Van Leeuwen.

After Bohr's critical confrontation with the way others had tried to bring electron theory into line with the physical properties of metals, the obvious next step was that he himself would make an attempt to form a better electron theory of metals. As soon as May 1911, he defended his dissertation before a commission that, according to Bohr, did not have enough knowledge on the subject to form a good judgement of it. Later it became apparent that Bohr had not succeeded in forming the ultimate theory that could explain all properties of metals; for this it was necessary to call upon Max Planck's Quantum Hypothesis, formulated in 1900.

Bohr's dissertation was written in Danish, which made it hard for foreign specialists to form a sound judgement of it. Hoping to publish an English translation and to continue his studies with the father of the electron theory, J.J. Thomson, Bohr travelled to Cambridge in 1911. However, his stay there turned out to be disappointing, due to various causes. The Cambridge Philosophical Society did not want to publish the dissertation in English, supposedly because it was too long; as a consequence the dissertation has never been published in English. Furthermore, Thomson was already occupied with other things than his electron theory – his so-called 'plum pudding' or 'raisin bread' model of the atom – and he had no time to read Bohr's dissertation. Bohr would finally find his niche after meeting New-Zealander Ernest Rutherford – instructor of a whole series of Nobel Prize winners, amongst whom Otto Hahn – who had set up a flourishing laboratory in Manchester, after having formed his "miniature solar system" model. This model presented the atom as having a positively charged nucleus and electrons that spin around it in random orbits. In Manchester, building on Rutherford's work, Bohr laid the foundations for his greatest discovery: the 'onion' model of the atom, in which electrons lie in orbits around the nucleus similar to the layers of an onion. This model, on which modern nuclear physics is based, was innovating in its time, mostly because it incorporated Planck's Quantum Hypothesis. Bohr would be rewarded for his work with the Nobel Prize in Physics in 1922. Bohr's model would only be improved by Schrödinger.

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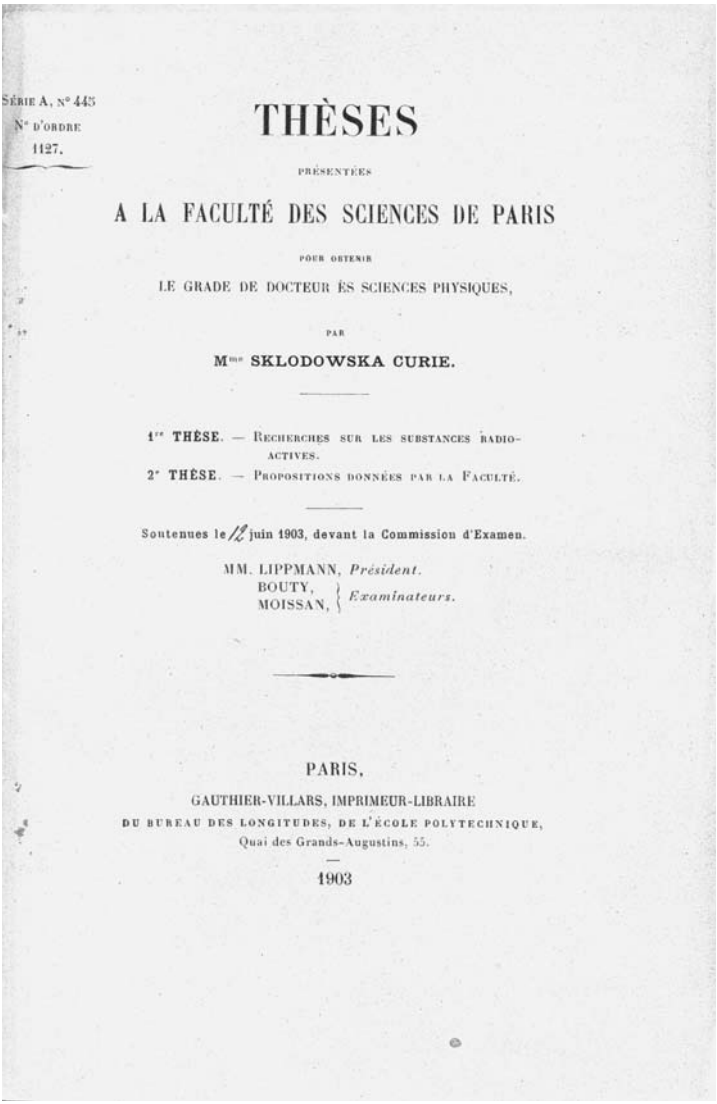
**Marie Skłodowska Curie**
**Recherches sur les substances radioactives**
**Dissertation Paris 1903**

Doctoral studies that get the researcher a Nobel Prize straight away are very rare. Marie Curie made it happen. Marie Skłodowska Curie (1867-1934) was born in Warschau. She was the daughter of a teachers couple and received her first scientific education from her father. Early on, she and her sister Bronya showed a great interest in science, and both had the ambition to study at the Parisian Sorbonne; academic studies were not attainable for women in those days in Poland. Because their parents could not afford a foreign education, the sisters agreed to help each other: first Bronya would go to Paris, supported by the money that Marie was earning as a governess, and then it would be Marie's turn. When she was twenty-four she visited Paris for the first time, having been invited by her sister and her husband, in order to study mathematics and physics. In spite of some initial difficulties, she was very happy about this: 'It was as if I entered a new world', she would write later on, 'the world of science that I had finally been allowed to get to know in freedom.' And indeed, the mathematicians and physicists whose classes she attended were prominent figures in their field: men like physicist Marcel Brillouin (1854-1948), mathematician Paul Painlevé (1863-1933), who would later hold prominent public functions, the physicist and future (1908) Nobel Prize winner Gabriel Lippmann (1845-1921) and the mathematician Paul Appell (1855-1930). Marie, who had arrived in Paris in 1891, got her physics degree in 1893, and a year later one in mathematics. It was her intention to return to Poland as soon as she had obtained her teaching qualification, but in 1894 she met Pierre, eight years older than her, who had discovered the phenomenon of piezoelectricity together with his brother Jacques and who was working as the head of the laboratory at the School for Industrial Physics and Chemistry. In 1895 they married and after receiving her teaching qualification she started working in her husband's laboratory.

In the previous decades, science had discovered radiation. Goldstein had described the phenomenon of cathode rays in 1867, Röntgen discovered a new kind of radiation in 1895 which he called X-rays, and the following year Becquerel found that radiation in uranium salts could also exist independently from light and fluorescence. Marie Curie, looking for a subject for her dissertation, decided to measure this mysterious radiation for the first time with the piezo recorder, developed by her husband and his brother.



SÉRIE A, N° 445
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# THÈSES

PRÉSENTÉES

## A LA FACULTÉ DES SCIENCES DE PARIS

POUR OBTENIR

LE GRADE DE DOCTEUR ÈS SCIENCES PHYSIQUES,

PAR

**Mme SKLODOWSKA CURIE.**

1re **THÈSE.** — RECHERCHES SUR LES SUBSTANCES RADIO-ACTIVES.

2e **THÈSE.** — PROPOSITIONS DONNÉES PAR LA FACULTÉ.

**Soutenues le 12 juin 1903, devant la Commission d'Examen.**

MM. LIPPMANN, *Président.*
BOUTY, MOISSAN, } *Examinateurs.*

PARIS,
GAUTHIER-VILLARS, IMPRIMEUR-LIBRAIRE
DU BUREAU DES LONGITUDES, DE L'ÉCOLE POLYTECHNIQUE,
Quai des Grands-Augustins, 55.

1903

Marie Skłodowska Curie, *Recherches sur les substances radioactives* […]
Dissertation Paris 1903.
Marie Skłodowska was awarded the Nobel Prize in Physics in 1903 (together with her husband Pierre Curie) and the Nobel Prize in Chemistry in 1911.

She soon discovered that thorium gives out the same radiation as uranium. Further systemetical research of various compounds revealed that radiation power did not depend on chemical compound, but solely on the amount of uranium or thorium in it. From this, Marie made the revolutionary conclusion that radiation is not a property of molecules, but of atoms. When she subsequently ran through the – then known – periodical system, she found that only uranium and thorium produced radiation.

She then decided to study natural ores that hold these two elements. It turned out that uranite or pitchblende in particular emits far more radiation than one would expect from the amount of uranium in it. The only possible conclusion from this could be that this ore contained more elements than were known up to that point. This was indeed the case. She and her husband, who was by now helping her with her research, first found the elements polonium and radium in 1898, and during the same period introduced the concept of radioactivity.

Together they continued with purifying the new-found element radium. After thousands of crystallisations Marie managed to isolate one decigram of radium chloride out of several tons of ore on March 28th, 1902. She presented her findings in her dissertation on June 25th, 1903. That same year she received, together with her husband and Henri Becquerel, the Nobel Prize in Physics for this research. In 1911 she received a second Nobel Prize, this time in chemistry, thus becoming the first scientist to win two Nobel Prizes. Marie Curie died of leukaemia in 1934, almost certainly caused by frequent exposure to large doses of radiation during her work. Pierre, who was also suffering from serious health problems, was spared this fate: he was hit by a horse-drawn cart in 1906.

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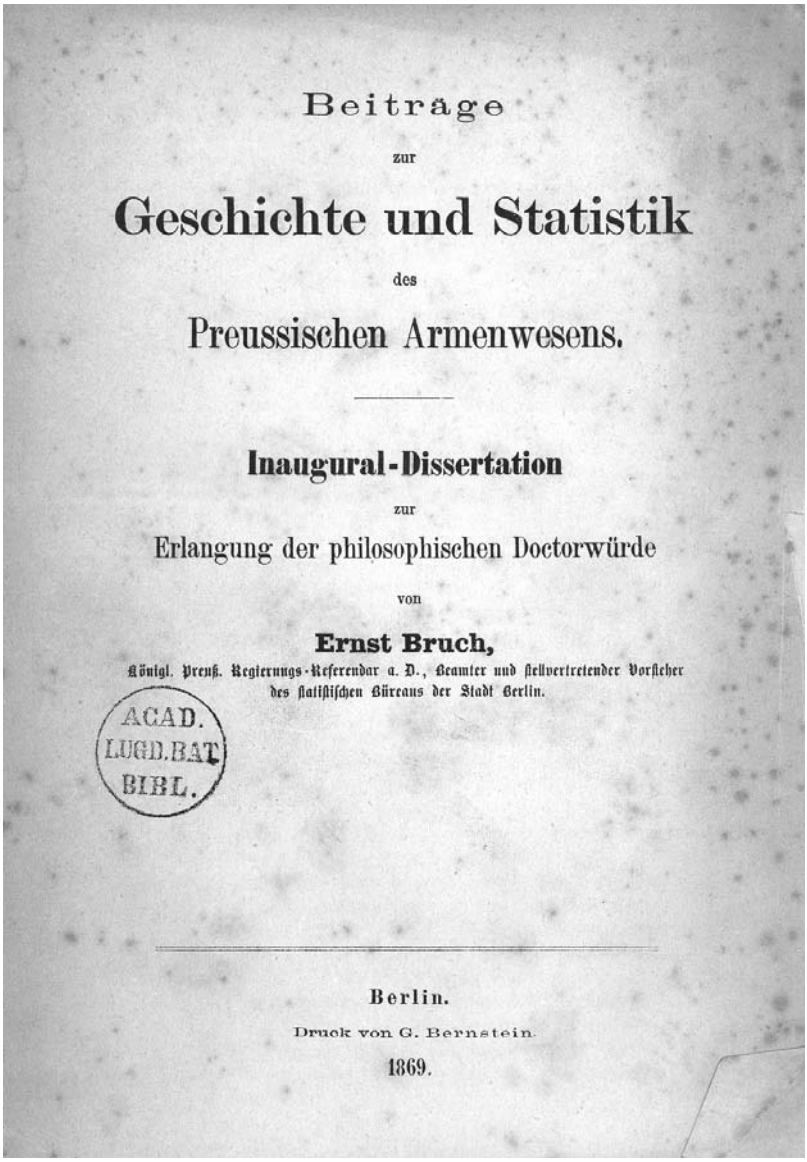
**Émile Durkheim**
**Quid Secundatus politicae scientiae instituendae contulerit**
**Dissertation Paris 1892**

The French sociologist and philosopher Émile Durkheim was born in 1858 in Epinal, Lotharingen. He was the son of a rabbi and a merchant's daughter. Initially he was destined, like his father, grandfather and great-grandfather, to become a rabbi. But already during his secondary education



Beiträge

zur

Geschichte und Statistik

des

Preussischen Armenwesens.

Inaugural-Dissertation

zur

Erlangung der philosophischen Doctorwürde

von

Ernst Bruch,

Königl. Preuß. Regierungs-Referendar a. D., Beamter und stellvertretender Vorsteher des statistischen Büreaus der Stadt Berlin.

ACAD. LUGD. BAT. BIBL.

Berlin.

Druck von G. Bernstein.

1869.

Ernst Bruch, *Beiträge zur Geschichte und Statistik des Preussischen Armenwesens*. Dissertation Berlin 1869.

he decided against this, and after having finished the Collège d'Epinal and having been awarded at the Concours Général – a French competition that existed since 1747, initially in Classical Literature and later also in French, Mathematics (1803), Natural Sciences (1830) and the Living Languages (1865) – he moved to Paris. He hoped to be admitted to the prestigious École Normale Supérieure after a period of preparation at the Lycée Louis-le-Grand. He succeeded only after his third attempt in 1879, a year after Bergson had been admitted; Durkheims talents and interests lay in the scientific and social field, rather than in the field of humanities that was being cultivated at the time at the École. Nevertheless Durkheim found people that served as examples and teachers as philosopher Boutroux and historian Fustel de Coulanges. They introduced him to the works of Comte and Kant, and he would dedicate his dissertation to them later on. Besides, Durkheim profited from his contacts with some classes of fellow students of an unusually brilliant composition. Amongst these were, in addition to Bergson, the philosophers Gustave Belot, Felix Rauh and Maurice Blondel, psychologist Pierre Janet, and in particular Jean Jaurès, with whom he would remain friends for the rest of his life.

Two years later Durkheim passed his 'agrégation', the comparative exam that provided him with a teaching qualification. He started teaching at various lycées, but was also publishing, and in 1885-1886, after consultation with the Director of Higher Education, Louis Liard, he took a year off to follow the classes of Wilhelm Wundt in Leipzig. He came into contact with German social ethics, and in 1887 he published two articles on this subject in the *Revue International de l'Enseignement* and in the *Revue Philosophique*. These articles caught the attention of the dean of the Pedagogic Faculty of Bordeaux (founded in 1882), and on his and Liard's insistence Durkheim got appointed there as 'Chargé d'un Cours de Science Sociale et de Pédagogie'. In this appointment, the French wish for a national, Republican, secular education system, that would be a match for the German system, was expressed.

As was customary in those days in France, Durkheim obtained his doctorate with two dissertations, one of which was in Latin, *Quid Secundatus politicae scientiae instituendae contulerit.* This one concerns the contribution of Montesquieu – in his *De l'esprit des Lois* – to the development of the social sciences. A French translation of this dissertation was first published in the *Revue d'Histoire politique et constitutionelle* of July-December 1937, and again in the book *Montesquieu et Rousseau. Précurseurs de la sociologie* in 1966. An electronic edition (in French) can be found at http://www.uqac.uquebec.ca/zone30/Classiques_des_sciences_sociales/classiques/Durkheim_emile/Montesquieu_Rousseau/Montesquieu/Durkheim_Montesquieu.pdf. The other dissertation, in French, was titled *De la Division du Travail Social*: *Étude sur l'Organisation des*

*Sociétés Supérieures.* This is one of Durkheim's first great works, in which he examines the transition from the archaic to the modern, industrial society (based on a large extent of specialisation), on the basis of concepts such as 'mechanical' vs. 'organic' solidarity and 'repressive' vs. 'restitutive' legislation.

Durkheim was 34 years old when he finished his dissertations. He had not yet reached the top – an appointment at the Sorbonne – but he already had some powerful supporters, and his ideas about the place of sociology among other sciences were the topic of many debates, in which he himself participated energetically.

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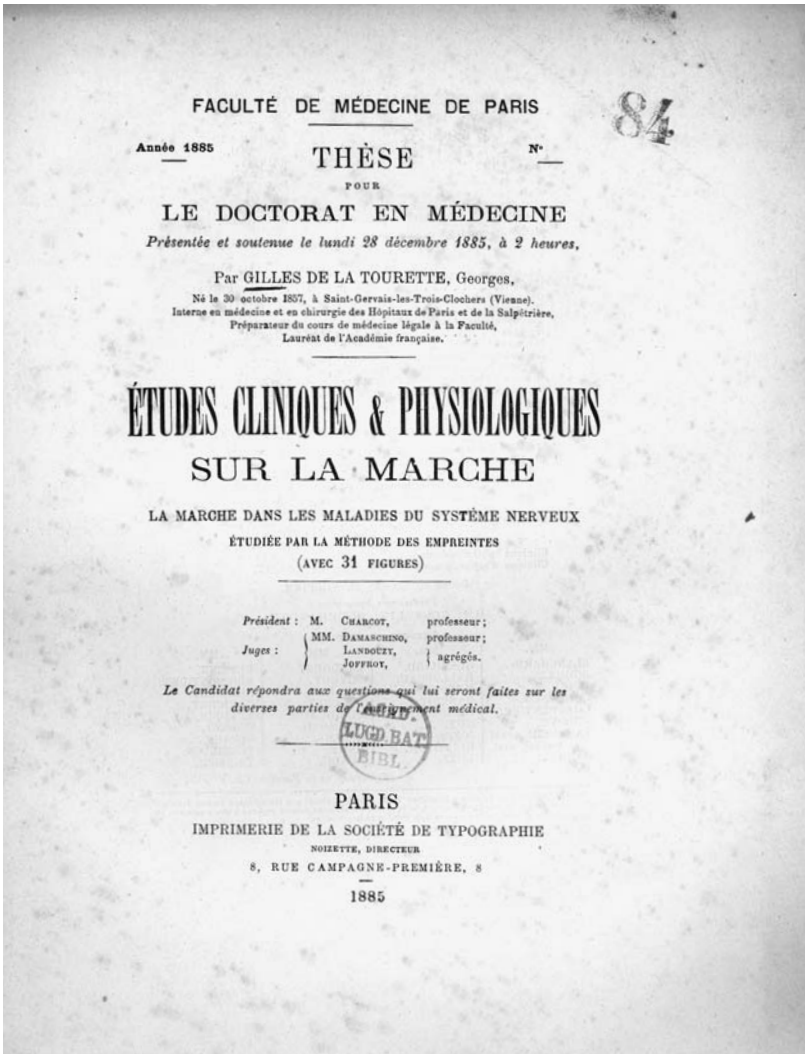
**Otto Hahn**
**Über Bromderivate des Isoeugenols**
**Dissertation Marburg 1901**

In the small selection of great scientists whose dissertations are displayed in this exhibition, there are many who came from an academic environment, and who were brought up on science. Otto Warburg, Niels Bohr and Max Weber are examples of scholars that followed in the footsteps of their fathers and sometimes even grandfathers. Their lives were, in respect to their careers at least, somewhat predictable. But sometimes life has great surprises in store, and in the life of the father of nuclear fission we find that this was certainly the case. Otto Hahn was born in 1879 as the son of a stained-glass artist and entrepreneur and a mother who came from a family of merchants. Although his father would liked to have seen him become an architect, Otto decided he wanted to study chemistry after having attended a lecture by a Frankfurter professor at his grammar school. From his days in grammar school springs a lifelong resentment of metaphysical, philosophical and religious speculations, the result of an initial interest in spiritism. In 1897 Otto commenced his study in Marburg, where he enjoyed the student life to the full. At the same time he managed to obtain a doctoral degree *magna cum laude* in 1901 with a dissertation on the effect of bromine derivates on isoeugenol.

Young Hahn had little interest in an academic career, rather he aspired



FACULTÉ DE MÉDECINE DE PARIS

Année 1885 — N° —

THÈSE

POUR

LE DOCTORAT EN MÉDECINE

*Présentée et soutenue le lundi 28 décembre 1885, à 2 heures,*

Par GILLES DE LA TOURETTE, Georges,

Né le 30 octobre 1857, à Saint-Gervais-les-Trois-Clochers (Vienne).
Interne en médecine et en chirurgie des Hôpitaux de Paris et de la Salpêtrière,
Préparateur du cours de médecine légale à la Faculté,
Lauréat de l'Académie française.

ÉTUDES CLINIQUES & PHYSIOLOGIQUES

SUR LA MARCHE

LA MARCHE DANS LES MALADIES DU SYSTÈME NERVEUX

ÉTUDIÉE PAR LA MÉTHODE DES EMPREINTES

(AVEC 31 FIGURES)

*Président* : M. CHARCOT, professeur;
*Juges* : MM. DAMASCHINO, professeur; LANDOUZY, JOFFROY, agrégés.

*Le Candidat répondra aux questions qui lui seront faites sur les diverses parties de l'enseignement médical.*

LUGD BAT BIBL

PARIS

IMPRIMERIE DE LA SOCIÉTÉ DE TYPOGRAPHIE

NOIZETTE, DIRECTEUR

8, RUE CAMPAGNE-PREMIÈRE, 8

1885

Georges Gilles de la Tourette,
*Etudes cliniques & physiologiques sur la marche* […].
Dissertation Paris 1885.

to a job in the chemical industry. In order to be employed in a chemical company, with which his professor, Zincke, could help him, it was necessary for him to learn English. Therefore he ended up in England, with a letter of recommendation from Zincke to Sir William Ramsay, who was the head of a laboratory at the University College in London. Ramsay was interested in radioactivity and gave his German visitor something to do by asking him to isolate the approximate 9 milligrams of radium from 100 grams of barium salt using Marie Curie's methods. By doing this, he made his first groundbreaking discovery: the barium salt contained not only radium, but also a radioactive isotope of thorium, which he named radiothorium. This discovery encouraged Hahn's interest in radiochemistry, and when Ramsay offered him a research position with his friend Emil Fischer in Berlin, he readily accepted. First, however, he spent one year at the McGill University in Montreal, Canada, under the guidance of Ernest Rutherford, in order to further understand the phenomenon of radioactivity. During his stay in Canada he made new discoveries (radioactinium), but perhaps more importantly he was permanently influenced by Rutherford, who was known for his pragmatic, open and amicable style.

In the fall of 1907 Hahn took up his work in Berlin, where he had to start from scratch, having only been provided by Emil Fischer with an empty carpenter's workshop for his experiments. Fischer was, like Hahn, originally an organic chemist, and in Berlin only the physicists were interested in radioactivity. Amongst these were Max von Laue, Otto von Baeyer and in particular Lise Meitner, with whom he would work together for thirty years and bring out fifty publications. In the course of the following decades they discovered (together and separately) mesothorium, nicknamed "German radium", that would play a large part in medicine as a cheaper alternative to radium, protactinium, and uranium Z, the first case of nuclear isomery of radioactive kinds of atoms. They also constructed the first beta radiation spectrometer and rediscovered the phenomenon of "radioactive recoil" (which had already been discovered in 1904 by the Canadian Harriet Brooks, but was wrongly interpreted at the time). Together with Fritz Strassmann, with whom he would also discover the nuclear fission of uranium at a bombardment with neutrons, he further developed the rubidium-strontium method for dating stones.

During World War I, Hahn was involved, along with amongst others Gustav Hertz, with the development of poisonous gases and their antidotes in the Kaiser Wilhelm Institut of Fritz Haber in Brussels.

He received the Nobel Prize in Chemistry in 1944. After the war he dedicated himself to the cause of (nuclear) disarmament. He passed away in 1968.

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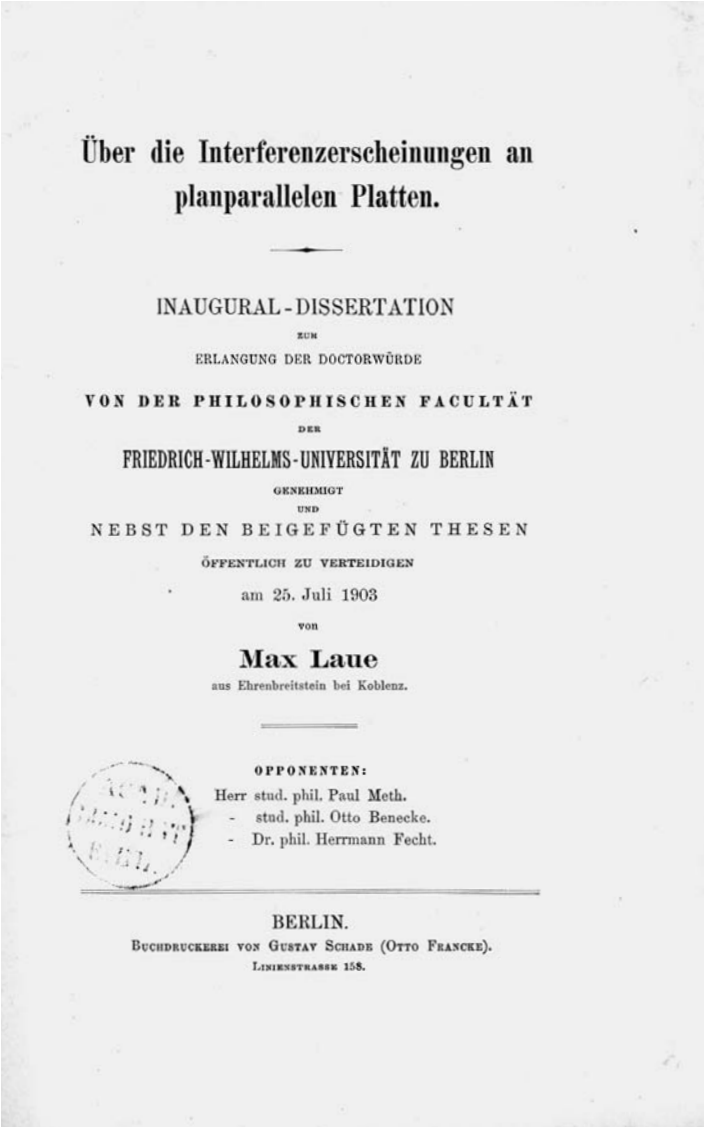
**Max [von] Laue**
**Über die Interferenzerscheinungen an planparallelen Platten**
**Dissertation Berlin 1903**

Max Laue – Max von Laue after his father, a prominent public servant, had been ennobled in 1913 – was born in 1879 in Ehrenbreitstein, near Koblenz. He started his physics study in 1898 during his military service in Strasbourg, but moved to Göttingen the following year, where he specialised in theoretical physics and became interested in optics. From 1902 onward he studied in Berlin under Max Planck, whose favourite student he would become, and followed the classes of Otto Lummer on interferential spectroscopy and heat radiation for three semesters. This inspired him with the topic of his dissertation, with which he obtained his Ph. D. degree in 1903 under Max Planck: *Über die Interferenzerscheinungen an planparallelen Platten.* After passing his 'Staatsexamen für das Höhere Lehramt' in Göttingen, which provided him with a teaching qualification for secondary education, he was invited by Max Planck to come back to Berlin in 1905. There he became an assistant at the Institute of Theoretical Physics. He submitted his *Habilitationsschrift,* titled *Zur Thermodynamik der Interferenzerscheinungen*, in 1906. In the same year he met Albert Einstein. Von Laue was one of the first to provide experimental proof of Einstein's Theory of Special Relativity in 1910, and was the first to write an extensive monography on this subject. In 1909 Von Laue moved to Munich. He became an unsalaried university lecturer at the Institute of Theoretical Physics, and made the discovery that would yield him the Nobel Prize in Physics two years later: he discovered diffraction of X-rays through crystals, which confirmed that X-rays are in fact electromagnetic rays with a very short wavelength, as well as that the characteristic property of crystals is a regular atomic structure. Laue would remain friends with Planck as well as Einstein for the rest of his life. On the recommendation of Planck he became a member of the Prussian Academy of Sciences in 1921. In 1933, in this position and as Chairman of the German Scientific Society, he opposed the repression of the new physics of Einstein and Planck, as it was conducted by scholars such as Johannes Stark (see below). After 1934, when Stark was appointed chairman of the 'Deutsche Forschungs Gemeinschaft', Von Laue lost much of his influence, but after the war he played an important role in the reconstruction of German science. He died in 1960 after a car-accident.



# Über die Interferenzerscheinungen an planparallelen Platten.

INAUGURAL-DISSERTATION

ZUM

ERLANGUNG DER DOCTORWÜRDE

VON DER PHILOSOPHISCHEN FACULTÄT

DER

FRIEDRICH-WILHELMS-UNIVERSITÄT ZU BERLIN

GENEHMIGT

UND

NEBST DEN BEIGEFÜGTEN THESEN

ÖFFENTLICH ZU VERTEIDIGEN

am 25. Juli 1903

von

**Max Laue**

aus Ehrenbreitstein bei Koblenz.

OPPONENTEN:

Herr stud. phil. Paul Meth.
- stud. phil. Otto Benecke.
- Dr. phil. Herrmann Fecht.

BERLIN.

BUCHDRUCKEREI VON GUSTAV SCHADE (OTTO FRANCKE).

LINIENSTRASSE 158.

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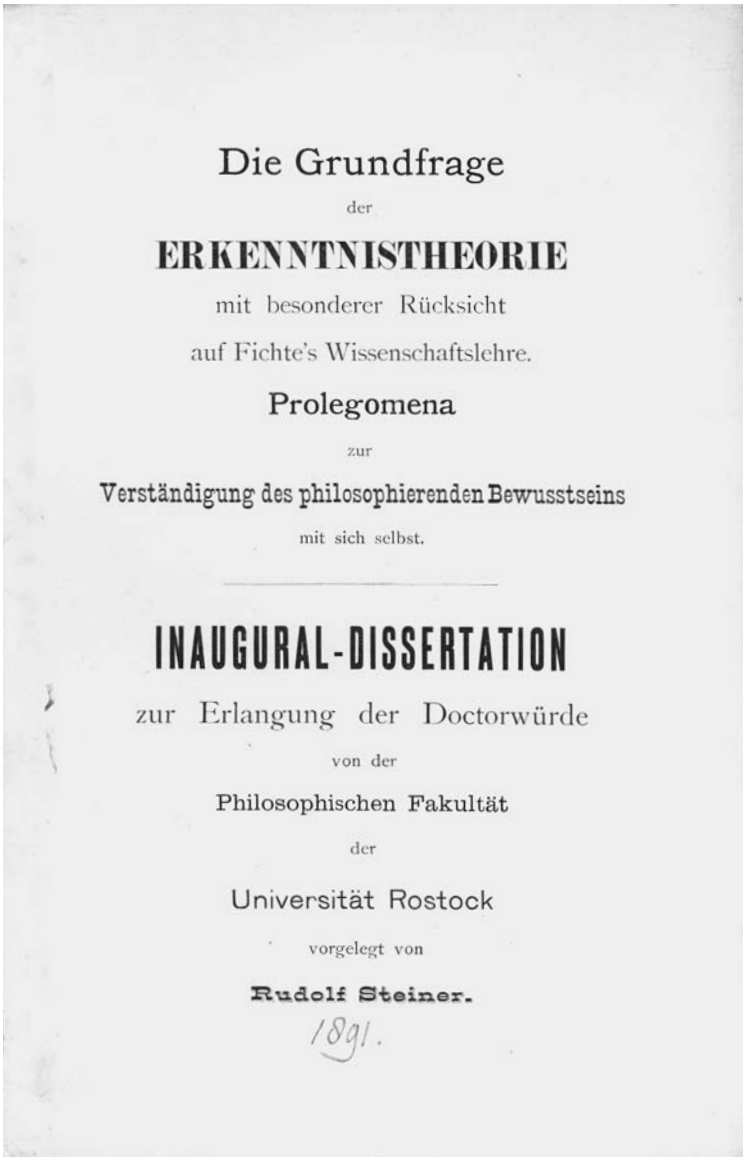
## Kurt Lewin
## Die psychische Tätigkeit bei der Hemmung von Willensvorgängen und das Grundgesetz der Assoziation
## Dissertation Berlin 1916

*'There is nothing so practical as a good theory.'*
Kurt Lewin was born in 1890 in Mogilno, in the Prussian province Posen, nowadays in Poland. He came from a not so well-off middle-class Jewish family. His father ran a shop and owned a small farm, where young Kurt frequently stayed; his mother helped out in the shop and raised four children.

The Lewins had great plans for their children. They moved to Berlin in 1905 and sent Kurt to the Kaiserin Augusta grammar school. In the final two years he turned out to be an excellent student, and it was obvious that he would continue studying after he had finished in 1909: medical studies in Freiburg. He couldn't bear the anatomy lessons, so he made a transition to biology. Next he changed from studying at Freiburg to Munich, and in 1910 we find him in Berlin, where he finally found the study that suited him: psychology. He decided on an academic career as a university lecturer, and from then on he followed the lectures of Carl Stumpf at his Laboratory of Psychology.

Stumpf himself was a student of the phenomenologist Franz Brentano and of the philosopher Herman Lotze, and had several students who would go on to become famous: amongst these were Edmund Husserl and two founders of Gestalt Psychology, Wolfgang Köhler and Kurt Koffka.

Like his colleague Wilhelm Wundt in Leipzig, Stumpf belonged to the experimental school of thought amongst psychologists, and because Lewin's interests inclined more towards natural sciences than towards philosophy, it was logical that he chose Stumpf as his *Doktorvater*. One should not picture the term "Vater" as something we would see nowadays: Lewin told about the contact with Stumpf about the topic of his dissertation to his



Die Grundfrage

der

ERKENNTNISTHEORIE

mit besonderer Rücksicht

auf Fichte's Wissenschaftslehre.

Prolegomena

zur

Verständigung des philosophierenden Bewusstseins

mit sich selbst.

INAUGURAL-DISSERTATION

zur Erlangung der Doctorwürde

von der

Philosophischen Fakultät

der

Universität Rostock

vorgelegt von

Rudolf Steiner.

1891.

Rudolf Steiner, *Die Grundfrage der Erkenntnistheorie* […].
Dissertation Rostock 1891.

biographer Alfred Marrow that while an assistant was presenting Lewin's dissertation topic to the professor, Lewin had sat waiting for the answer in another room. Between the moment that the assistant returned with a positive answer and the moment of the final ceremony four years later, the topic had not been discussed by the doctoral student and his supervisor. Apart from Stumpf, Lewin was also influenced by the Neo-Kantian philosopher Ernst Cassirer, also a Jew, with whom he took a course in Philosophy in 1910. He learned from Cassirer that the 'researcher, in order to get away from the limitations of a certain knowledge level, had to break the methodological taboos that dismiss exactly those ideas that afterwards turn out to be essential for the next big step forward as 'unscientific' or 'illogical'. In Lewin's dissertation the influence of Stumpf and the experimental school he supported, and the influence of Cassirer is clearly visible. His dissertation was followed by a *Habilitationsschrift* (published in 1922) titled *Der Begriff der Genese in Physik, Biologie und Entwicklungsgeschichte*. This would get him a position as a teacher at the Institute of Psychology of the Friedrich Wilhelms (nowadays Humboldt) University.

Lewin received his doctoral degree in 1916, although the research for his dissertation had already been finished in 1914. The reason for this was that he signed up for the military as a volunteer in World War I as one of many German Jews. He was wounded in the war and lost a younger brother. Hardly twenty years later he was one of the many German psychologists who had to leave their country because of the racist *Beamtengesetze* of 1933.

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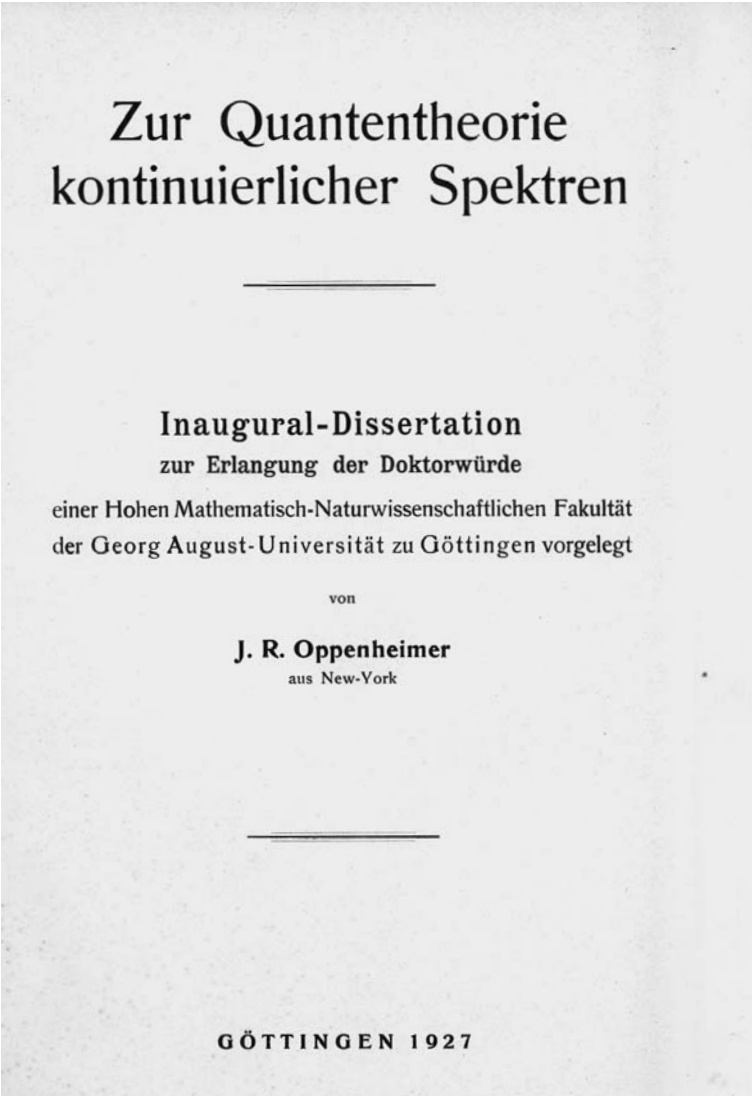
**J. Robert Oppenheimer**
**Zur Quantentheorie kontinuierlicher Spektren**
**Dissertation Göttingen 1927**

The 'father of the atomic bomb', J. (he received this initial to add distinction to his name) Robert Oppenheimer was born in New York in 1904 as the son of a wealthy clothing manufacturer who had, as a seventeen year old, emigrated from Germany to the US in 1888. His mother, Ella Friedman, was also from German-Jewish descent, but her family had been living in America for several generations. She was a painter and gave lessons in her own studio. From an early age, Robert was a somewhat clumsy, sickly, but



# Zur Quantentheorie kontinuierlicher Spektren

**Inaugural-Dissertation**

**zur Erlangung der Doktorwürde**

einer Hohen Mathematisch-Naturwissenschaftlichen Fakultät
der Georg August-Universität zu Göttingen vorgelegt

von

**J. R. Oppenheimer**
aus New-York

**GÖTTINGEN 1927**

J.R. Oppenheimer, *Zur Quantentheorie kontinuierlicher Spektren*.
Dissertation Göttingen 1927.
In June 1942, J. Robert Oppenheimer was appointed director of the Manhattan Project to work on the problem of creating an atomic bomb.

also brilliant and extremely curious book worm. In school he was as interested in Greek as he was in chemistry, but he was also a keen sailor.

In 1922 he went to Harvard, where he started studying Chemistry, but switched to Physics in his second year. Three years later, in spite of a programme that also included the classical languages he obtained his Bachelor's degree *summa cum laude.* In the fall of 1925, when he was twenty-one, he made the journey to Cambridge to continue his studies in the famous Cavendish Laboratory with men like Joseph Thomson and Ernest Rutherford. He only stayed there a short time, but he did publish two articles about the virtually unexplored field of quantum mechanics, in which scholars such as Heisenberg, Dirac and Schrödinger had only recently taken their first steps. By invitation of Max Born he went to Göttingen in 1926, where he continued his research of transitions in the continual spectrum, and where he, together with Born, developed the so-called 'Born-Oppenheimer Approach', at present one of the classic chapters in quantum theory. In the meantime he was reading Dante in Italian as a pastime, together with Fritz Houtermans and George Uhlenbeck, after having taught himself Italian in a month. The oral examination for his doctoral degree, the 'rigorosum' or 'viva voce', he did when he was barely twenty four on May 11th 1927, after having published his dissertation as an article in the *Zeitschrift für Physik* in 1926.

Having spent some more time in Europe – for instance, with Paul Ehrenfest in Leiden –, Oppenheimer decided to return to America in 1929, where he became a professor at the University of California in Berkeley and the California Institute of Technology. In the next thirteen years he proved himself to be not only a brilliant researcher, but also an outstanding teacher.

Oppenheimer has become particularly famous as Scientific Director of the Manhattan Project, which designed and tested the first atomic bomb, and because of his initial resistance to the development of a hydrogen bomb, that would ultimately cost him his 'security clearance' at the Atomic Energy Commission.

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**Luigi Pirandello**
**Laute und Lautentwickelung der Mundart von Girgenti**
**Dissertation Bonn 1891**

The Italian writer, playwright and poet Luigi Pirandello grew up on Sicily, where he was born in 1867 in the region of Caos, near Agrigento. On his father's side he came from a family of traders in typical Sicilian products, such as citrus fruits and sulfur. His father was managing a sulfur mine that his brother had rented, and Luigi was to follow in his footsteps. In the summer of 1886, when he had already shown literary aspirations, he was working in the sulfur mines, leading a hard life; it would leave a mark on his work. At the end of that summer he enrolled as a Law student at the University of Palermo. Soon, however, he moved to Rome and changed his law study for a study in literature. But this also did not appeal to him, and when one of his professors advised him to move to Bonn to follow a course in Romanistics with Friedrich Dietz, he took this advice. From 1889 he stayed in Germany and received his doctoral degree, about the dialect of his native region, in 1891. In addition he was publishing literary articles in a Florentine journal. He continued writing – supported financially by his family – after he had returned to Rome in 1892 after a short lectureship in Bonn. In 1894 he married the daughter of a wealthy Italian sulfur trader whom he had not met before, at the instigation of his family. The couple settled down in Rome, where Pirandello, when his father could no longer support him, accepted a job as a teacher at the Instituto Superiore di Magistero Femminile. Seven years later his father went bankrupt.

Luigi's wife Antonietta suffered a mental breakdown that would worsen in the following years. Her paranoid jealousy forced Pirandello to lead a hermitlike existence, and he and his family would be terrorised by Antonietta for the next fifteen years, until he could get her admitted to an institution. Some say that traces of these events can be found in his work, which comprised until 1916 mostly poetry, novels and short stories, and after that also many plays. His most famous plays are *Six Characters in Search of an Author* and *Henry IV.*

'Each of us, face to face with other men, is clothed with some sort of dignity, but we know only too well all the unspeakable things that go on in the heart.'

'Whatever is a reality today, whatever you touch and believe in and that seems real for you today, is going to be – like the reality of yesterday – an illusion tomorrow.'

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# Laute und Lautentwickelung

der

# Mundart von Girgenti.

**Inaugural-Dissertation**

zur Erlangung der Doktorwürde

bei der

**Philosophischen Fakultät**

der

**Rheinischen Friedrich-Wilhelms-Universität zu Bonn**

eingereicht und mit den beigefügten Thesen verteidigt

**am 21. März 1891, Mittags 12 Uhr**

von

**Luigi Pirandello**

aus Girgenti.

**Opponenten:**

Jean Etienne Lork, Dr. phil.
Franz Pütz, cand. phil.

Halle a. S.,
Druck der Buchdruckerei des Waisenhauses.
1891.

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Pirandello was awarded the Nobel Prize in Literature in 1934.

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**Max Planck**
**Über den zweiten Hauptsatz der mechanischen Wärmetheorie**
**Dissertation München 1879**

Max Planck, born in Kiel in 1858, descended from a family of clergymen and jurists. His father, Johann Julius Wilhelm von Planck, was a professor of Civil Law in Kiel, but was appointed in Munich when Max was nine years old, so that Max would receive the larger part of his education there at the Königliche Maximilian-Gymnasium. He was a versatile boy, with a gift for music and talented not only in mathematics and physics, but initially even more in philology and theology. After graduating from grammar school in 1874, he enrolled with the university of Munich as a student of Mathematics and Physics and followed classes with, amongst others, Gustav Bauer, Ludwig Seidel and Wilhelm Beetz.

In 1877 he moved to Berlin, where he followed classes with Weierstrass, Kirchhoff and Helmholtz, and studied Rudolf Clausius' *Mechanische Wärmetheorie* on his own. Thermodynamics, especially the Law of Entropy, would be the topic of his dissertation, with which he graduated *summa cum laude* as a Doctor of Philosophy at the University of Munich in 1879. Before this he had already passed his 'Staatsexamen für das Höhere Lehramt', which provided him with teaching qualifications in maths and physics.

A year later it became apparent that he aspired to an academic career, when he obtained his *venia legendi* at the University of Munich with a *Habilitationsschrift* titled *Gleichgewichtszustände isotroper Körper in verschiedenen Temperaturen.* For the next five years he worked as an unsalaried lecturer at the University of Munich, while living with his parents. This only ended when, in 1885, he was appointed extraordinary professor of Theoretical Physics in his place of birth Kiel.
Thermodynamics would continue to fascinate him during his further career. In 1888 he became the successor of Kirchhoff at the University of Berlin and the Director of the Institute of Theoretical Physics – founded especially for him – a post he held until 1926. Planck is particularly famous for his contribution to quantum physics – for which he received a Nobel Prize in Physics in 1918. This contribution is summarised in the formula E = h*f,

ÜBER DEN

ZWEITEN HAUPTSATZ

DER

MECHANISCHEN WÄRMETHEORIE.

INAUGURALDISSERTATION

ZUR ERLANGUNG DER PHILOSOPHISCHEN DOCTORWÜRDE
AN DER K. UNIVERSITÄT MÜNCHEN

VON

MAX PLANCK.

MÜNCHEN.
THEODOR ACKERMANN.

1879.

Max Planck, *Über den zweiten Hauptsatz der mechanischen Wärmetheorie*.
Dissertation München 1879.
Max Planck was awarded the Nobel Prize in Physics in 1918.

in which the relationship between the energy level E of a photon and the frequency F of the belonging electromagnetic wave is expressed in h, the 'universal' constant of Planck, named after, indeed, Max Planck.

Also Planck's life did not remain untouched by the turmoil of his time. It should be mentioned that one of Planck's sons was executed as one of the conspirators in the failed assault on Hitler's life in 1944.

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**Helmuth Plessner**
**Vom Anfang als Prinzip der Bildung transzendentaler Wahrheit: Begriff der kritischen Reflexion**
**Dissertation Erlangen 1916**

The German philosopher and sociologist Helmuth Plessner (1892-1985) belonged to a generation of scholars who, from 1933, were forced to emigrate because of Hitler's *Beamtengesetze*. Like Kurt Lewin he had signed up as a volunteer in the First World War, but was declared unfit for military service because of a stunted right arm. Jewish on his father's side, he was fired at the University of Cologne, where he had been an extraordinary professor from 1926, and he fled to Istanbul. After an invitation of his friend, physiologist and psychologist F.J.J. Buytendijk, he moved to Groningen in the Netherlands, where he initially worked in Buytendijk's physiological laboratory. After having been in hiding during the war, he became a professor of philosophy at Groningen University from 1946 to 1952. Later on he teached in Göttingen, New York and Zurich.

Plessner was born in 1892 in Wiesbaden as the son of a physician. After grammar school he started studying Zoology in Freiburg im Breisgau, but moved, already after two semesters, to Heidelberg, where he concentrated on Philosophy. As a student of the neovitalist Hans Driesch (1867-1941) he was researching the light sensitivity of a lobster species in the daytime, while at night he was working on his first philosophical essay, *Die wissenschaftliche Idee. Ein Versuch über ihre Form.* Although he submitted this to the Neo-Kantian Wolfgang Windelband, he dedicated the book to Driesch, through whom he had met, amongst others, Max Weber and the theologist and historian Ernst Troeltsch. Both of them – Weber with his religious-sociological views and Troeltsch with his historistic notions –

have had a great influence on Plessner's firstling, along with the phenomenology of Husserl. The topic strikes one as a current one: 'Wenn Plessner in der *Idee* von 1913 die Frage nach dem Wesen und Wirken des gesellschaftlich institutionalisierten Fortschritts nachzuvollziehen versucht und dieses Thema in einer kleineren Arbeit im Kriegsjahr 1916 als politisch hochbrisantes Phänomen der Modernität begreift, eröffnet sich eine historische Perspektive. Mit Blick auf den Islam erscheint Plessner die aus dem christlichen Europa hervorgegangene Modernisierung als zielloser Wirtschaftskolonialismus. Die traditionszerzetzenden dieser globalen Modernisierung führen zu politischen Konflikten, die, so Plessner 1916, wiederum nur im Rahmen einer interkulturellen Politik zu bewältigen seien.' (Schüssler, p. 13, cf. p. 19).

Plessner did not take his doctoral degree in Heidelberg, but in Erlangen in 1916 with Paul Hensel, a student of Windelband, with a dissertation with the title *Krisis der transzendentalen Wahrheit im Anfang*, which was published two years later. After becoming an unsalaried university lecturer at the newly founded university of Cologne in 1920, he submitted his *Habilitationsschrift* titled *Untersuchungen zu einer Kritik der philosophischen Urteilskraft* in the same year.

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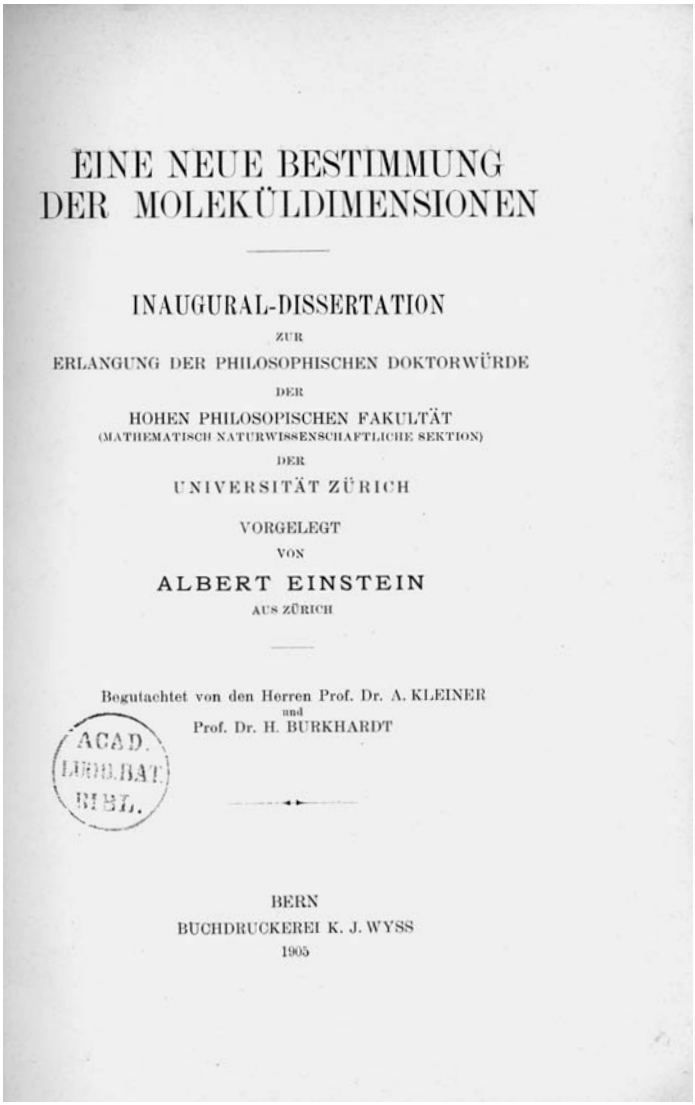
**Johannes Stark**
**Untersuchungen ueber einige physikalische, vorzüglich optische Eigenschaften des Russes.**
**Dissertation München 1897**

Johannes Stark (1874-1957), born in Schickenhof (Bavaria), came from a prominent family of landowners and farmers. During his secondary education at the grammar schools in Kaltenbrunn and Regensburg he was interested in philology, philosophy, theology, and physics. In 1894 he graduated at the University of Munich under professor Von Lommel in mathematics and physics. As early as 1897 he received his doctoral degree *summa cum laude* with physics as main subject and mathematics and mineralogy as subsidiaries. His *Inauguraldissertation* was titled 'Untersuchungen über einige physikalische, vorzüglich optische Eigenschaften des Russes'.

After having worked as Von Lommel's assistant, Stark became an unsalaried lecturer at the University of Göttingen in 1900. In 1899 Stark had already published an article about the transport of electric steam through



EINE NEUE BESTIMMUNG
DER MOLEKÜLDIMENSIONEN

INAUGURAL-DISSERTATION
ZUR
ERLANGUNG DER PHILOSOPHISCHEN DOKTORWÜRDE
DER
HOHEN PHILOSOPISCHEN FAKULTÄT
(MATHEMATISCH NATURWISSENSCHAFTLICHE SEKTION)
DER
UNIVERSITÄT ZÜRICH

VORGELEGT
VON
ALBERT EINSTEIN
AUS ZÜRICH

Begutachtet von den Herren Prof. Dr. A. KLEINER
und
Prof. Dr. H. BURKHARDT

ACAD.
LUGD.BAT.
BIBL.

BERN
BUCHDRUCKEREI K. J. WYSS
1905

Albert Einstein, *Eine neue bestimmung der Moleküldimensionen*.
Dissertation Zürich 1905.
This is Einstein's first published book. Einstein was awarded the Nobel Prize in Physics in 1921.

gases, and in 1905 he made his first great discovery, for which he received the Nobel Prize in Physics: the existence of the Doppler Effect in canal rays. After this discovery, Stark obtained appointments as extraordinary professor at the Technische Hochschule in Aachen in 1906 and as professor at the University of Greifswald in 1917. Before that, he had made another major discovery in Aachen, the splitting of spectral lines in an electric field (the 'Stark Effect', as a pendant of the 'Zeeman Effect' in a magnetic field). In the same year he made a correction in a law that had been formulated by Einstein in 1912, which said that every molecule subject to a photochemical reaction will only absorb one quantum (photon) of the radiation caused by the reaction. Since then, this Second Law of Photochemistry has been known as the 'Stark-Einstein law'. In 1920 he moved to the Institute of Physics at the university of Würzburg, where he stayed until 1922. After this he attempted to set up a porcelain factory, but failed.

Ever since winning the Nobel Prize in 1919, Stark had been on the downgrade. As experimental physicist he became more and more opposed to both the theoretical directions taken by Einstein and Heisenberg's and Planck's quantum mechanical ideas. This was accompanied by strong anti-Semitic feelings. After having joined the NSDAP, he was appointed President of the Physikalisch-Technische Reichsanstalt (PTR) in Berlin; in addition the Nazis pitchforked him into the job of president of the Deutsche Forschungs Gemeinschaft (also see Max Laue). After the war he was sentenced to four years in prison by a war tribunal.

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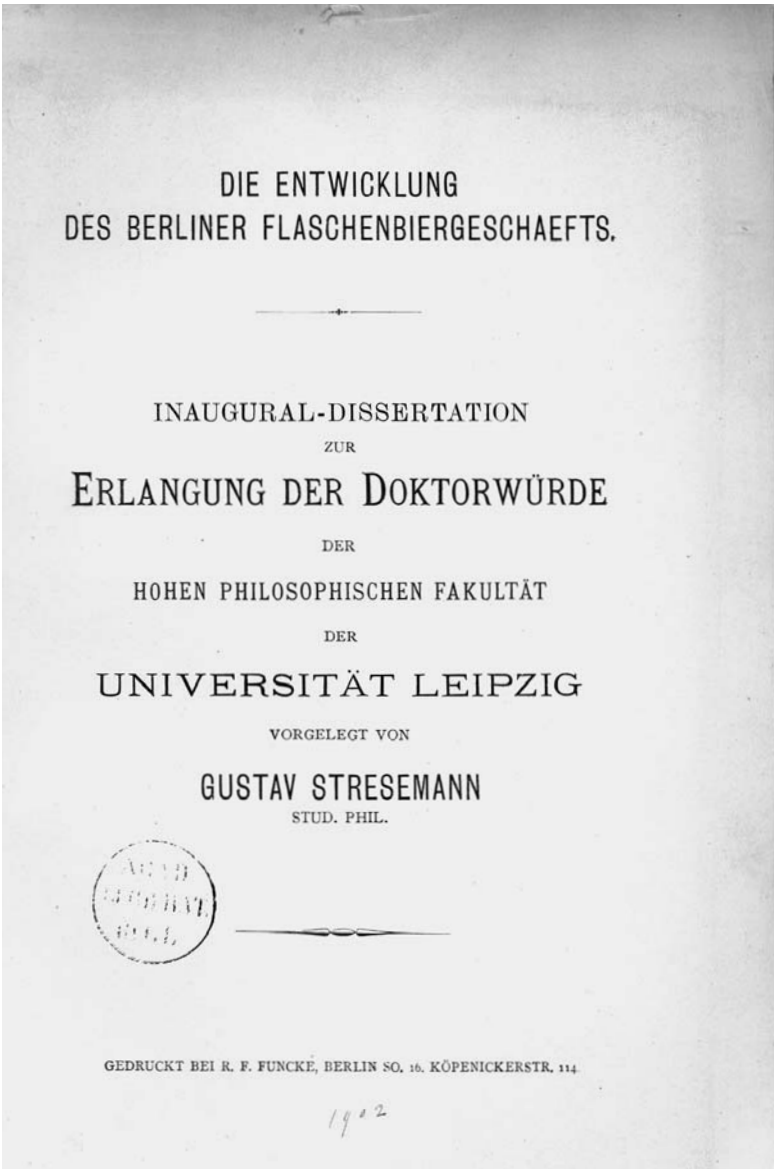
http://www.nobel.se/physics/laureates/1919/stark-bio.html

**Gustav Stresemann**
**Die Entwicklung des Berliner Flaschenbiergeschaefts**
**Dissertation Leipzig 1902**

Gustav Stresemann, the German statesman, is known for signing the Treaty of Locarno (1925), together with Austen Chamberlain and Aristide Briand. For this he and Briand received a Nobel Prize in 1926 (Chamberlain had already received his in 1925). Furthermore, he realised Germany's accession to the League of Nations. He did not come from an intellectual, but from a middle-class environment: his father ran a wine shop/bottle plant.



DIE ENTWICKLUNG
DES BERLINER FLASCHENBIERGESCHAEFTS.

INAUGURAL-DISSERTATION
ZUR
ERLANGUNG DER DOKTORWÜRDE
DER
HOHEN PHILOSOPHISCHEN FAKULTÄT
DER
UNIVERSITÄT LEIPZIG
VORGELEGT VON
GUSTAV STRESEMANN
STUD. PHIL.

GEDRUCKT BEI R. F. FUNCKE, BERLIN SO. 16. KÖPENICKERSTR. 114.

1902

Gustav Stresemann, *Die Entwicklung des Berliner Flaschenbiergeschaefts.* Dissertation Leipzig 1902.

Perhaps it is due to this (or thanks to this) that Stresemann did not end up in science, but first in commerce and then in politics. He was a quiet and serious child, who was always at his books and who was especially interested in poetry – from which he drew his ideals of 1848 – from his grandfather's collection.

In 1897 Stresemann started studying in Berlin, where he took classes in History and Literature and in addition Philosophy and National Economics. He aimed for an academic, or alternatively, a journalistic career. He joined a liberal fraternity, Neogermania, where he developed his rhetorical and leadership skills. Neogermania was affiliated with the national 'Allgemeine Deutsche Burschenbund' (ADB), where he acted as chairman of the general assembly in 1898. During this time, Stresemann was already writing for the reformist 'Allgemeine Deutsche Universitätszeitung'.

In the fall of 1898 he moved to Leipzig, where once again he became Erste Chargierter with a fraternity, Suevia. But most of all he devoted himself to his study, choosing national economy as main subject because it offered him the best prospects. He would have liked to do his doctoral research on a general theoretical topic, but his professor, Karl Bücher, preferred a more detailed study. Therefore Stresemann chose as a subject the development of the Berlin bottle plant as an example of the cutting out of distributive trades by large breweries, something that he had seen happening over the past few years with his own father's business. In that same period he wrote an article about 'Die Warenhäuser: ihre Entstehung, Entwicklung und Volkswirtschaftlicher Bedeutung', which was published in the *Zeitschrift für die gesamte Staatswissenschaft.*

After getting his doctoral degree, Stresemann became an assistant at the Employer's Federation of German Chocolate Manufacturers in 1901. The knowledge and experience he had obtained during his doctoral research was very useful to him here. The chocolate manufacturers had to cope with a cartel of sugar suppliers that demanded high prices; Stresemann suggested that they would set up a joint factory, just as he had advocated a co-operation of small wine shops/bottle plants against large breweries in his dissertation. Although his career would not develop in a scientific direction, his doctoral research turned out to be useful for his further career.

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**Über Derivate des Glycocolls, Alanins und Leucins.**

**Über die l-Brompropionsäure und das l-Alanylglycin.**

INAUGURAL-DISSERTATION

ZUR

ERLANGUNG DER DOKTORWÜRDE

GENEHMIGT

VON DER PHILOSOPHISCHEN FAKULTÄT

DER

FRIEDRICH-WILHELMS-UNIVERSITÄT

ZU BERLIN.

Von

**Otto Warburg**

aus Freiburg (Baden).

ACAD. LANDWIRTSCH. BIBL.

**Tag der Promotion: 17. März 1906.**

Otto Warburg, *Über Derivate des Glycocolls, Alanins und Leucins; Über die 1-Brompropionsäure und das 1-Alanylglycin.* Dissertation Berlin 1906.

**Otto Warburg**
**Über Derivate des Glycocolls, Alanins und Leucins /**
**Über die 1-Brompropionsäure und das 1-Alanylglycin**
**Dissertation Berlin 1906**

The reader of Otto Warburg's biography will imagine himself in a time far behind us. After all, how many scholars, in this era of 'publish or perish', will get the opportunity to repeat their scientific tests twenty up to a hundred times before they publish about them? Or what professor can afford to refrain from teaching, being in any commission and never do any administrative work, but solely focus on his research? And yet it is perhaps this fixation on that one essence of existence that has made Warburg, who died in 1970 at the age of 86, such an important and extremely productive scientist. On the other hand, he didn't gather much of a following. When someone once pointed out to him that research and education go hand in hand, he named three students – Meyerhof, Theorell and Krebs – announcing that he thought that was enough.

Otto Heinrich Warburg was born in 1883 in Freiburg as the son of physicist Emil Gabriel Warburg and his wife Elisabeth Gärtner. On his father's side he came from a lineage of bankers and art lovers (the library of Aby Warburg is still the core of the collection of the London-based Warburg Institute), his mother came from a family of directors, jurists and soldiers.

In 1895 the family – Otto had one older and two younger sisters – moved to Berlin, where young Otto came into contact with colleagues of his father; men like Emil Fischer, who would act as supervisor for his Ph. D. Degree later on, and the Dutchman Van 't Hoff, who had come to Berlin to escape the numerous lectures and examinations that kept him from his scientific work in Amsterdam.

His whole life, Warburg had one overpowering ambition: to be a researcher. He started his studies in 1901 in Freiburg, his place of birth, but continued them in 1903 in Berlin, under the guidance of Emil Fischer, who had received the Nobel prize in Chemistry in 1902 and who became Warburg's example in life. Although he was the head of the chemical laboratory with many obligations, Fischer spent most of his time between the retorts, and imparted to his students a very disciplined style of experimenting. Four of his students – next to Warburg (1931) Otto Diels (1950), Hans Fischer (1930) and Adolf Windaus (1928) – would later on receive a Nobel Prize.

Warburg's doctoral research resulted in a dissertation titled 'Über die 1-Brompropionsäure und das 1-Alanylglycin'. (Curiously enough, although this study is mentioned as Warburg's dissertation in the *Jahresverzeichnis der an den Deutschen Universitäten erschienenen Schriften* 1905-1906

(XXI), there is no mention of it in Hans Krebs' biography of Warburg.) After taking his Ph. D. Degree in Chemistry, he moved to Heidelberg, where he studied under Ludwig Krehl to become a doctor. He finished in 1911. Warburg has made dozens of scientific discoveries and is credited with hundreds of publications. Many of these have to do with cancer research, in which he was already interested as a young man. According to him, healthy cells develop into cancer cells because the cellular respiration is replaced by glycolysis. He received the Nobel Prize in Physiology or Medicine for the discovery of the nature and operation of the respiration enzyme. Next to this, he more or less continuously researched various aspects of fotosynthesis during the last fifty years of his life.

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**Max Weber**
**Entwickelung des Solidarhaftprinzips und des Sondervermögens der offenen Handelsgesellschaft aus den Haushalts- und Gewerbegemeinschaften in den italienischen Städten**
**Dissertation Berlin 1889**

In his article 'Max Weber's dissertation', Lutz Kaelber (2003) gives a detailed account of this dissertation and the circumstances under which it was written. The information presented below is mostly taken from this article.

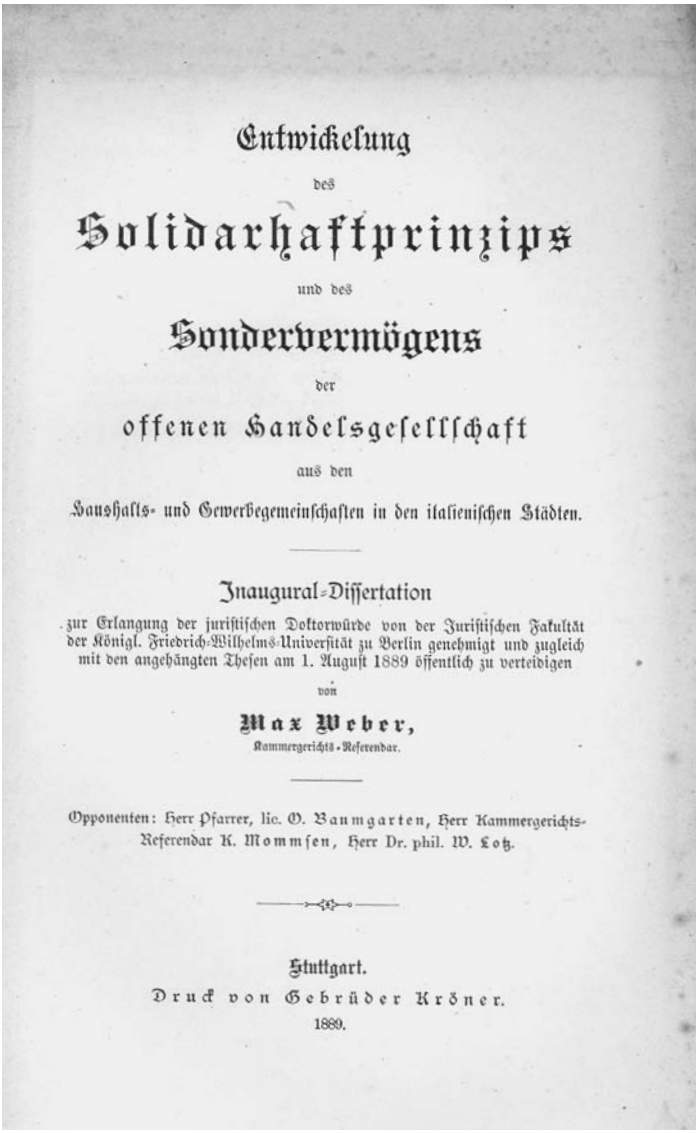
Max Weber (1864-1920), born in Erfurt, was the first of eight children of jurist and politician Dr. Max Weber and Helene Fallenstein. His father was a prominent figure; amongst his friends and acquaintances he could include other prominent people, such as philosopher Wilhelm Dilthey and the historians Theodor Mommsen and Heinrich von Treitschke. These last two were to become teachers of Max Jr. later in life. From an early age, Weber showed a great historical and intellectual interest. In secondary school he wrote two essays on German and late Roman history and took extra lessons in Hebrew. After graduating in 1882 he started reading law in Heidelberg. He followed additional classes in history, economics and philosophy and read books on theology. All these interests were to return in his later work. In 1883 he moved to Strasbourg, where he fulfilled his military duty, at the same time following classes at the university. During

this time he also became friends with his uncle Hermann Baumgarten, professor of history at the University of Strasbourg. The following year he started studying in Berlin, and graduated in 1886. In the subsequent academic year he started preparations for writing his dissertation.

The subject was to be the development of the principle of joint and undivided guarantee and the separate estate out of the household communities and commercial associations in Italian cities (*Entwickelung des Solidarhaftprinzips und des Sondervermögens der offenen Handelsgesellschaften aus den Haushalts- und Gewerbegemeinschaften in den italienischen Städten*). His supervisor, or *Doktorvater*, is Levin Goldschmidt, the authority in the field of commercial law, which Goldschmidt approached from a historical and comparative viewpoint. He was known as a particularly meticulous supervisor that was hard to please.

Weber's topic choice, which he first mentioned in a letter to his uncle Baumgarten on October 21st 1887, along with his *Doktorvater's* characteristics and scientific approach, meant that he also had to learn Spanish and Italian, in addition to Latin and French. Furthermore, he had to be able to read medieval texts in all these languages, a skill which he required in a short time, because already on August 1st 1889 he defended his dissertation. He had already passed his oral exam *magna cum laude.* At the same time he was working as a lawyer during the day and was doing his military duty in 1887 and the first months of 1888. His later wife Marianne Schnitger recounted that at the graduation ceremony, the famous historian Theodor Mommsen, who was acting as opponent, said: "Wenn ich einmal in die Grube fahren muß, so werde ich keinem lieber sagen: 'Sohn, da hast Du meinen Speer, meinem Arm wird er zu schwer' als dem von mir hochgeschätzten Max Weber.'

Weber's *Inauguraldissertation* was followed in 1891-1892 by a *Habilitationschrift*, titled *Die römische Agrargeschichte in ihrer Bedeutung für das Staats- und Privatrecht*, with which Weber promoted in Latin, German and commercial law in Berlin. His inaugural dissertation was written under circumstances familiar to many contemporary Ph. D. students: since 1883/1884 he had romantic feelings for his cousin Emmy Baumgarten, with whom he got acquainted during his military service in Strasbourg. These feelings were mutual; they continued their relationship via letters and in 1887 they met again, when Weber was back in Strasbourg to fulfill his military duty. However, Emmy's weak mental health and the fact that Weber could not yet support even himself, prevented the relationship from developing. Another unfortunate circumstance at the time of writing his dissertation was the fact that Weber was still living with his parents. He was financially dependent on them and his father was forever pressing him to finish his studies. He would live with them until his marriage with Anna Schnitger in 1893.



Entwickelung

des

Solidarhaftprinzips

und des

Sondervermögens

der

offenen Handelsgesellschaft

aus den

Haushalts- und Gewerbegemeinschaften in den italienischen Städten.

Inaugural-Dissertation

zur Erlangung der juristischen Doktorwürde von der Juristischen Fakultät der Königl. Friedrich-Wilhelms-Universität zu Berlin genehmigt und zugleich mit den angehängten Thesen am 1. August 1889 öffentlich zu verteidigen

von

Max Weber,

Kammergerichts-Referendar.

Opponenten: Herr Pfarrer, lic. O. Baumgarten, Herr Kammergerichts-Referendar K. Mommsen, Herr Dr. phil. W. Lotz.

Stuttgart.

Druck von Gebrüder Kröner.

1889.

Max Weber, *Entwickelung des Solidarhaftprinzips und des Sondervermögens der offenen Handelsgesellschaft* [...].
Dissertation Berlin 1889.

It was, however, a good dissertation. It was reviewed positively in two journals in 1890, and Weber's *Doktorvater* Goldschmidt made extensive use of it in his magnum opus 'Universalgeschichte des Handelsrechts' (1891), in spite of some criticism on some details. It was Goldschmidt who pressed the University of Berlin to appoint Weber as his successor, after he himself had a heart attack in 1892. Weber himself was very modest about his dissertation. As often, in later years his interest and work took new directions. However, at the end of his life he referred to it in passages from the reviewed publication of "Die protestantische Ethik und der 'Geist' des Kapitalismus" (first published in 1904) and in 'Wirtschaft und Gesellschaft', which was published after his death in 1920.

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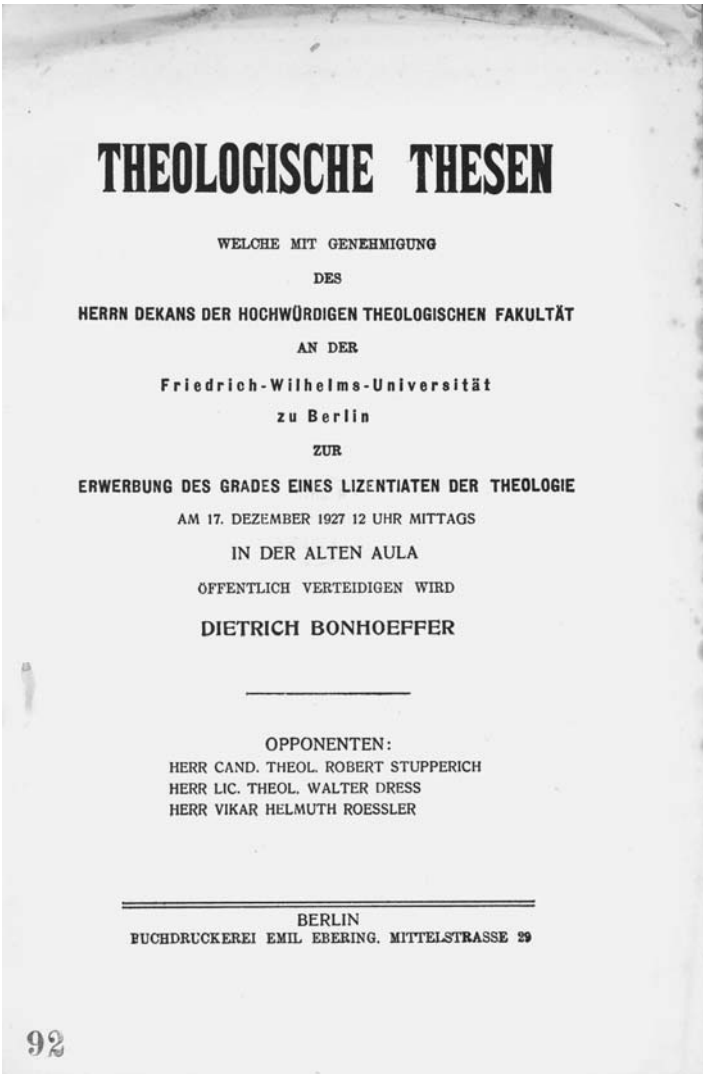
**Alfred Wegener**
**Die Alfonsinischen Tafeln für den Gebrauch eines modernen Rechners**
**Dissertation Berlin 1905**

There are great differences in scope, ambition and perhaps also in quality to be found in the selection of dissertations of famous men and women shown here. For some the dissertation is the start of a body of work in which themes are brought up that will keep on returning. For others, the dissertation remains an isolated publication, that bears no relation to the scientific fame that they later, possibly in an entirely different field, achieve. An example of the latter is the dissertation of Alfred Lothar Wegener, who was born in 1880. He was the youngest of five children of the Berliner theologist and classicist Richard Wegener, who worked as a preacher and as a director of an orphanage in Berlin. His wife Anna came from the village Zechlinerhütte, 90 km north of Berlin. The family owned a second house there since 1886. Their sojourns in the mountainous landscape have possibly contribued to the scientific interest of Alfred and his two year older brother Kurt. They did not have this interest by birth: on his father's side they descended from a lineage with many vicars.

Young Alfred went to study in Berlin in 1899, where he became competent in mathematics and natural sciences and especially in astronomy. But his study in Berlin was only one of his many interests. Two summer

semesters he spent in Heidelberg and Innsbruck, the last in the company of Kurt, and here the students – Kurt was also studying in Berlin – seized the opportunity to satisfy their geological and botanical interests during challenging expeditions into the mountains. Although Alfred was also interested in geology and meteorology during his study in Berlin, subjects that would later determine his course in life and his career, his dissertation was on an astronomical subject. He received his doctoral degree *magna cum laude* on March 4th 1905. His dissertation is titled *Die Alfonsinischen Tafeln für den Gebrauch eines modernen Rechners* and has a very practical goal: to make it possible for the modern mathematician to correct old calculations based on the so-called Alfonsine tables. Kepler had done something similar in 1627 with the observations of Tycho Brahe in the *Tabulae Rudolphinae.*

Throughout the fourteenth, fifteenth and sixteenth century, the Alfonsine tables – named after Alfons X of Castilla, who had ordered them – were the most important aid for seafarers and cartographers in calculating a range of data that was of vital importance for navigation. These data included the position of the sun, the moon and the five planets that were known at the time at any moment. Furthermore, lunar and solar eclipses and coordinates of all planets could be calculated with these tables. They stood in a long tradition of similar aids, that goes back to Ptolemy's *Syntaxis* or *Almagest* and that had been introduced in Europe via Islamic scholars. For his dissertation Wegener used five publications of the tables from the fifteenth and sixteenth century. In order to write it, he had to be able to read Latin, something that was normal for astronomers of a century ago. Although Wegener would occasionally write about astronomical topics after 1905, he actually started to take an interest in something completely different. In astronomy he did not expect any more great discoveries, but perhaps for him as a person it was even more important that this science did not offer him the opportunity for exercise and physical challenges. Meteorology, offering the possibility of kite-balloon ascents and balloon rides, appealed to him and his brother Kurt, and soon they both started to work in the aeronautical observatory in Lindenberg as 'technical assistants'. In 1906 the brothers made a balloon ride from Central Germany to Jutland, which took them 52 hours – 17 hours longer than the world record of those days. Further adventure was awaiting them, because in the same year they got the chance to participate in the Danish *Danmark* expedition (named after the expedition ship) to the northeastern coast of Greenland. Alfred did meteorological research from a kite-balloon and published his *Habilitationsschrift* about this in 1909 in Marburg. More journeys to Greenland would follow: in 1912/13, in 1929 and in 1930/31. During the last expedition in 1930 he died, probably from exhaustion and heart failure. By then he was a professor of meteorology and geophysics in Graz.



# THEOLOGISCHE THESEN

WELCHE MIT GENEHMIGUNG

DES

HERRN DEKANS DER HOCHWÜRDIGEN THEOLOGISCHEN FAKULTÄT

AN DER

Friedrich-Wilhelms-Universität

zu Berlin

ZUR

ERWERBUNG DES GRADES EINES LIZENTIATEN DER THEOLOGIE

AM 17. DEZEMBER 1927 12 UHR MITTAGS

IN DER ALTEN AULA

ÖFFENTLICH VERTEIDIGEN WIRD

DIETRICH BONHOEFFER

OPPONENTEN:

HERR CAND. THEOL. ROBERT STUPPERICH
HERR LIC. THEOL. WALTER DRESS
HERR VIKAR HELMUTH ROESSLER

BERLIN
BUCHDRUCKEREI EMIL EBERING, MITTELSTRASSE 29

92

Dietrich Bonhoeffer, *Theologische Thesen* […]
Dissertation Berlin 1927.
This first publication of Bonhoeffer consists of one leaflet,
Thesen zur Erwerbung des Grades eines Lizentiat der Theologie.
These 11: ‘Es gibt keinen christlichen Geschichtsunterricht.’

Wegener has become especially famous because of his "continental drift" hypothesis. He was not the first one to formulate the hypothesis: the symmetry of the coastal lines of Africa and South-America had already been noticed by scholars such as Francis Bacon and Alexander von Humboldt. In 1858 geographer Antonio Snider-Pellegrini, in his book *La Création et ses mystères dévoilés,* had published a drawing in which 'Atlantide' (North America), Africa and Australia were joint together. Around 1910, when Wegener became interested in this issue, three Americans W.H. Pickering, H.B. Baker and F.B. Taylor, had already thought of a possible floating apart of the continents. However, Wegener's arguments for this theory and the way in which he defended it from 1912, when he published about it for the first time, until his death, have made that his name is securely linked to the theory. It was also he who alluded to the cause of the continental drift that is currently most commonly accepted: convection currents of magma of the earth's crust. On this idea the modern version of the Continental Drift Theory, named Plate Tectonics, is based.

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# The dissertation in the twenty-first century

Jet Katgert & Trudi Noordermeer
(Leiden University Library & Leiden Library of Social Sciences)

Things were not always better in the old days. For several decades now information and communication technology, Internet and the World Wide Web have enlarged the possibilities for scientific and scholarly communication. Academic publishers have digitized their production process and their publication of learned journals. Initially they offered the electronic version of journals in addition to the printed version and at additional cost. Now, in 2005, the emphasis has shifted to the electronic version. Libraries can still get printed versions, but only at considerable extra cost. Many academics have meanwhile cancelled their personal subscription to learned journals because of steep price rises. These days libraries discontinue their subscriptions to printed versions of journals on a large scale – especially in the fields of medicine and natural sciences. After all, their registered readers are perfectly happy with their access via Internet, both at home and at work, 24 hours a day, seven days a week. Publishers offer licenses for separate publications or bulk licenses for their entire list, and universities form consortia in order to obtain joint licenses.

A second important development in scientific and scholarly communication is Open Access.[1] Its purpose is rapid, free, worldwide, and lasting access to academic publications through Internet. To this end digital repositories are being developed, archives of universities and academic organizations containing their publications, both preprint and postprint. A second aim of Open Access is the reuse of online publications and the corresponding research material. This has repercussions for copyright, and lawyers are currently investigating if there is a better way for the research material to become available while authors still get the rightful recognition for their intellectual effort.[2]

Each year some 250 scholars and scientists receive their doctorate at Leiden University. In 1999 the Electronic Text Centre of the Leiden University library started a small-scale test with the publication of dissertations through the Internet. Since then techniques for on-line publication of dissertations and other academic publications, with or without open access, have greatly improved. MIT (Massachusetts Institute of Technology)

1 See http://www.surf.nl/themas/index2.php?oid=36
2 See http://www.surf.nl/copyright/

and HP (Hewlett-Packard Company) have developed *Dspace* for institutional repositories – and made it available as shareware on Internet. This guaranteed a rapid and widespread introduction of the software. User groups helped to improve functionality. All over the world universities are now setting up their repositories; these contain publications of researchers but also source data, quantitative data, audiovisual documents and so on.

In 2003 a unique project was started in the Netherlands: DARE, Digital Academic REpositories, will be fully implemented in 2006. All Dutch universities and several academic institutions are collaborating in this project. The DARE program, organized by Stichting Surf [Surf Foundation], has a coordinating and stimulating role in designing repositories and filling them with results of research carried out in the Netherlands.

Experiments of universities in the US with the on-line publication of dissertations have already led to several services being introduced. For example, the UMI/Proquest company offers a commercial service with a choice of over two million dissertations. Non-profit institutions such as the NDLTD (Networked Digital Library of Theses and Dissertations) and Unesco support universities all around the world in publishing their dissertations in Open Access.[3]

In November 2004 Leiden University started a pilot project, commissioned by its Governing Body, to set up and implement a digital academic archive, which should include new dissertations published in Leiden. As of 1 January 2005 Ph.D. students are asked to make their dissertation available for digital filing. The large majority comply with this request: so far 65% of all new dissertations have been received. From 2006 it will be compulsory for new dissertations in Leiden to be filed in the digital repository. In principle there is open access to these documents, but if required an embargo can be imposed.

So far, digital dissertations do not differ very much from their printed counterparts. They are collections of PDF files containing (parts of) the dissertation: text, photographs and figures. What can be seen on screen is very similar to the printed version, even the page numbers are the same. For most dissertations the cover photograph is also digitized and filed for later use. Sometimes MS Word files are sent in, which are subsequently converted to PDF files that closely correspond to the printed version. But some pioneers start to take advantage of the opportunities offered by digital filing. They experiment with different forms by adding audiovisual

3 See http://www.ndltd.org/

material, animation and sound, especially in medical dissertations and in the humanities, e.g. Egyptology. In other words, the digital form of publishing has not yet had a great influence on the shape of the dissertation, but over the coming years we are bound to see more and more multimedia dissertations.

The switch to digital filing also has its consequences for the way libraries acquire their collection. National libraries throughout the world include dissertations in their collection and publish the data in the national bibliography. Traditionally, universities also had mutual agreements to exchange dissertations. These agreements may well become irrelevant if dissertations can be accessed through the web. The Koninklijke Bibliotheek (KB), the national library of the Netherlands, has collected and catalogued the dissertations of all Dutch universities since 1974. Digital information is still vulnerable and the KB is responsible for the accessibility of the digital versions of Dutch dissertations in the eDepot for at least a hundred years. After all, this is an important part of our cultural legacy.

A problem that will have to be solved in the coming years is that of copyright. Until now there have been huge differences between publishers. Some applaud on-line publication and think that this can only increase sales of the commercial edition. Others are totally against it. When a commercial edition of a dissertation is published, open access is the exception rather than the rule. For dissertations that are partly made up of published articles, other questions emerge: Was the article published in an open-access journal? Has the author used the PDF version of the journal or his own version? What is the policy of the journal? This is a field where the rules of the game change rapidly. Journals are adjusting their policies and are increasingly inclined to allow on-line publication. This trend is expected to be reinforced in the coming years. Currently dissertations that cause problems in this field are partly subjected to an embargo and are always accompanied by links to the original publications, so that everyone who works at an institution with a subscription to those publications can still access the separate parts of the dissertations. The shape of the dissertation in the twenty-first century will thus change as a result of new possibilities.

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| Belgrado (Beograd) | 1954-1982 | 2 mtrs |
| Berlin | 1811-1989; microf: 1982-1988 | 140 mtrs |
| Bern | 1838-1989 | 56 mtrs |
| Besançon | 1760, 1863-1984 ; microf: 1981-1988 | 8 mtrs |
| Bochum | 1966-1990; microf: 1982-1989 | 26 mtrs |
| Bonn | 1835-1989; microf: 1977-1988 | 91 mtrs |
| Bordeaux | 1875-1986; microf: 1978-1987 | 74 mtrs |
| Bremen | 1679-1757, 1972-1989; microf: 1977-1989 | 6 mtrs |
| Breslau | 1817-1941 | 28 mtrs |
| Brest | 1970-1978 | |
| Brno | 1727, 1728 | |
| Brussel | 1881-1907; 1977-1984 | |
| Bryn Mawr | 1914 | |
| Budapest | 1912-1914 | |
| Buenos Aires | 1929 | |
| Bukarest | 1912-1923 | |
| Burgsteinfurt | 1660, 1762, 1765, 1766 | |
| Caen | 1857-1980; microf: 1978 | 17 mtrs |

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|---|---|---|
| Chicago | 1893-1948 | 15 mtrs |
| Christiania (see Oslo) | 1871-1924 | |
| Clermont-Ferrand | 1882-1985; microf: 1986 | 13 mtrs |
| Coburg | 1711,1769 | |
| | | |
| Dakar | 1960-1975 | 4 mtrs |
| Dantzig | 1668-1732 | |
| Dorpat | 1837-1924 | 2 mtrs |
| Dortmund | 1972-1989; microf: 1982-1991 | 3 mtrs |
| Douai | 1872-1888 | |
| Düsseldorf | 1779-1987; microf: 1982-1992 | 22 mtrs |
| Duisburg | 1670-1980 | |
| Durlach | 1684, 1685 | |
| Dijon | 1883-1986; microf: 1986 | 17 mtrs |
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| Edinburgh | 1788 | |
| Eichstätt | 1981-1982 | |
| Eisenach | 1743 | |
| Erfurt | 1661-1794 | |
| Erlangen | 1744-1990 | 110 mtrs |
| | | |
| Flensburg | 1714, 1715 | |
| Frankfurt am Main | 1710-1766; 1914-1989; microf: 1981-1989 | 78 mtrs |
| Frankfurt an der Oder | 1624-1839 | |
| Freiburg i/B | 1653-1989; microf: 1982-1987 | 47 mtrs |
| Freiburg i/S | 1895-1988 | 30 mtrs |
| | | |
| Genève | 1658-1989 | 35 mtrs |
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| | | |
| Halle | 1602-1967 | 25 mtrs |
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| Heilbronn | 1718 | |
| Helmstadt | 1639-1805 | |
| Helsinki/Helsingfors | 1827-1989 | 49 mtrs |

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|---|---|---|
| Herborn | 1686, 1687, 1692, 1705, 1723, 1728, 1744 | |
| Hildesheim | 1684 | |
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| Indiana | 1935-1936 | |
| Ingolstadt | 1774 | |
| Ithaca | 1889-1937 | 6 mtrs |
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| Jaroslaw | 1900-1910 | |
| Jena | 1642-1980 | 31 mtrs |
| Johannesburg | 1931-1980 | |
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| Kaiserslautern | 1978-1989 | 6 mtrs |
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| Kopenhagen | 1600-1991 | 38 mtrs |
| | | |
| Lausanne | 1890-1944 | 29 mtrs |
| Leipzig | 1630-1969 | 86 mtrs |
| Lemgau | 1752 | |
| Leuven / Louvain | 1691-1990 | 117 mtrs |
| Lille | 1882-1987; microf: 1977-1983 | 37 mtrs |
| Limoges | 1970-1973; microf: 1985-1986 | |
| Lingen | 1722, 1751, 1754, 1780, 1781, 1810 | |
| Lübeck | 1708-1762; microf: 1984 | |
| Luik | 1861-1944 | 3 mtrs |
| Lund | 1795-1990 | 42 mtrs |
| Luneburg | 1658, 1753, 1804 | |
| Lyon | 1875-1982; microf: 1981-1990 | 163 mtrs |
| | | |
| Magdeburg | 1736 | |
| Mainz | 1751-1990; microf: 1981-1990 | 37 mtrs |
| Mannheim | 1933 | |
| Marburg | 1627-1982 | 57 mtrs |
| Marseille | microf: 1985-1988 | |
| Metz | 1973-1979 | |
| Minnesota | 1930; 1941-1951 | |

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| Missouri | 1924-1931 | |
| Montauban | 1882-1914 | 4 mtrs |
| Montpellier | 1682-1990; microf: 1984-1988 | 48 mtrs |
| Moskou | 1895-1914 | |
| München | 1832-1989; microf: 1972-1988 | 223 mtrs |
| München (Tech.Hochsch.) | 1901-1938 | 2 mtrs |
| Münster | 1771-1990; microf: 1980-1983 | 34 mtrs |
| | | |
| Nancy | 1880-1980; microf: 1981-1986 | 42 mtrs |
| Nantes | 1961-1976; microf: 1984-1987 | 3 mtrs |
| Neuchâtel | 1910-1984 | 10 mtrs |
| New Haven | 1930-1938 | |
| New York | 1892-1947 | 11 mtrs |
| Nice | 1964-1977; microf: 1983-1988 | |
| Nürnberg | 1792 | |
| | | |
| Odense | 1969-1990 | 2 mtrs |
| Odessa | 1908, 1911 | |
| Oldenburg | 1986-1990; microf: 1987-1989 | |
| Oran | 1969 | |
| Orleans | 1968-1980; microf: 1985 | 3 mtrs |
| Oslo (see Christiania) | 1927-1931 | |
| Osnabrück | 1984 | |
| | | |
| Padua | 1644, 1676 | |
| Palo Alto | 1898-1905 | |
| Paramaribo | 1981 | |
| Paris | 1754-1986; microf: 1974-1989 | 750 mtrs |
| Pau | 1973-1983; microf: 1984-1988 | |
| Peina | 1743 | |
| Perpignan | 1974-1980 | |
| St. Petersburg | 1770-1912 | |
| Philadelphia | 1894-1950 | 13 mtrs |
| Plön | 1716 | |
| Poitiers | 1872-1983 | 16 mtrs |
| Praag / Praha | 1684, 1685 | |
| Pretoria | 1932-1975 | 8 mtrs |
| Princeton | 1906-1952 | 2 mtrs |
| Providence | 1928-1950 | |
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| Regensburg | 1680 | |
| Reims | 1966-1976 | 6 mtrs |

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|---|---|---|
| Rennes | 1878-1980; microf: 1986 | 16 mtrs |
| Rinteln | 1674-1764, 1846 | |
| Roma | 1873-1874 | |
| Rostock | 1665-1969 | 22 mtrs |
| Rouen | 1964-1975; microf: 1986 | 3 mtrs |
| Rüsselheim | microf: 1984 | |
| | | |
| Saarbrücken/Saarland | 1952-1990; microf: 1981-1991 | 17 mtrs |
| Salzburg | 1757-1768 | |
| Schwäbisch Gmünd | 1986-1989 | |
| Seattle | 1922-1936 | |
| Sedan | 1649 | |
| Stanford | 1911-1929 | |
| Stargard | 1725 | |
| Stellenbosch | 1964-1973 | |
| Stettin | 1727 | |
| Stockholm | 1873-1987 | 9 mtrs |
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| Stuttgart | 1749, 1778 | |
| | | |
| Tartu/Tartus | 1934-1936 | |
| Titograd | 1962-1965 | |
| Torgau | 1725 | |
| Toronto | 1901-1918 | |
| Toulouse | 1857-1986; microf: 1979-1989 | 104 mtrs |
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| Trondheim | 1974 | |
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| Uppsala | 1699-1990 | 29 mtrs |
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| | | |
| Valenciennes | 1980 | |
| | | |
| Warschau | 1872-1937 | |
| Washington | 1929-1938 | |
| Wetzlar | 1756 | |
| Wien | 1642, 1643, 1757-1787, 1839, 1934-1941 | |
| Wilhelmshaven | 1958-1962 | |
| Wittenberg | 1612-1816 | |
| Worcester | 1913-1914 | |

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|---|---|---|
| Würzburg | 1725-1989; microf: 1983-1985 | 65 mtrs |
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| Zerbst | 1719 | |
| Zürich | 1650-1990 | 120 mtrs |

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*Pro summo in Arte Medicâ gradu, insignibus privilegiisq; Doctoralibus obtinendis,*

Publicè discutiendas proponit

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