

# Aktuelle Änderungen im Bachelor DH, werden vermutlich zum WiSe 2024/2025 umgesetzt

Sem.	5 LP	5 LP	5 LP	5 LP	5 LP	5 LP
1.	Einführungsmodul (MuP I + Praktikum OOP)		Einführung in die Digital Humanities		Wahlbereich der Geistes- und Sozialwissenschaften	
2.	MuP II	ADS I	Einführung in die digitale Philologie		Wahlbereich der Geistes- und Sozialwissenschaften	
3.	Datenbanksysteme I	ADS II	Statistik für DH	Schlüsselqualifikation	Wahlbereich der Geistes- und Sozialwissenschaften	
4.	Wahlpflichtmodul Informatik	NLP	Aktuelle Trends in den DH	Forschungsseminar DH	Wahlbereich der Geistes- und Sozialwissenschaften	
5.	Wahlpflichtmodul Informatik	Machine Learning	Anwendungsbereiche der Computational Humanities	Schlüsselqualifikation	Wahlbereich der Geistes- und Sozialwissenschaften	
6.	Wahlpflichtmodul Informatik	Bachelorseminar	Bachelorarbeit		Wahlbereich der Geistes- und Sozialwissenschaften	

Änderungen bei MUP/OOP

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Änderungen im Informatik Wahlbereich, keine Unterscheidung mehr zwischen Kernmodul, Vertiefung, etc.

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ML und Statistik statt Logik und Diskrete Strukturen

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Mehr DH: zwei neue Pflichtmodule

# 2. Challenges and Characteristics of Digital Humanities



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Digital Humanities / Computational Humanities



@8urghardt



UNIVERSITÄT  
LEIPZIG

**What are the  
Digital Humanities?**

# What are the ~~Digital~~ Humanities?

# A Short History of the Humanities



# Let's go one step back: What is science anyway?



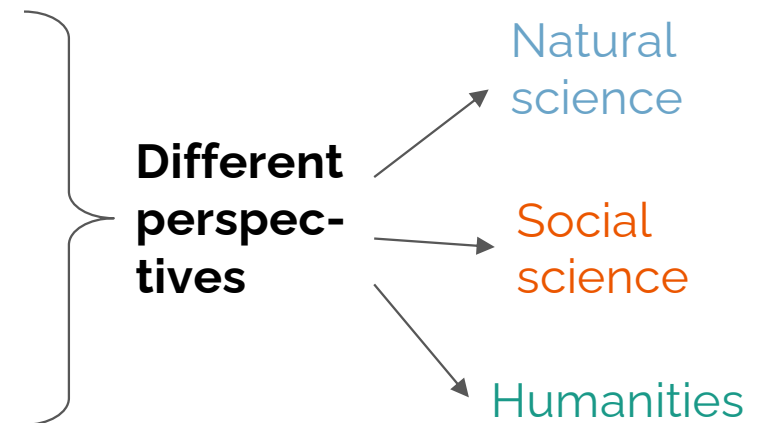
**Latin** *scientia* = "knowledge"

# A Short History of the Humanities

## ... and Science 😊

- Scholars **seek answers** to all kinds of questions → **knowledge**
- Often, there are **different answers** to the same question;  
Example: „What is man?“ (“Was ist ein Mensch?“)

- (1) Man consists of cells, water, blood and proteins.
- (2) Man lives in a society and fulfills different roles there, e.g. as a mother, neighbor, worker, etc.
- (3) Man is characterized by his intellectual and creative works, such as literature, art, music, etc.

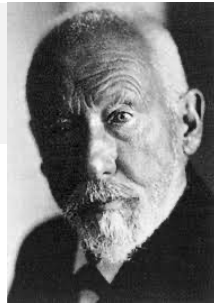


# Disciplines

- **3 main areas:** natural science, social science, humanities
- It's complicated (once again ...)
  1. What is **art history**?
  2. What is **chemistry**?
  3. What is **political science**?
  4. What is **maths**?
  5. What is **computer science**?
  6. What is **archeology**?

# Scientific methods

**Wilhelm Dilthey** (1833 – 1911):  
Erklären vs. Verstehen



Example: „What is man?“ (“Was ist ein Mensch?“)

Answer	Area	Method
„Man consists of cells, water, blood and proteins.“	<b>Natural science</b>	Cut open bodies to be able to <b>explain</b> how they work
“Man lives in a society and fulfills different roles there, e.g. as a mother, neighbor, worker, etc.“	Social science	Observe people how they interact with others, interview them, etc.
„Man is characterized by his intellectual and creative works, such as literature, art, music, etc.“	<b>Humanities</b>	Interpret and <b>understand</b> a text or a painting (domain knowledge, context knowledge, etc.)

# Trying to „understand“ human culture ...



**Photo of Jackson Pollock, taken by Hans Namuth.**

Source: [https://en.wikipedia.org/wiki/Jackson\\_Pollock#/media/File:Namuth\\_-\\_Pollock.jpg](https://en.wikipedia.org/wiki/Jackson_Pollock#/media/File:Namuth_-_Pollock.jpg)

## Shakespeare – Sonnet 130

My mistress' eyes are nothing like the sun;  
Coral is far more red than her lips' red;  
If snow be white, why then her breasts are dun;  
If hairs be wires, black wires grow on her head.  
I have seen roses damasked, red and white,  
But no such roses see I in her cheeks;  
And in some perfumes is there more delight  
Than in the breath that from my mistress reeks.  
I love to hear her speak, yet well I know  
That music hath a far more pleasing sound;  
I grant I never saw a goddess go;  
My mistress, when she walks, treads on the ground.  
And yet, by heaven, I think my love as rare  
As any she belied with false compare.

# Nota bene:

„**Answers**“ in the humanities are typically **vague** and oftentimes rely on very few example cases (**idiographic**)

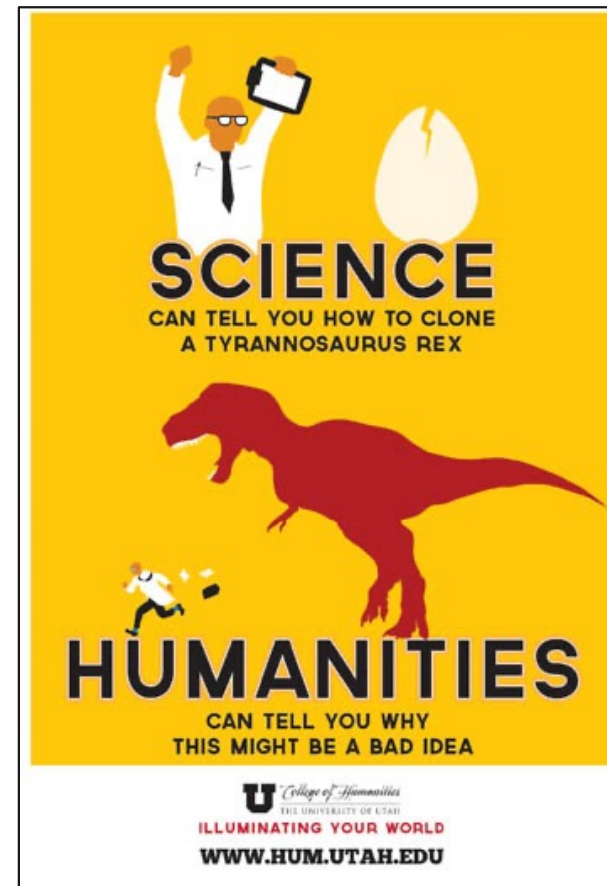
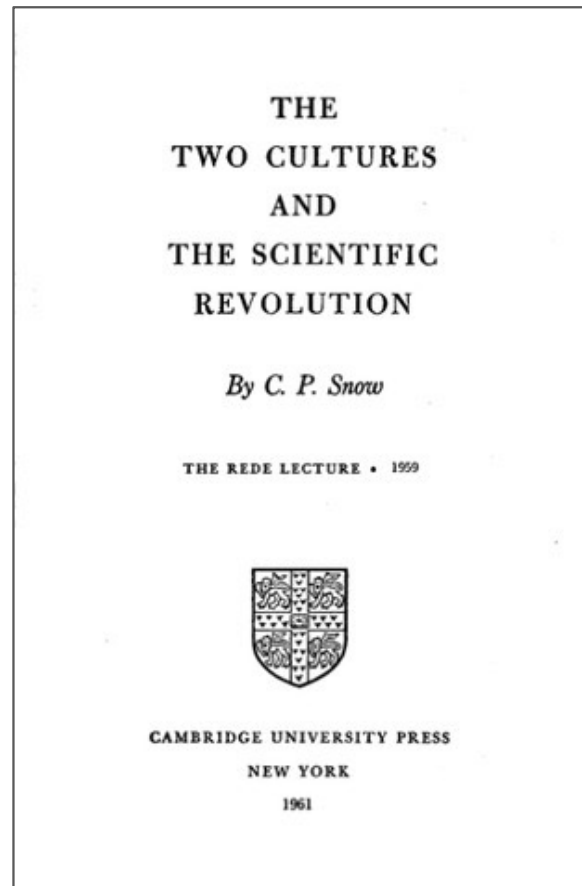


This entails very **specific methods** to obtain knowledge ...

Natural science  
try to **explain**  
what is going on

Humanities try  
to **understand**  
what is going on

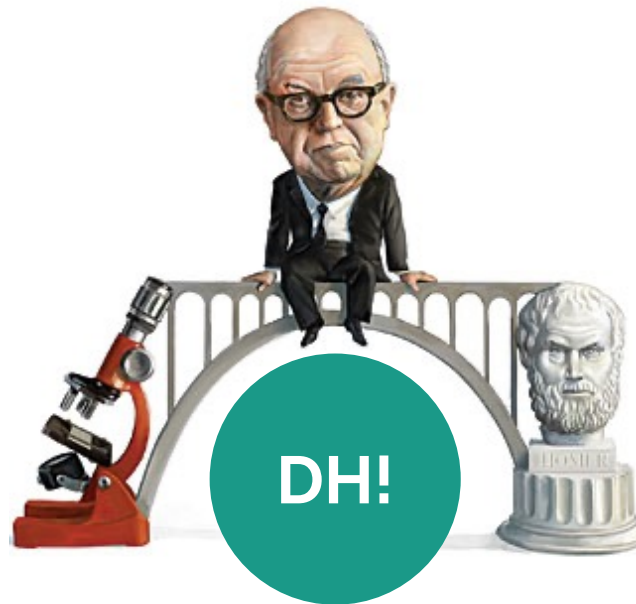
# The Two Cultures (C. P. Snow, 1959)





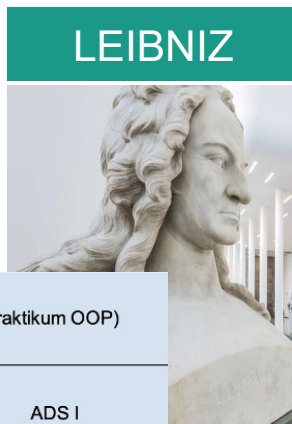
# Bridging the Two Cultures

“The clashing point of [...] two cultures [...] ought to produce creative chances.” (C. P. Snow, 1959)

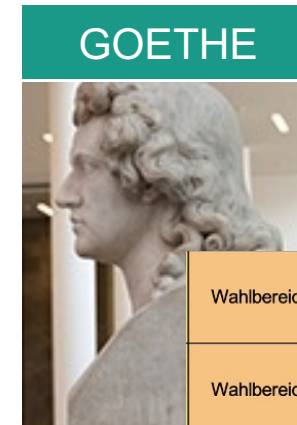


# Bridging the Two Cultures

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Wahlpflichtmodul Informatik	Machine Learning
Wahlpflichtmodul Informatik	

[illegible]

# AlmaWeb: Elective area of the humanities and social sciences

- [African Studies](#)
- [Egyptology](#)
- [Ancient Oriental Studies](#)
- [American Studies](#)
- [English Studies](#)
- [Arabic Studies](#)
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<https://almaweb.uni-leipzig.de/>

# Subfields of DH: Computer Science + Humanities X

- **Computational Linguistics** > Linguistics, German Language and Literature, Egyptology, African Studies, ...
- **Computational Literary Studies** > German Language and Literature, Cultural Studies, American Studies, English Studies, Arabic Studies, Japanologie, ...
- **Computational Social Science** > Anthropology, Political Science, Sociology, ...
- **Digital History** > African Studies, Political Science, American Studies, English Studies, Arabic Studies, ...
- **Digital Art History** > Art History, Cultural Studies, History, ...
- **Digital Musicology** > Musicology, Cultural Studies, Communication and Media Studies, ...
- **Digital Film Studies** > German Language and Literature, Cultural Studies, Communication and Media Studies, ...
- ...

# Don't be that kind of person ...



# The Case for Digital Humanities



**Digital**

Humanities

\*as in „Digitization“ or  
„Digital Revolution“

# „Die digitale Vermessung der Kultur“

trifft. Das Rechnen gehörte lange Zeit so gut wie nicht zum Methodeninventar der Geisteswissenschaften (vgl. dazu auch den Beitrag von danah boyd und Kate Crawford in diesem Band), wobei methodische Innovationen in diesem Bereich ohnehin eine eher untergeordnete Rolle spielen. In den Natur- und Lebenswissenschaften ist der Einsatz von Computern längst selbstverständlich; an spezialisierte Disziplinen wie Computational Physics, Bio-, Geo- und andere Bindestrich-Informatiken hat man sich gewöhnt; die Vergabe des Physiknobelpreises an Gerd Binnig und Heinrich Rohrer, die 1986 für die Entwicklung des Rastertunnelmikroskops ausgezeichnet wurden, belegt den Stellenwert methodischer Innovationen in diesen Fächern.

**Lauer**, G. (2013). Die digitale Vermessung der Kultur. In H. Geiselberger & T. Moorstedt (Eds.), *Big Data: Das neue Versprechen der Allwissenheit*. Berlin: Suhrkamp.



# But why now?

Why do the humanities even need „digital“ tools?



„To code or  
not to code ...“

# **Interlude: The Cradle of Digital Humanities** (as often told by the DH community ...)

# The Father of Digital Humanities




**Roberto Busa** (1913-2011), Author of the *Index Thomisticus*, one of the first Digital Humanities projects

# The cradle of DH...

**1933** | Entry into the Order of the Jesuits

**1941** | Work on the dissertation on the topic: "The Concept of the Present in Thomas von Aquinas".



According to the scholarly practices, I first searched through tables and subject indexes for the words of *praesens* and *praesentia*...

I like to use the preposition *in* as a marker for presence...

My next step was to write out by hand 10.000 3" x 5" cards, each containing a sentence with the word *in* or a word connected with *in*. Grand games of solitaire followed...



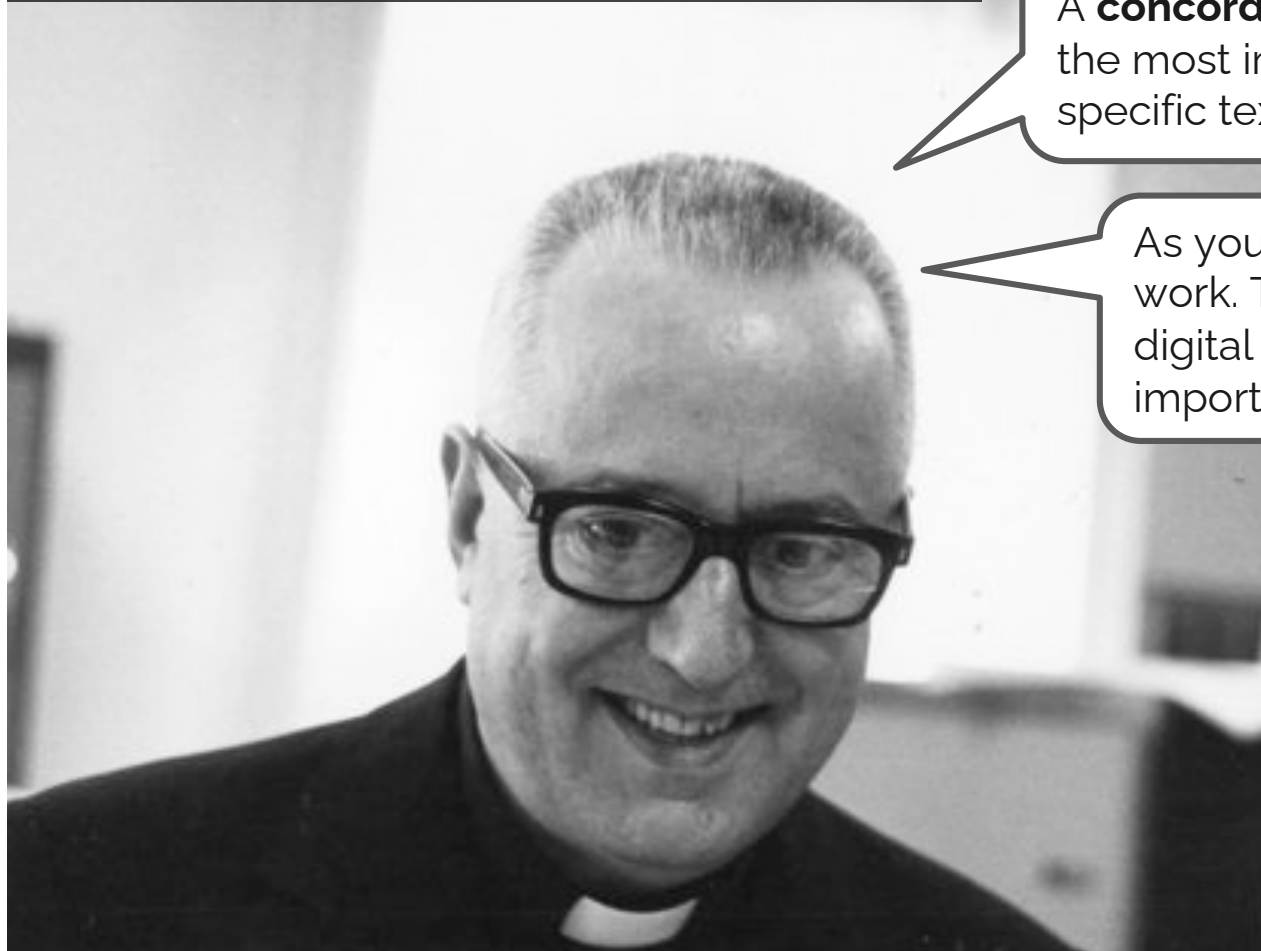
# Concordances

Concordare = match

In case you didn't know:

A **concordance** is an alphabetical list of the most important words that occur in a specific text, almost like an index.

As you can imagine, this is very **laborious** work. That's why concordances in the pre-digital age were only created for very important books/texts, e.g. the holy **bible**.



# Example of a concordance

<http://www.bible-guide-online.com/bible-concordance-verse-finder.html>

1. the entry itself

2. other forms of the word you may look up

3. a verse where the word occurs, in this case the book of Deuteronomy, chapter 5, verse 10.

4. words as they appear in the verse, close to your word you looked up.

5. the entry word, abbreviated as the first letter of the entry, followed by an asterisk (\*)

6. the entry's Strong's number, keyed to the dictionary in the back

love	See also	LOVED; LOVE'S; LOVES; LOVEST; LOVETH; LOVING.
Ge 27: 4	make me savoury meat, such as I l'	157
29: 20	few days, for the l' he had to her.	160
32	therefore my husband will l' me.	157
Ex 20: 6	unto thousands of them that l' me,	"
21: 5	I l' my master, my wife, and my	"
Le 19: 18	but thou shalt l' thy neighbour as	"
34	and thou shalt l' him as thyself; for	"
De 5: 10	unto thousands of them that l' me	"
4: 5	thou shalt l' the Lord thy God with	"
7: 7	Lord did not set his l' upon you,	2836
9	mercy with them that l' him and	157
13	he will l' thee and bless thee, and	"
10: 12	walk in all his ways, and to l' him,	"

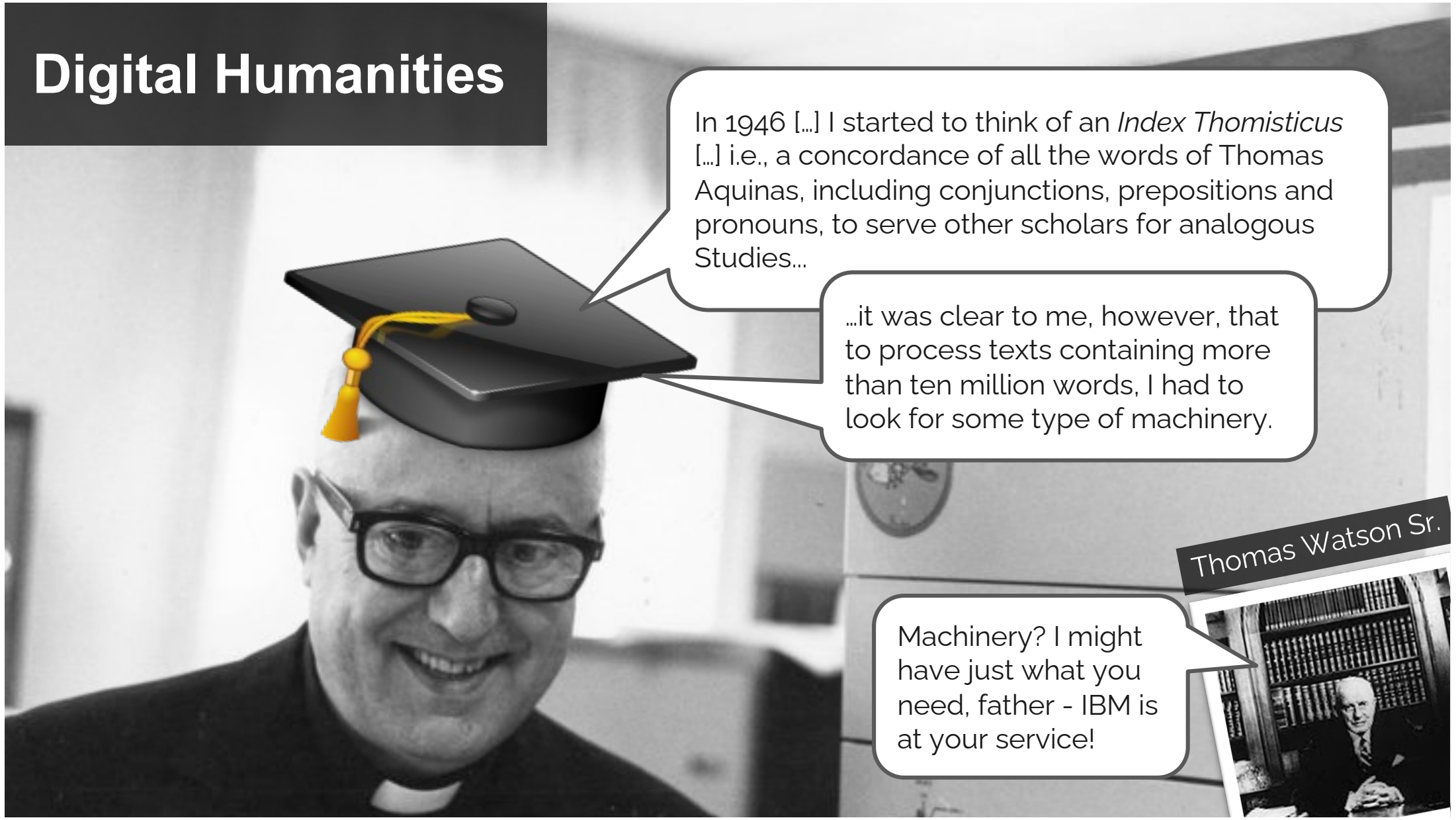


# The cradle of DH...

1946 | Successful defence of the dissertation



# Digital Humanities



In 1946 [...] I started to think of an *Index Thomisticus* [...] i.e., a concordance of all the words of Thomas Aquinas, including conjunctions, prepositions and pronouns, to serve other scholars for analogous Studies...

...it was clear to me, however, that to process texts containing more than ten million words, I had to look for some type of machinery.

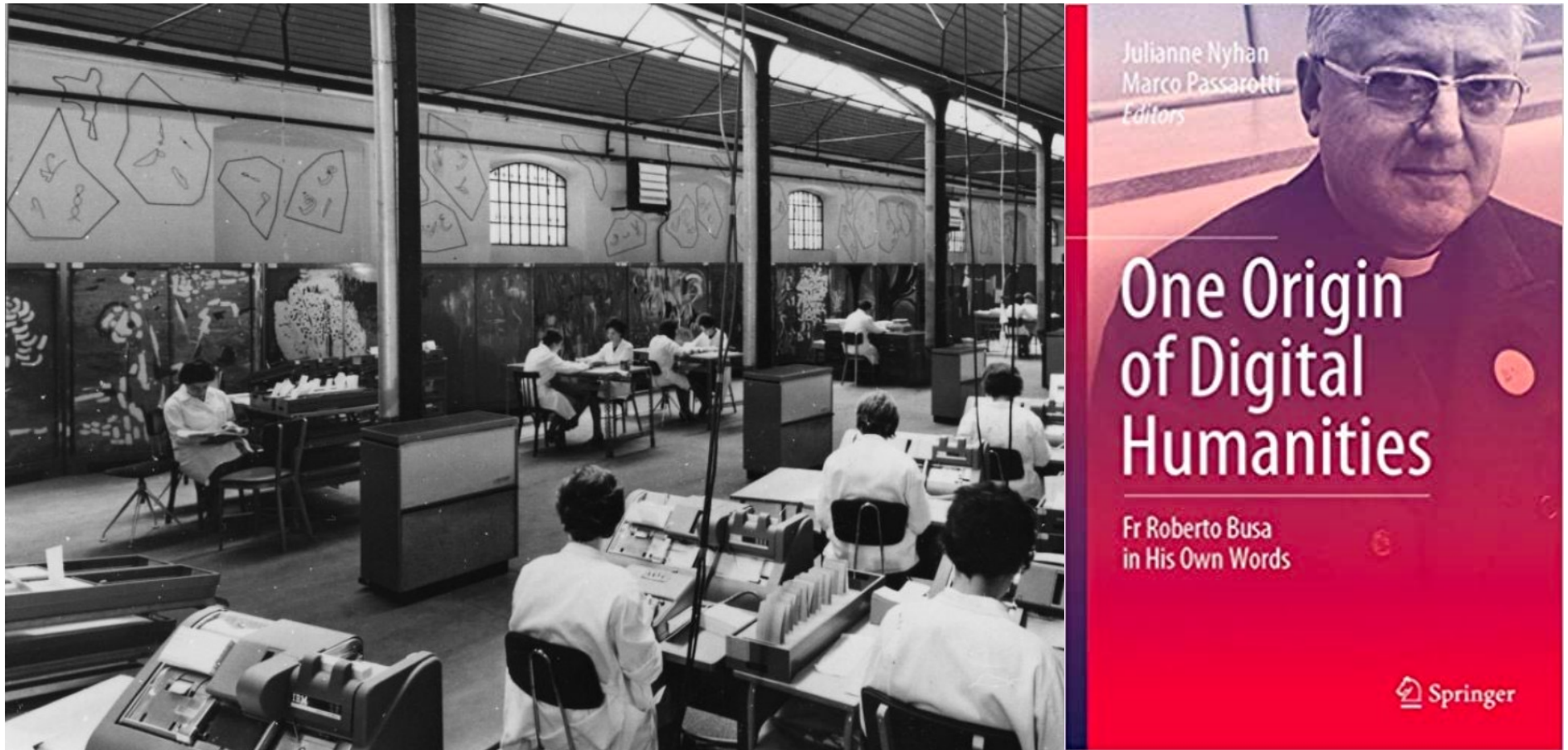
Machinery? I might have just what you need, father - IBM is at your service!

Thomas Watson Sr.





## Side note on „Roberto Busa's“ Index Thomisticus ...



**Source:** <https://www.c2dh.uni.lu/de/events/new-findings-and-new-questions-about-origins-digital-humanities-state-art-histories-index>

# Lecture by Julianne Nyhan "New findings and new questions about the origins of Digital Humanities"



**Video:** <https://www.c2dh.uni.lu/data/lecture-julianne-nyhan-new-findings-and-new-questions-about-origins-digital-humanities>

# „Technological Miniaturization“

- Building the *Index Thomisticus*
  - Duration: 30 years
  - Size: 10.6 million words
- 1949: Punching cards
  - 13 million punching cards
  - Weight: 500 tons (!)
- 1955: Magnetic tapes
  - Until 1980: 1.800 volums, length: 1.500 km
  - Print version: 56 volums, total of 65.000 pages
- 1987: CD-ROM
- 1992: Huffman-compressed version: 1.36 GB



“In his merci [...] God led men to invent magnetic tapes”

# 30 years later: Opera omnia cum hypertextibus

CORPUS THOMISTICUM  
INDEX THOMISTICUS  
by Roberto Busa SJ and associates  
web edition by Eduardo Bernot and Enrique Alarcón  
English version

Search:

[concordances](#) [terms](#) [works](#) [options](#) [new search](#)

FOUND 118 CASES IN 103 PLACES



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**CASE 1. PLACE 1.** *Super Sent., lib. 1 q. 1 pr.* Huic operi Magister prooemium praemittit, in quo tria facit. Primo reddit auditorem benevolum; secundo docilem, ibi, *horum igitur Deo odibilem Ecclesiam evertere, atque **ora** oppilare... volentes, in labore multo ac sudore volumen, Deo praestante, compegimus*; tertio attentum, ibi, *non ergo debet hic labor cuiquam pigro vel multum docto videri superfluous*. Benevolum reddit assignando causas moventes ipsum ad compilationem hujus operis, ex quibus ostenditur affectus ipsius in Deum et proximum. [...] <sup>-131</sup>

**CASE 2. PLACE 1.** *Super Sent., lib. 1 q. 1 pr.* [...] <sup>-111</sup> 3 Esdr. 4, 38: *veritas manet, et invalescit in aeternum. Horum igitur Deo odibilem Ecclesiam evertere atque **ora** oppilare... volentes, in labore multo ac sudore hoc volumen, Deo praestante, compegimus*. Hic reddit auditorem docilem, praelibando causas operis: et primo ponit causam finalem quantum ad duas utilitates, scilicet destructionem erroris; unde dicit: *odibilem Ecclesiam*: Psalm. 25, 5: *odivi Ecclesiam malignantium: ne virus, idest ne venenum, in alios effundere queant*: et manifestationem veritatis: unde dicit: *lucernam veritatis in candelabro exaltare volentes*. [...] <sup>-20</sup>

**CASE 3. PLACE 2.** *Super Sent., lib. 3 d. 22 q. 1 a. 1 arg. 6.* Praeterea, Petrus est nomen cujusdam singularis in natura humana. Sed post mortem Petri invocamus eum dicentes: *sancte Petre, **ora** pro nobis*. Ergo post mortem potest dici homo; et sic videtur quod eadem ratione Christus.

# Today: You can build you own Index Thomisticus in 5 Minutes



Welcome to the **Age of Digitization!**

# Summary

**Question:** Why DH? And why now?

**Answer:** Because we have all the **data and tools** freely available, and there is no good reason to not use them.

**Disclaimer:** Not all parts of the humanities will have to become „digital“ – it only makes sense for some areas / research questions. DH is definitely not here to **substitute** „traditional“ humanities, but rather to provide and **extended perspective**