

Continuities and Discontinuities of Practices and Logics of (Non-)Knowledge

A Comparative Case Study of Student Practices in University Courses around 1900 and 2025

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1. Introduction: Student practices as practices of knowledge

University students in their daily work are occupied with many things—they read, listen, write, take notes while listening, repeat, organize, memorize, and discuss. Such student practices are complex and can be understood as ›knowledge practices‹ which are an inextricable part of the everyday university lifeworld of aspiring academics. Analyzing and investigating these practices can therefore make an important contribution to understanding students' learning processes and knowledge acquisition. Students obtain and acquire knowledge through such practices and within the specific educational context provided by the university's infrastructure. Within this framework in particular students absorb, structure, and secure knowledge. This process is fundamentally shaped by the asymmetrical relationship between lecturer and student, the former having essential authority over what is perceived as knowledge and non-knowledge at university in a specific academic discipline.¹ All of this takes place within the context of different types of university courses (e.g. lectures, exercises, seminars), and is in each case enacted performatively through practices.

Here practices are understood, in line with the theory of social practices, as repeatable forms of meaningful action.² They can be seen as establishing and consol-

1 Nevertheless, nowadays students—especially those in the humanities—are given the task to question the canon and critically examine established knowledge. However, it is possible that these discussions in university courses are mostly just about practicing the academic discourse, not about serious criticism. Cf. Kollmer, Imke/König, Hannes/Wenzl, Thomas (2023): ›Wissen ohne Geltung oder: Das Seminar als Ort eines kritiklosen Diskurses‹, in: Zeitschrift für Pädagogik 69:5, pp. 584–598.

2 Cf. Reckwitz, Andreas (2003): ›Grundelemente einer Theorie der sozialen Praktiken. Eine sozialtheoretische Perspektive‹, in: Zeitschrift für Soziologie 32:4, pp. 282–301; Haasis, Lucas/

idating social order and thus providing insight into the logic of their cultural environment. In this sense, this article will examine student practices and their logics as practices of knowledge, using the example of two university courses in Germany in comparison, one course from the beginning of the 20th century and one of today, around 2025.

This comparison protects from focusing solely on supposedly new or old and outdated aspects: The comparative perspective seeks to draw attention to the fact that current practices are historically constituted and that past practices are connected to larger and longer developments in the sense of the *longue durée*. For example, as such and detached from their analogue predecessors, so-called digital practices cannot be understood as being entirely new. Practices should be seen as continuations, transformations, and extensions of long-established practices.

As early as around 1900, Friedrich Paulsen in his (historical and contemporary) analysis of German universities and university studies provided a detailed account of »Universitätsunterricht«³—university instruction—and addressed issues related to students, their academic pursuits, and their examinations. He discusses student practices such as transcribing lectures⁴ and identifies the introduction to scientific methods as a key achievement of university seminars.⁵ Furthermore, he emphasizes that engaging with scholarly literature is central to academic studying,⁶ and he highlights, for instance, that it is necessary for students to purchase books themselves rather than merely borrowing them.⁷ Moreover, he describes the practice of reading as always being connected to the practice of writing, as »reading with the pen in hand«,⁸ in the sense of excerpting and annotating. Nevertheless, all these descriptions constitute ideal-typical representations of student practices.

There are already considerable research findings about how students study *these days* and which materialities, media, and technical infrastructures are involved, but not from a perspective that combines epistemological questions with a praxeological approach.⁹ The *historical* sciences have also addressed these topics. In *Geistesar-*

Rieske, Constantin (2015): »Historische Praxeologie. Zur Einführung«, in: id. (eds.): *Historische Praxeologie. Dimensionen vergangenen Handelns*, Paderborn: Ferdinand Schöningh, pp. 7–54.

3 Paulsen, Friedrich (1902): *Die deutschen Universitäten und das Universitätsstudium*, Berlin: Verlag von Asher & Co, p. 201.

4 Ibid., pp. 398–400.

5 Ibid., pp. 400–401.

6 Ibid., pp. 400–407.

7 Ibid., p. 404.

8 Ibid., p. 407. Translation by the authors.

9 Cf. for some insights into contemporary student practices: Hofhues, Sandra et al. (eds.) (2020): *Studierende – Medien – Universität. Einblicke in studentische Medienwelten*, Münster/New York: Waxmann; Meyer, Daniel/Reuter, Julia/Berli, Oliver (eds.) (2022): *Ethnografie der Hochschule. Zur Erforschung universitärer Praxis*, Bielefeld: transcript; Willatt, Car-

beit, Steffen Martus and Carlos Spoerhase have presented a recent and widely discussed praxeological study focusing on the practices of the humanities in their historical transformation.¹⁰ In general, studies combining the history of knowledge and praxeology have been published since the 1990s and continue to do so today.¹¹ In the course of this, the practices of students in the past have also been examined.¹² Going beyond these previous studies, this article explores the practices and logics of knowledge and non-knowledge, the underlying cultures of knowledge, and their transformation.

To do so, the empirical analysis addresses the following questions to examine how students' practices were and are enacted and how this is linked to students' production and acquisition of knowledge: Which practices of knowledge can be observed around 1900 and around 2025, and which underlying logics are present? How are both conditioned by specific infrastructures? What is regarded as knowledge, and what is identified as non-knowledge? How is non-knowledge dealt with—where and when does it occur, and how does it relate to knowledge? What do students and lecturers perceive as valuable knowledge? How do lecturers shape the relationship between knowledge and non-knowledge?

Student practices change significantly over time and are by no means timeless or universal. Examining these changes can contribute to an understanding of the development process of knowledge categories and scientific concepts. So, this article will compare two university courses in the field of history (one around 1900, one around 2025) and the thus applied knowledge practices. Both courses dealt, among

los/Buck, Marc Fabian (2023): »Studieren im Medium des Digitalen«, in: Marc Fabian Buck/Miguel Zulaica y Mugica (eds.): Digitalisierte Lebenswelten. Bildungstheoretische Reflexionen, Berlin: J.B. Metzler, pp. 347–369.

10 Martus, Steffen/Spoerhase, Carlos (2022): *Geistesarbeit. Eine Praxeologie der Geisteswissenschaften*, Berlin: Suhrkamp.

11 The focus of these studies was and is not solely on university history. For example see Lehner, Eva M. (2023): *Taufe – Ehe – Tod. Praktiken des Verzeichnens in frühneuzeitlichen Kirchenbüchern*, Göttingen: Wallstein.

12 Cf. for example Prinz, Michael (2021): »Historische Vorlesungen zwischen freyem Discours und Heftmanufactur. Praktiken des Vortragens und Nachschreibens akademischer Vorlesungstexte im 18. und frühen 19. Jahrhundert«, in: Wolf Peter Klein/Sven Staffeldt (eds.): *Zur Geschichte der Fach- und Wissenschaftssprachen. Identität, Differenz, Transfer*, Würzburg: Julius-Maximilians-Universität Würzburg, pp. 135–179; Füssel, Marian (2024): »Hörsaal-Leben. Zur Praxisgeschichte der Vorlesung im 18. Jahrhundert«, in: *Zeitschrift für Historische Forschung* 49, pp. 441–478; Reh, Sabine/Klinger, Kerrin (2020): »Perspektiven einer bildungshistorischen Praxeologie. Studieren als Praxis«, in: Andreas Hoffmann-Ocon/Andrea De Vincenti/Norbert Grube (eds.): *Praxeologie in der Historischen Bildungsforschung. Möglichkeiten und Grenzen eines Forschungsansatzes*, Bielefeld: transcript, pp. 207–242; Spoerhase, Carlos/Dehrmann, Mark-Georg (2011): »Die Idee der Universität. Friedrich August Wolf und die Praxis des Seminars«, in: *Zeitschrift für Ideengeschichte* 5:1, pp. 105–117.

other things, with the military conflicts between the Delian League and the Peloponnesian League, especially during the Peloponnesian War (431 BCE to 404 BCE). This thematic overlap is intended to enable for a comparison that is not distorted by shifts in content. The comparison can help to highlight the specificity of contemporary conditions. In addition, continuities and discontinuities of academic knowledge practices can be identified. At the same time, this requires a particularly careful comparison, so that no anachronistic conclusions arise. This can be ensured by not making comparisons in a judgmental sense but rather (in the spirit of historical research) by emphasizing the otherness of the past and the meaningfulness of individual actions.

To analyze student practices, this article will at first briefly outline the theoretical framework of the comparative case study. Subsequently, the approximately 120-year-old course and the current one will be analyzed separately regarding the questions outlined above. Finally, continuities and discontinuities will be identified in a conclusion, and further research perspectives will be pointed out to.

2. Theoretical framework: Cultures of knowledge and ›Bildungswissen‹¹³

The contexts shaping and conditioning students' practices and their underlying logics can be summarized under the term ›culture of knowledge‹.¹⁴ In this paper the term is used according to Hans Jörg Sandkühler and Karin Knorr Cetina. Sandkühler provides a contextualist definition by saying that ›cognitive performance and

13 This article uses the terms ›culture of knowledge‹ and ›knowledge culture‹ synonymous. In other publications, the term ›epistemic cultures‹ is used, too. The term ›Bildungswissen‹ could best be translated as ›educational knowledge‹. Since the German word ›Bildung‹ and the English word ›education‹ are not identical and the term ›educational knowledge‹ could be misleading, the term ›Bildungswissen‹ is used in this article. It was first described, but differently, as a form of knowledge by Max Scheler. Cf. Scheler, Max (1926): *Die Wissensformen und die Gesellschaft*, Leipzig: Neue Geist.

14 The concept of thought styles (›Denkstile‹) and thought collectives (›Denkkollektive‹) according to Ludwik Fleck could also be applied. According to Fleck's theory, knowledge is also conceived as a construct. Thought styles describe (similar to knowledge cultures) historically and socially influenced ways of thinking that prevail within a particular community and shape the way in which knowledge is handled. However, the concept of knowledge cultures has the advantage that it focuses more on framework conditions, allowing the present analysis to look at practices. About Fleck's thought styles cf. Fleck, Ludwik (1935): *Entstehung und Entwicklung einer wissenschaftlichen Tatsache. Einführung in die Lehre vom Denkstil und Denkkollektiv*, Basel: Schwabe; Sabisch, Katja (2017): ›Die Denkstilanalyse nach Ludwik Fleck als Methode der qualitativen Sozialforschung. Theorie und Anwendung‹, in: *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* 18:2. Online: <http://nbn-resolving.org/urn:nbn:de:0114-fqs170258> (last access: 11.09.2025).

knowledge [are] embedded in the contexts of complex cultural—epistemic and practical-social—networks». ¹⁵ The logics of practices are tied to the orders of knowledge within which they take place. Knorr Cetina defines the culture of knowledge as being constructed by practices and determining the emergence of knowledge. ¹⁶ Even though Knorr Cetina tends to view practices as the generating factor, it is the connection between practices and the knowledge culture that is particularly important for this article. By help of the analysis of student practices and their logics, the aim is to reconstruct historical and current cultures of knowledge which »are distinguishable, systemically constituted ensembles of epistemic and practical contexts of representations that can be reconstructed holistically«. ¹⁷

This article aims at looking at the context shaping the knowledge representation through student practices. Therefore, it is of interest to see how students are introduced to specific cultures of knowledge. Cultures of knowledge thus determine the scientific practices that are carried out within their context, and practices likewise shape and create the knowledge culture as a social construct. Cultures of knowledge and practices are therefore always in a mutually dependent relationship with each other. It must be noted at this point that knowledge cultures are not absolute. They are neither independent in time—nor are they spatially unlimited. Cultures of knowledge are not monolithic but are subject to constant change and a process of negotiation. The purpose of this article is to identify continuities and changes of knowledge practices and thus to be able to make initial observations about different knowledge cultures over time. It is neither possible nor desirable to present a comprehensive and definitive picture of the respective knowledge culture. As already pointed out to: First indications of the reconstruction of cultures of knowledge should be achieved by analyzing student practices and the logic behind them.

University courses are a particularly interesting object of research because lecturers are faced with a complex task here: They are supposed to impart specialized knowledge as well as propaedeutic techniques of academic research, especially with first-year students. In doing so, they are forced to convey the configuration of the relationship between knowledge and non-knowledge that is customary for their academic discipline. ¹⁸ This knowledge, transmitted from older to younger generations,

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- 15 Sandkühler, Hans Jörg (2014): »Wissenskulturen. Zum Status und zur Funktion eines epistemologischen Konzepts«, in: id. (ed.): Wissen. Wissenskulturen und die Kontextualität des Wissens. Frankfurt a.M.: Peter Lang, pp. 59–72, here p. 59. Translation by the authors.
 - 16 Knorr Cetina, Karin (2002): Wissenskulturen. Ein Vergleich naturwissenschaftlicher Wissensformen, Frankfurt a.M.: Suhrkamp, p. 11. See also the articles by Norbert Ricken and Joachim Scholz in this volume.
 - 17 Sandkühler: Wissenskulturen, p. 60.
 - 18 See also the considerations by Patrizia Breil, Anne Dippel, Christoph Engemann, Estrid Sørensen and Iris van der Tuin regarding the question of how virtual universities deal with truth in this volume.

is closely intertwined with the culture of knowledge it belongs to and to whose on-going formation it actively contributes.

By the concept of ›Bildungswissen‹ as it was outlined by Norbert Ricken, Sabine Reh and Joachim Scholz, we adopt a theoretical perspective on this particular type of knowledge about knowledge that »can be analyzed as a special form of [...] reflection of knowledge from an *intergenerational* perspective«.¹⁹ It plays a crucial role for the process of subjectivation, constituting: »Who one is made to be through knowledge [...], what position [...] one is ascribed [...], what relationship to the world, but also to others and to yourself goes hand in hand with this, all this is at the core of the respective ›Bildungswissen‹«.²⁰

It may be, for instance, a kind of meta-knowledge of the organization of knowledge, or knowledge of the practices of knowledge production. It is knowledge of how to deal with non-knowledge, too. In doing so, ›Bildungswissen‹ must be conceptualized as being both processual and relational because it emerges from a process of cooperation and negotiation between lecturers and students, who rely on each other: The former set guidelines and are in the powerful position to authorize and evaluate knowledge and knowledge practices. On the other hand, students carry on and potentially transform traditional knowledge practices by developing new routines and idiosyncratic behavior.

3. Case Study Part I: Student practices in a university course around 1900

The first part of the case study will take a closer look at the course from 120 years ago. The basis of the reflections is a notebook written by a student from the summer semester 1903 to the winter semester 1903/04.²¹ The author was Adolf Hofmeister, a male history student in Berlin whose father held a doctorate in history and was director of the university library in Rostock. He is thus a representative of precisely that social group that was particularly common at German universities around 1900. At the end of the 19th century and around 1900 there were almost exclusively male

19 Ricken, Norbert/Reh, Sabine/Scholz, Joachim (2023): »Transformationen des Bildungswissens. Eine wissenstheoretische und -geschichtliche Perspektive auf digitale Wissenskulturen«, in: Sandra Afßmann/Norbert Ricken (eds.): *Bildung und Digitalität. Analysen – Diskurse – Perspektiven*, Wiesbaden: Springer VS, pp. 313–324. Translation by the authors. About ›Bildungswissen‹ see also the articles by Norbert Ricken and Joachim Scholz in this volume.

20 Ibid., p. 325. Translation by the authors.

21 University Archive Greifswald, Estate Hofmeister, B3-32: Prof Eduard Meyer: *Historische Übung – Peloponnesischer Krieg* (Berlin, SS 1903, WS 1903/04), unpaginated, [cover verso].

students at German universities. Moreover, these students often came from an upper social class.²² These two aspects applied to almost all students of the time.

The notebook being the only direct source of the course, it is of course no longer possible to observe the practices firsthand. Instead, attention must be paid to the material traces left behind by bodies and practices in the material.²³ This allows for indirect conclusions about practices. This case study investigates one single case. The praxeological method may—as in this article—start out from a single object²⁴ as well as search for and examine practices in serial sources.²⁵ With case studies starting out from one single object it is of course only possible to search for »repetitions and small deviations«²⁶ within this single object.

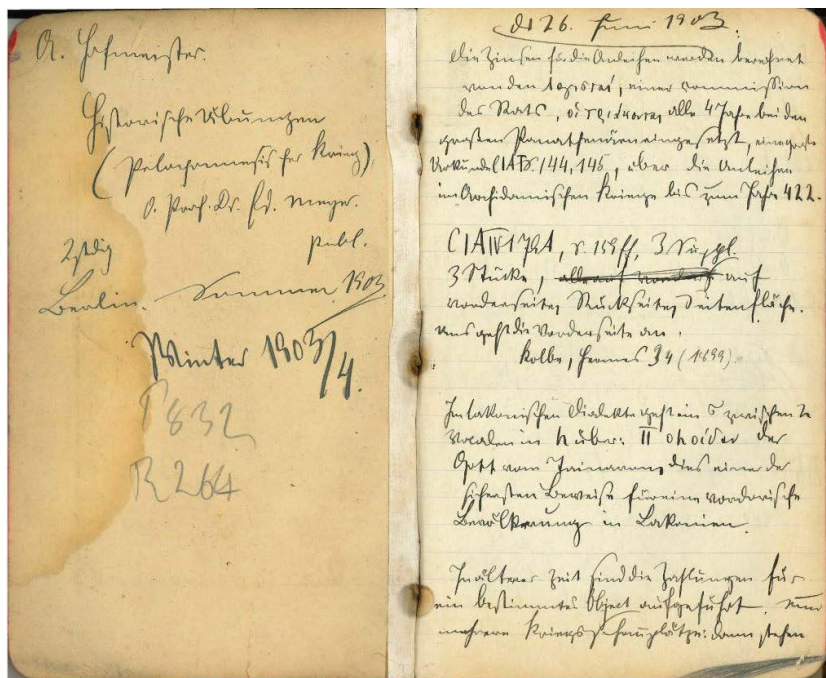
Hofmeister had been enrolled at Friedrich Wilhelm University in Berlin (now Humboldt University) since Easter 1903,²⁷ having studied in his hometown of Rostock²⁸ and in Halle since 1901.²⁹ So he was about halfway through his studies when he attended the course. Historical seminars and exercises were traditionally intended for advanced students. Exercises especially for new students in the field of historical science were not established at universities until the end of the 19th century.³⁰ Hofmeister himself had attended history seminars from his first semester onwards,

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- 22 Möller, Silke (2001): *Zwischen Wissenschaft und ›Burschenherrlichkeit‹. Studentische Sozialisation im Deutschen Kaiserreich, 1871–1914*, Stuttgart: Steiner, p. 65; Jaraus, Konrad H. (2012): »Frequenz und Struktur. Zur Sozialgeschichte der Studenten im Kaiserreich [1980]«, in: *Historische Sozialforschung*, Supplement 24, pp. 125–156, here p. 148.
 - 23 Füssel, Marian (2022): »Praxeologie als Methode«, in: Stefan Haas (ed.): *Handbuch Methoden der Geschichtswissenschaft*, Wiesbaden: Springer VS, pp. 1–19, here p. 8. Online: https://doi.org/10.1007/978-3-658-27798-7_18-1 (last access: 06.10.2025).
 - 24 Ibid., p. 12.
 - 25 Reh, Sabine (2014): »Can we discover something new by looking at practices? Practice theory and the history of education«, in: *Encounters in Theory and History of Education* 15, pp. 183–207, here p. 189; Berdelmann, Kathrin et al. (2019): »Praxeologie in der Bildungsforschung. Ein Umriss historischer und gegenwartsbezogener Forschungsperspektiven«, in: id. (eds.): *Transformationen von Schule, Unterricht und Profession. Erträge praxistheoretischer Forschung*, Wiesbaden: Springer VS, pp. 1–28, here pp. 6–10.
 - 26 Reh: Practices, p. 189.
 - 27 Amtliches Verzeichnis des Personals und der Studierenden der Königlichen Friedrich-Wilhelms-Universität zu Berlin, Sommersemester 1903, p. 109. Online: <http://edoc.hu-berlin.de/18452/1440> (last access: 06.08.2025).
 - 28 Immatrikulation von Adolph Hofmeister, Sommersemester 1901, in: Krüger, Kersten (ed.): *Matrikelportal Rostock*. Online: <http://purl.uni-rostock.de/matrikel/200007385> (last access: 06.08.2025).
 - 29 Schmidt, Roderich (1972): Art. »Hofmeister, Adolf«, in: *Neue Deutsche Biographie* 9, p. 469–470. Online: <https://www.deutsche-biographie.de/pnd11695230X.html#ndbcontent> (last access: 06.08.2025).
 - 30 Eskildsen, Kaspar (2015): »Private Übungen und verkörpertes Wissen. Zur Unterrichtspraxis der Geschichtswissenschaft im 19. Jahrhundert«, in: Steckel, Sita/Kintzinger, Martin (eds.): *Akademische Wissenskulturen. Praktiken des Lehrens und Forschens vom Mittelalter bis zur*

which is an indication of this period of transition.³¹ However, his sparse notes from the first courses suggest that his attendance was not particularly successful and productive. This may have been because the special differentiation of courses for different student groups had not yet been completed.

The student attended a historical exercise with Professor Eduard Meyer at the University of Berlin. The course was given every semester on Friday from 6 to 8 pm.³²

Fig. 1: First page of the notebook with notes inside the cover.



Moderne, Basel: Schwabe, pp. 143–161, here p. 154; Weber, Wolfgang (2002): *Geschichte der europäischen Universität*, Stuttgart: Kohlhammer, p. 228.

- 31 University Archive Greifswald, Estate Hofmeister, B3-15: Prof. Schirrmacher – Historisches Seminar (Rostock, SS 1901, WS 1901/02), Prof. Meyer – Historisches Seminar (Halle, SS 1902), Prof. Droysen – Historisches Seminar (Halle, WS 1902/03), Prof. Meyer – Historisches Seminar (Berlin, SS 1903).
- 32 Verzeichnis der Vorlesungen der Friedrich-Wilhelms-Universität zu Berlin, Sommersemester 1903, p. 31. Online: <https://nbn-resolving.org/urn:nbn:de:kobv:11-709232> (last access: 30.07.2025); Verzeichnis der Vorlesungen der Friedrich-Wilhelms-Universität zu Berlin, Wintersemester 1903/04, p. 32. Online: <https://nbn-resolving.org/urn:nbn:de:kobv:11-709233> (last access: 30.07.2025).

He notes down a kind of cover page in his notebook with his own name, the name of the professor, the title of the course, the semester and the place where it was held in, the length, and whether it was open to the public or private (Fig. 1).³³ This way the notes can be assigned quite easily. It is a notebook approximately 100 pages long, with pre-printed lines and a size of 19 by 12cm. It is very densely written and has hardly any paragraphs. It was written in both ink and pencil. The student uses different scripts and languages, all of which he is proficient in: Ancient Greek, Latin, and German—as well as German Kurrent script, Latin script, and shorthand.

First of all, it is important to consider how the notebook was handed down: it was among the estate of a professor who had attended this course himself as a student. Thus, Hofmeister was not only part of an educated upper class with a historian as his father, but he also became a history professor himself. The fact that the notebook is among the estate of the professor already speaks for the value that was attached to it. The author considered it necessary to keep it for many years after attending the course and also to keep it in his professorial library. This is certainly a very common practice among scholars of the time.³⁴ But it also reflects the understanding of knowledge. The author assumed that this knowledge would continue to be relevant decades after attending the course. There is no decay of knowledge but rather the idea and understanding that knowledge is timeless and objective.

This may certainly also be due to the materiality around 1900. This notebook is the only thing the student may be supposed to have physically taken away from this course. The notes are not supplemented by other materials. This notebook can and must therefore be understood firstly as a notebook and workbook but, secondly, also as a material learning outcome and knowledge repository. It can be seen as an actively used everyday object as well as a knowledge medium designed for a certain permanence.

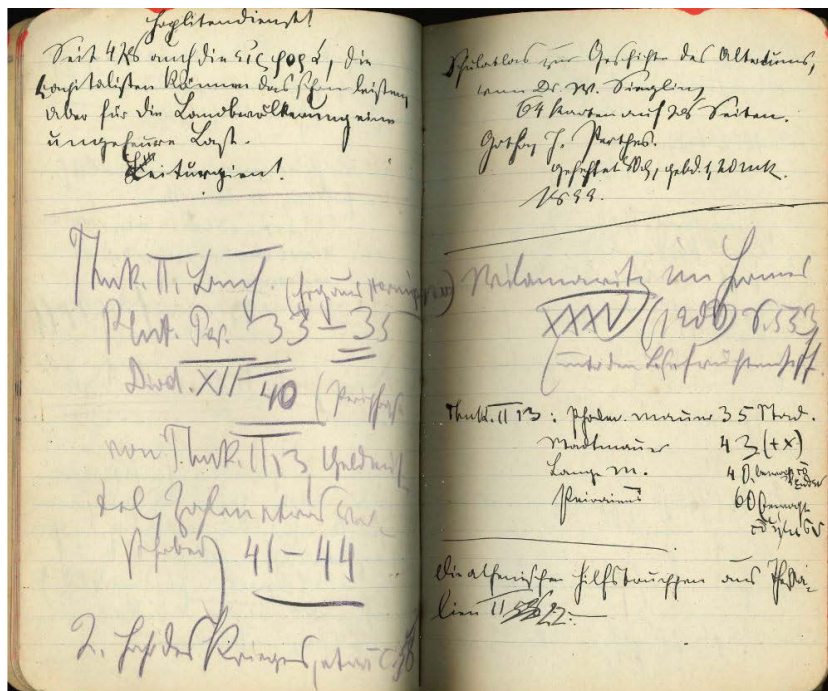
The notebook consists largely of standardized abbreviations of ancient authors and parts of their works, with subsequent text blocks which contain summaries or evaluations of these text passages.³⁵ These parts can be seen as material traces of practices of reading and transforming knowledge.

33 UA Greifswald, Hofmeister, B3-32, [cover verso].

34 Reh/Klinger: *Praxeologie*, pp. 224, 228; Weber: *Geschichte der europäischen Universität*, pp. 227–228.

35 For example: UA Greifswald, Hofmeister, B3-32, [fol. 7r].

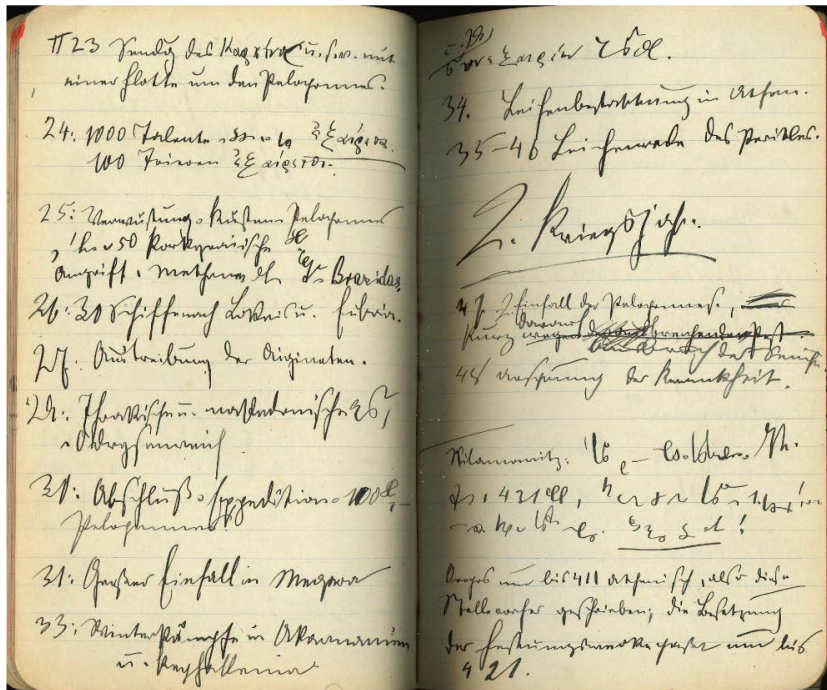
Fig. 2: Notebook page with abbreviations



These abbreviations are very common in the field of ancient history and stand for certain ancient sources. The author (if necessary, the work), book, and chapter are abbreviated—page numbers are not given. By help of these abbreviations, text passages can be clearly assigned in different prints and are independent of their (translated) language. Here (Fig. 2) we have an example of Thucydides' History of the Peloponnesian War. It shows that subject-specific terms and codes were familiar to the student and could be decoded by him. Therefore, when he attended the course, he was already provided with a certain amount of orientational knowledge, which made specialized knowledge accessible and allowed for its systematization, as well as with a subject-specific body of knowledge.

This orientational knowledge can also be found in lists created by the student as practices of knowledge structuring. Longer text passages in the ancient source are summarized by paragraph. Hofmeister compiled lists of entire passages from the ancient sources, for example by creating short summaries of only two lines for each paragraph. This is also a repository, a storage of orientational knowledge. It can be surmised that the later professor used these lists, for example, to be able to quickly find certain passages again.

Fig. 3: Notebook page with listed contents of chapters.

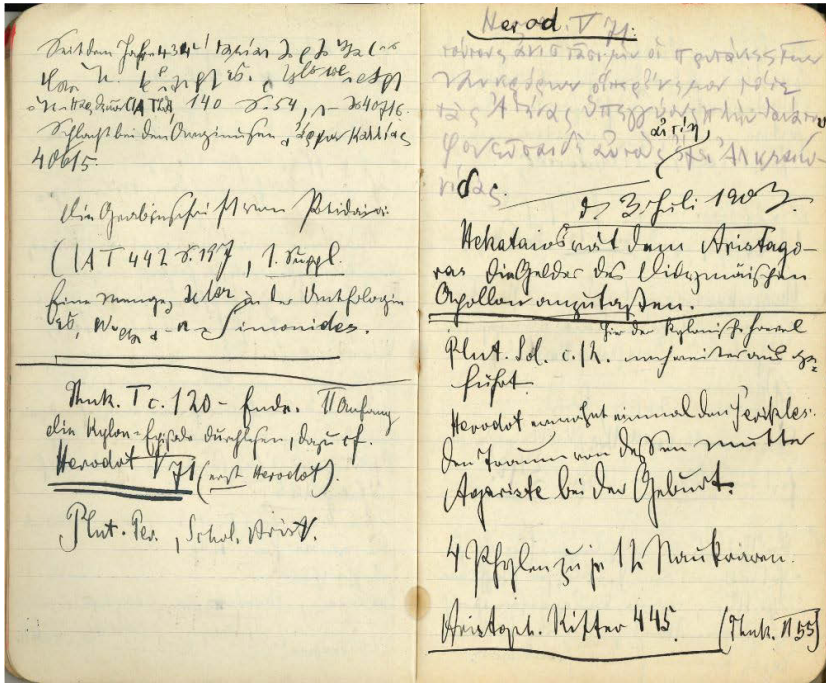


For example, in one list Hofmeister summarized Thucydides' History of the Peloponnesian War, Book II, Chapters 23 to 48. For Chapter 31, he writes »Großer Einfall in Megara«³⁶—the invasion of Megara (Fig. 3). Thus, he knows that Thucydides talks about this event at this specific part in his text. This made the sources accessible, especially because the students could not otherwise provide themselves with orientation in source editions. This kind of overview is therefore not directly accessible to students but must firstly be actively created and secondly be saved.

These abbreviations can also be found in parts that may be understood as a kind of homework (Fig. 4).

36 Ibid., [fol. 7v].

Fig. 4: Notebook page with homework.

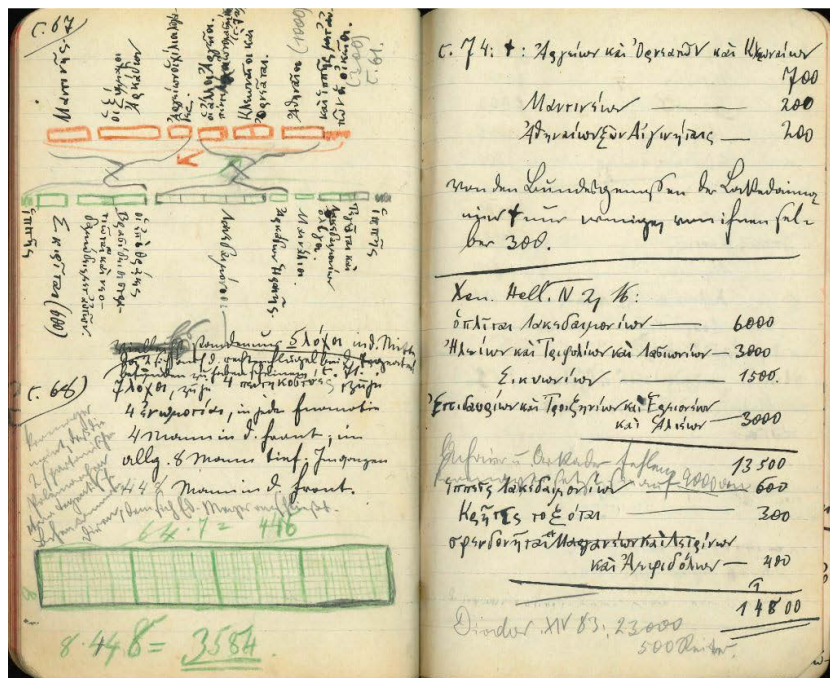


At this point, for example, the students are given the task of reading several sources, and precise instructions are also given: for example »erst Herodot«³⁷—Herodotus first. While working on the task, the student writes down the original ancient Greek text from the source edition into his notebook. This is certainly the practice intended by the professor. Students are supposed to go to the libraries of the seminars on their own and to look at the source editions. Usually this was the only place to look at them. The students practised working with the primary sources there. They were supposed to handle them on their own and to internalise the knowledge of dealing with sources. They practiced the reconstruction of events from the past.

The sources are attributed particular significance. The information provided by them was directly accepted as knowledge in the course and transferred to the notebook.

37 Ibid., [fol. 2v]. Highlighting in the original.

Fig. 5: Notebook page with calculation of troop strength.



Hofmeister, for example, transferred figures directly from Thucydides to his notes (Fig. 5).³⁸ The ancient author talks about the size and composition of an army, and the student transfers these figures and calculates an exact troop strength. This example shows that the information from the sources was simply copied. The knowledge conveyed by the sources is therefore regarded as truth. This was not only done by the students but was a standard academic practice of the time.³⁹ The practices taught and practiced in this course were therefore part of an introduction to the knowledge culture and conventions of contemporary historical scholarship.

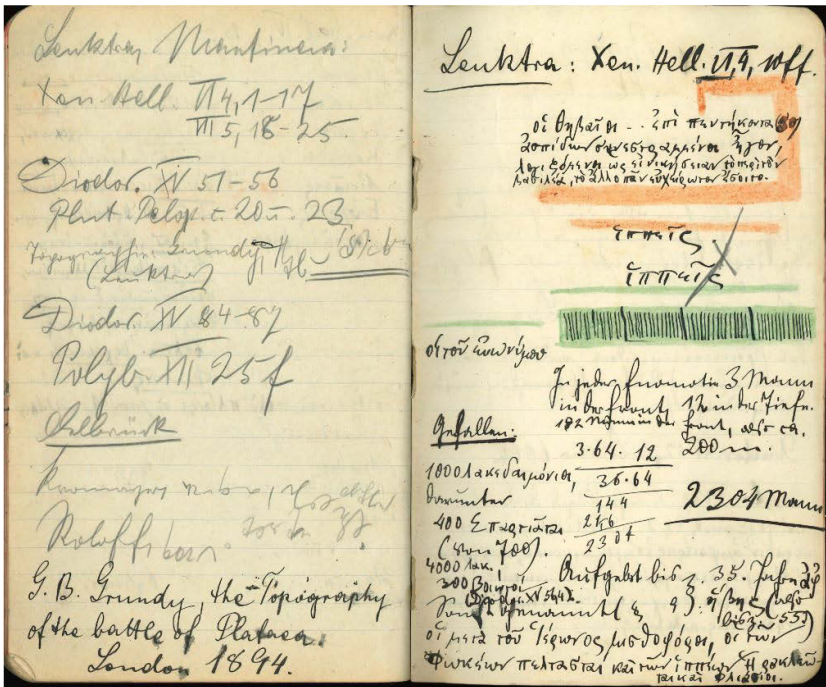
This assumption was very widespread and can also be found in the textbooks and introductory works on ancient history. Curt Wachsmuth in his 'Introduction to Ancient History' of 1895 wrote, for example: Thucydides could tell »the truth about

38 Ibid., [fol. 46v].

39 E.g. Busolt, Georg (1905): Spartas Heer und Leuktra, in: Hermes 40:3, pp. 387–449. Around 1900, troop strength was already being critically questioned, for example by Hans Delbrück. Delbrück, Hans (1900/2006): Geschichte der Kriegskunst. Vol. 1: Das Altertum. Von den Perserkriegen bis Caesar, Hamburg: Nikon.

important events«. ⁴⁰ The text of the ancient author is not regarded as a product of its time and circumstances: Thucydides was said to report with »scientific clarity«. ⁴¹ This conveys an understanding that past events are directly accessible to the trained eye through the sources. This means that the learned historians of the time around 1900 are able to extract the truth handed down to the readers by, for example, Thucydides. This assumption was passed on from the professor to the student and trained in and through the course.

Fig. 6: Notebook page with precise calculation of fatalities.



Knowledge of the past in the sources did not have to be worked out interpretatively or to be read from between the lines but could be extracted directly. Knowledge was always believed to be explicitly found in the sources—such was the prevailing conviction at the time. For example, the student also calculated exactly how many

40 Wachsmuth, Curt (1895): Einleitung in das Studium der Alten Geschichte, Leipzig: S. Hirzel, p. 519. Translation by the authors.

41 Ibid., p. 521. Translation by the authors.

people died in the Battle of Leuctra a few years after the Peloponnesian War (Fig. 6).⁴²

It naturally follows from this that non-knowledge is everything the sources do not explicitly reveal. A distinction between knowledge and non-knowledge could therefore be made quite clearly. Only what was written by ancient authors is considered knowledge. It is not related to the historian's interpretation. They therefore do not create knowledge. This sovereignty belongs to the sources alone. Wachsmuth, for example, also called Thucydides a »master«⁴³ and thus places him on the same level as contemporary scientific historians. Thus, the boundary between knowledge and non-knowledge is quite clearly defined. It is not subject to any variability conditioned by the historian's perspective. The historian has just the modest task of discovering true knowledge. The student in this example is taught to absorb the knowledge from the sources and accept it as being true. In a certain sense, the learning subject submits to knowledge that is valid independently of him.

4. Case Study Part II: Student practices in a university course around 2025

Considering the research questions formulated at the outset, several observations can now be made about the university course in the field of history in 2024, which forms the basis of the second case study. The seminar, held for four hours each week at a university in Western Germany, was ethnographically observed during five sessions over the course of a semester. Furthermore, conversations with students and the lecturer before and after the seminar were included, as well as the opportunity to access the corresponding course on the university's online learning platform, which to this day serves as a repository for various documents. The sessions were typically held in attendance in a seminar room at the university, equipped with digital technology, and were intended for around 30 first-semester students, both female and male, and from different social backgrounds. The course was accompanied by two tutorials led by senior students. Given the need for conciseness, the following considerations are directly linked to the analysis of the first case study and focus on selected aspects that allow for a comparison.

The first notable aspect concerns the data and its materialities. Unlike the historical notebook, which has been preserved, the ethnographer in this case is directly involved in the production of (partly digital) data: It is possible to observe students' »doing note-taking« in practice. Moreover, the researcher has access to the products or outcomes of student practices in various forms—for example, as

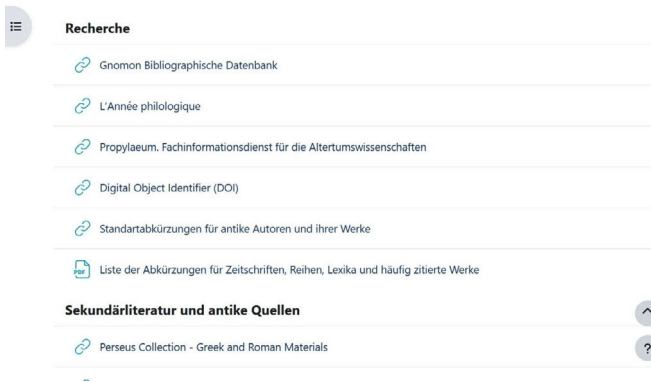
42 UA Greifswald, Hofmeister, B3-32, [fol. 49r].

43 Wachsmuth: Einleitung, p. 527. Translation by the authors.

a printed position paper or as a digital note file on an iPad which can be opened on any device for editing, taking screenshots, lossless duplication, uploading to a cloud, and so on. The research situation is therefore entirely different, and the ethnographer occupies a powerful position which must always be critically reflected upon—ethnographic fieldwork is a practice in its own right.⁴⁴ Ethnographic note-taking and writing must also be considered with regard to epistemological aims and principles of linguistic and stylistic composition.⁴⁵

Within the framework of what one could call digital ethnography—defined as »the practice of doing ethnographic fieldwork in digital environments«⁴⁶ or »ethnography of digital worlds«⁴⁷—the course on the online learning platform serves as a valuable resource: It contains, for example, around forty PDFs, thirty links to secondary literature, and ten homework assignments with corresponding texts (see screenshot of a section in Fig. 7).

Fig. 7



44 Cf. Breidenstein, Georg et al. (2020): *Ethnografie. Die Praxis der Feldforschung*, 3rd, revised edition, München: UVK Verlag.

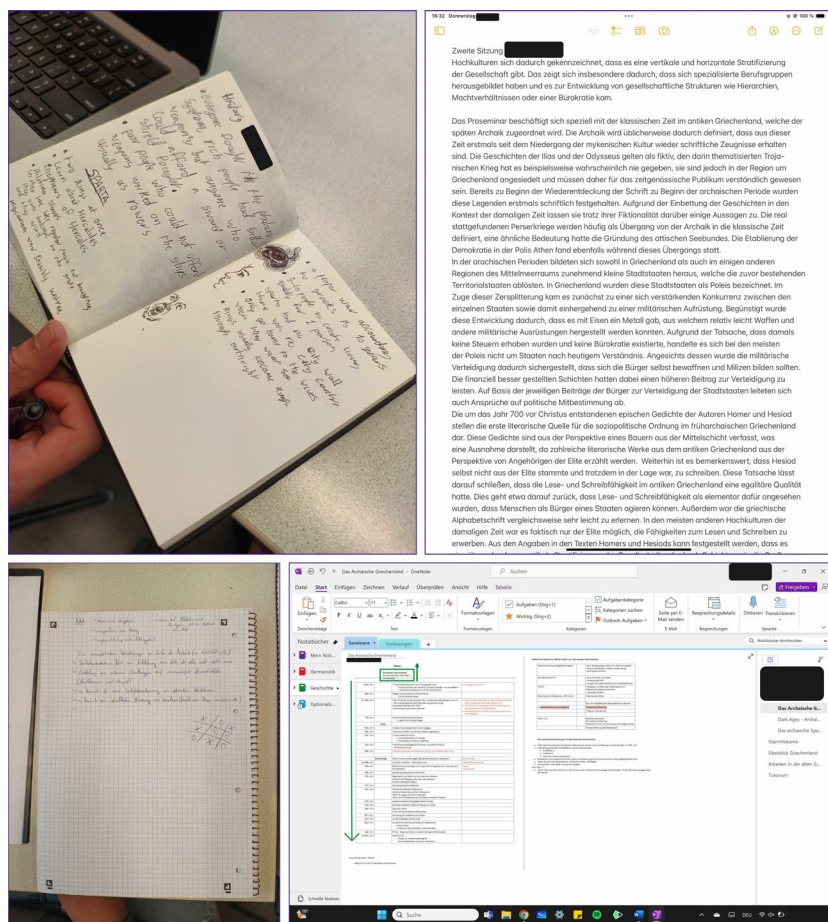
45 Cf. Bock, Katharina (2019): »Ethnografisches Protokollieren. Erkenntnisabsichten und sprachlich-stilistische Gestaltungsprinzipien«, in: *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* 20:1. Online: <http://dx.doi.org/10.17169/fqs-20.1.2933> (last access: 06.08.2025).

46 Underberg-Goode, Natalie M. (2016): »Digital Ethnography«, in: Heidrun Frieße/Marcus Nolden/Miriam Schreiter (eds.): *Handbuch Soziale Praktiken und Digitale Alltagswelten*, Wiesbaden: Springer VS, pp. 1–7, here p. 1. Online: https://doi.org/10.1007/978-3-658-08460-8_49-2 (last access: 06.08.2025).

47 Ibid., p. 2.

The information provided is structured but overwhelming because of its sheer volume. Behind every link there lies a new world of information with further links. It becomes evident that students must choose which information they engage with. Their implicit task is to get an overview and find the document that provides the answers to their questions or the texts they need to complete an assignment—and to decide what is (currently) not relevant for them and can be disregarded as irrelevant information and personal non-knowledge.

Fig. 8

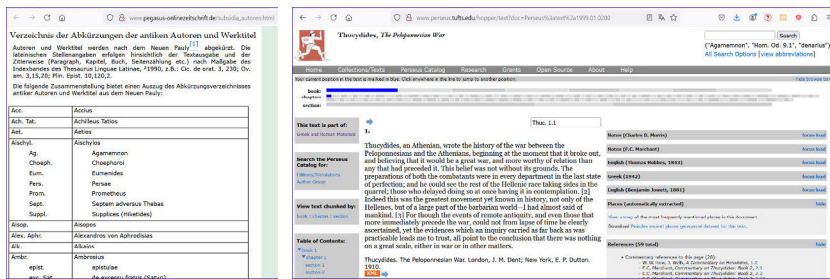


The student practice of note-taking is carried out in different ways (see photos and screenshots in Fig. 8). These days it comprises of a multitude of materialities be-

cause students use tablets or laptops with different operating systems and software, or pen and paper. They combine various techniques for different purposes, while the tools structure the practice of note-taking.

Some students write down more or less accurately what the lecturer says about the historical events during plenary discussions. What he says is thus taken as validated specialized knowledge which can be used for graded assignments to pass the course. However, we cannot say whether the notes are kept or stored permanently. There are significant differences of the practices of storing and organizing knowledge: many students collect texts and material in a folder on their notebooks. However, some open files in their browsers and do not seem to save them. Few students use a physical file. One way or another, it is difficult to observe in detail how students structure or collect (their) knowledge in class—or it rarely happens. There is one exception: a student who is attending the seminar for the second time because he/she previously failed takes notes in a table in *OneNote*. The student tries to organize what he/she is writing down into a chronology, focusing on historical facts. However, no one records details about ancient sources or even uses standard abbreviations for ancient authors. It no longer seems to be a necessary skill to know them (from memory). Ancient sources are read less frequently, and they can be googled or summarized by help of generative AI such as *ChatGPT*—which does not say anything about the quality of the result of this approach to ancient sources. Learning the abbreviation system is no longer part of ›Bildungswissen‹.

Fig. 9



However, links to it are to be found in the online course as well as the *Perseus Collection of Greek and Roman Materials*,⁴⁸ where one can find Thucydides' ›The Peloponnesian War‹ in Greek and English (see screenshots in Fig. 9). The homepages and texts are potentially accessible to anyone.

48 *Perseus Collection of Greek and Roman Materials*. Online: <https://www.perseus.tufts.edu/hoppe/r/collection?collection=Perseus:collection:Greco-Roman> (last access: 12.09.2025).

Fig. 10

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The students are obligated to give a presentation and submit a written version of it. Prior to the presentation they discuss it with the lecturer during an (online) office hour and submit their position paper via email shortly before or after their presentation. While presenting, they refer to ancient sources but rarely quote directly, instead referring to many authors of secondary literature. The presentations are an important practice of knowledge in the course of which students try to reproduce and reflect on the knowledge currently valid in historical science (see screenshots of sections in Fig. 10).

Fig. 11

Die Kleisthenischen Reformen

Fragestellung: Inwiefern sind die Anfänge der Demokratie bei den Kleisthenischen Reformen anzusetzen?

These: Die Quellenlage und die Handlungsprinzipien hinter und während der Reformen erlauben den Ansatz des Beginns einer weit isonomen athenischen Gesellschaft und damit einer Frühform der Demokratie.

Forschungsstand:

- ❖ Bleicken: Es gab keine Frühformen der Demokratie.
- ❖ Riklin: Die Demokratieentwicklung begann bereits bei dem Mehrheitsprinzip.
- ❖ Ober: Durch den Aufstand von 507 wurde die Demokratie durch die Menge geboren.
- ❖ Kienast: Die Inschriften aus dem 4. Jahrhundert sind als inakkurat zu betrachten.

Reformen des Kleisthenes:

- ❖ Einteilung des Staatsgebietes von Athen in Phylen

Some students still refer to historical events as facts, others indicate that they are presenting several research perspectives (see screenshot of section in Fig. 11). In any case, the lecturer urges students to specify exactly where each piece of information comes from. It is emphasized that they should read secondary literature on specific topics and be able to contextualize it.

Around 2025 students are also required to complete homework assignments, primarily involving the reading of secondary literature in German or English. Based

on interview data and the absence of annotations or highlights in the relevant texts on students' devices, it appears that only a minority of students engage with these readings on a regular basis. Instead, they focus on those assignments that are subsequently graded—the students produce or generate knowledge that is relevant as a form of assessment. The lecturer ascribes achievement and knowledge to the students and, through specific examination practices—which can be understood as part of knowledge practices—positions them as subjects of the examination.⁴⁹ Alongside the presentation, two written papers must be submitted by specific deadlines and will be graded.

Fig. 12

Hdt. 2,3-5:

(aus: Herodot: Historien, erster Band (Buch I-V), griechisch-deutsch, herausgegeben von Josef Feix, Düsseldorf 2007.)

3. Ich erfuhr aber in Memphis im Gespräch mit den Priestern des Hephaistos noch anderes. Auch nach Theben und Heliopolis bin ich eigens gereist, um festzustellen, ob das, was man dort erzählte, mit den Nachrichten in Memphis übereinstimmte. Denn die Bewohner von Heliopolis sollen die gelehrtesten Ägypter sein. Ich habe aber nicht die Absicht, hier zu erzählen, was man mir von den Göttern erzählte, höchstens ihre Namen; denn ich glaube, von den Göttern wissen alle Menschen gleich wenig. Wenn ich etwas davon erwähne, dann nur deshalb, weil der Zusammenhang der Erzählung es erfordert.

4. Über die Geschichte der Menschheit dagegen hat man mir einstimmig folgendes berichtet: Als erste unter den Menschen haben die Ägypter das Jahr gefunden und es in zwölf Monate aufgeteilt. Sie erzählen, die Sterne hätten sie auf diese Einteilung gebracht. Ich glaube, ihre Berechnung ist insofern klüger als die griechische, weil die Griechen in jedem dritten Jahr einen Schaltmonat wegen der Jahreszeiten einfügen. Die Ägypter aber zählen zwölf Monate zu je 30 Tagen und fügen jedes Jahr noch fünf Tage außer der Reihe hinzu. So läuft der Kreis der Jahreszeiten immer auf das gleiche hinaus. Auch die Nennung von 12 Göttern,

Content-wise, the task is about an ancient source by Herodotus in its German translation (see screenshot of section in Fig. 12). The text excerpt is provided with the literature reference, available as a PDF in the online course. The questions that need to be answered examine Herodotus' status as a historian and are intended to train students in source criticism.⁵⁰

The intended critical attitude conflicts with the assumption that historical sources convey something that can still be correctly reconstructed these days. The lecturer repeatedly marks different limits of historical knowledge, for example

49 Cf. Ricken, Norbert/Reh, Sabine (2017): »Prüfungen – Systematische Aspekte der Geschichte einer pädagogischen Praxis. Einführung in den Thementeil«, in: Zeitschrift für Pädagogik 63:3, pp. 247–258.

50 About source criticism in historical science cf. Fachgebiete Wissenschafts- und Technikgeschichte, TU Berlin (2022): Leitfaden zur Quellenkritik. Online: https://www.static.tu.berlin/fileadmin/www/10002004/Material_Studium_Lehre_tg/Leitfaden-Quellenkritik-1.pdf (last access: 06.10.2025).

when he exclaims: »We know nothing, we know nothing! Welcome to ancient history«, or: »Those are very good questions, and I cannot answer any of them. The sources provide no information on that«. Accordingly, *something* could be known based on the sources. In the introductory literature on historical science it also says: »ad fontes«—»to the sources!«⁵¹ This means that the sources are subject to interpretation, not that they contain pure truth. It is also emphasized that historians must be able to engage directly with primary sources and should not rely exclusively on secondary literature. On the other hand, the lecturer emphasizes that we cannot know what happened in the past anyway. He invites the students to make reasoned assumptions and points out that historians also make well-reasoned distinctions which could also be made differently. Herbey, the lecturer, points out to the constructed nature and necessity of social validation of all historical knowledge, to the coexistence of different bodies of knowledge that may also be in conflict with one another, the fallibility of knowledge, and the necessity of contextualizing all knowledge objects.

5. Conclusion: Continuities, discontinuities, and the idea of knowledge

On the surface, the comparative analysis of the two case studies reveals continuities of student practices such as reading ancient sources, taking notes, or doing homework. Nevertheless, the underlying structure and meaning of quite similar practices have changed significantly. Some have become less important, others have been modified, new ones have been added, and others have faded. Transformed technical and digital infrastructures are transforming the logics of established practices. This is accompanied by changed ways of work as well as by changed value of individual practices. Nowadays, the skill of reading and writing ancient Greek is less important than the skill of creating a *PowerPoint* presentation, so we have to ask once again about subject-matter expertise and knowledge.⁵² Many of the changed, new, and often subversive student practices (or, less entrenched: routines) are not yet part of the kind of ›Bildungswissen‹ the lecturer wants to convey, for example, (academic) writing with generative AI or researching using online search engines.⁵³

51 Eckert, Georg/Beigel, Thorsten (2019): *Historisch Arbeiten. Handreichung zum Geschichtsstudium*, Göttingen: Vandenhoeck & Ruprecht, p. 11. Translation by the authors.

52 Cf. Reh, Sabine/Caruso, Marcelo (2020): »Entfachlichung? Transformationen der Fachlichkeit schulischen Wissens. Zur Einführung«, in: *Zeitschrift für Pädagogik* 66:5, pp. 611–626.

53 Cf. Macgilchrist, Felicitas et al. (2023): »»Google_Suche. Suche als soziale Praxis in Unterricht und Schule«, in: Matthias Proske et al. (eds.): *Schule und Unterricht im digitalen Wandel. Ansätze und Erträge rekonstruktiver Forschung*, Bad Heilbrunn: Verlag Julius Klinkhardt, pp. 67–89. They show that if ›searching‹ means ›googling‹ the »multiplication of knowledge made relevant and the shifting of sovereignty over knowledge« (p. 68) is central.

Around 1900, the professor seems to know the limits of what is worth knowing or at least the limits of what history scientists of his time are interested in: True historical knowledge lies in the sources that define the area of what must and could be known. The idea is that there is pure knowledge to which one could advance. It would then also be timelessly valid. So, around 1900 historical knowledge is governed by the logic of unambiguity. Therefore, it can be made canonical for students.⁵⁴ The students practice working through the relevant ancient sources in their original language, gaining detailed knowledge of battle formations and calculating casualty figures while becoming scholars. The students follow the professor's guidance in analysis at a measured pace. The library, where the primary sources are stored in the form of books, and the seminar, as an exclusive institution, serve as the most important infrastructure for the acquisition of knowledge. One could say that knowledge is tied to these physical locations.

Around 2025 it is important for the lecturer to always specify the reasoning behind why certain facts are assumed to be true or untrue and by whom. The boundaries of what is worth knowing in historical science are expanded: the ancient sources are placed under new horizons of inquiry. It is well known that knowledge of the past is uncertain. Therefore, the lecturer aims at presenting different representations of the past and highlights the conditions that shape these perspectives. He questions traditional distinctions and emphasizes their temporality, criticizes his own academic discipline, and tries to enter into discussions with the students. At the same time the idea is upheld that there is a core of tangible specialized knowledge that is still, as factual knowledge, tied to the sources. It must be acquired in order to enter the academic discipline. The same applies to mastering the strict formal rules of academic research. The university course, the tutorial, but also the online course and the Internet in general (especially *Wikipedia* and *Google*), as well as the students' *WhatsApp* group and their devices serve as the most important infrastructure for acquiring different kinds of knowledge in scattered locations. Knowledge has become elusive and is leaving the university as a physical place. So, around 2025 historical knowledge is governed by the logic of ambiguity. It encompasses both positive factual knowledge of historical events and dates, which students simply need to know (factual or event-based level), as well as a much broader knowledge that goes well beyond, enabling for the classification and

54 Nevertheless, it should be noted here that criticism as a knowledge practice emerged as early as in the 18th century, in opposition to the tradition of scholasticism. Contemporaries were therefore aware of its ambiguity and lack of clarity. However, this study shows that the idea of positive knowledge was quite widespread. Of course, this was not an abrupt change but rather a process that manifested itself at different speeds in different teaching formats. Joachim Scholz demonstrates this in this volume by examining changes of the seminar practice.

contextualization of these facts (interpretative level). The latter aims at facilitating the understanding of complex issues and also reflects on the limits of historical knowledge and the conditionality of all that can be known. Additionally, historical knowledge is characterized by the dispersion of knowledge infrastructures underlying the practices of knowledge.

This comparative case study has shown that the transformation of the culture of knowledge in the field of history could be described by a neologism: what can be observed is an ongoing process of the ›contingentization‹ of knowledge—that is, an increasing emphasis on the possibility that knowledge is not incontestable or eternally fixed. The result is an ambivalent situation that calls for a careful examination of what can be considered knowledge worth knowing. During their proceeding, university courses reflect both the idea that knowledge is something that can be discovered or found and the idea that knowledge is contingently constructed.⁵⁵ These described changes can also be understood as a result of changes of epistemology and the theory of science. Contingentization rises from epistemological and methodological considerations regarding the status of historical sources.

6. Further research prospects

Future research will need to determine whether the here presented findings can also be observed in other disciplines—particularly in the humanities, but in contrast also in science, law, or engineering—and among other groups of students. Different cultures of knowledge can be understood as products of a scientific paradigm within specific social milieus, and it might be that the findings reflect a special characteristic of the discipline of history—or even of ancient history in particular. On the other hand, it might also be that the shift in the knowledge culture within the discipline of history towards a contingentization of knowledge reflects a broader move towards late or postmodernity, one that affects the sciences as a whole and is very much in line with Lyotard's idea of the dissolution of universal truth claims.⁵⁶ Only further empirical research can determine in which situations in different university courses knowledge becomes contingent and in which it is stabilized, such as in the context of examination knowledge.

55 Anthony Grafton's remarks on the origins of footnotes in the early modern period up to Leopold von Ranke should not be forgotten here. In his book, published in 1997, he attributed a central role in the process of changing historical sciences to them. They would move between the poles of evidence of past reality and the production of realistic constructs. Footnotes would remind to the uncertainty of life. Cf. Grafton, Anthony (1997): *The Footnote. A Curious History*, London: Faber and Faber.

56 Lyotard, Jean-François (1982/1994): *Das postmoderne Wissen*, 3rd, unchanged edition, Wien: Passagen-Verlag.

To conclude with some thoughts on virtuality and knowledge as ›Bildungswissen‹, the findings and previous considerations can be linked to Pierre Lévy's views about the virtual⁵⁷ by stating: university teaching is an attempt to actualize and virtualize the world (or, more specifically, objects of knowledge in an academic discipline). »Knowledge is the product of apprenticeship, the result of a virtualization of immediate experience«.⁵⁸ For Lévy, the

»process of virtualization is a transition from the act—here and now—to the problem, to the knot of constraint and finality that inspires our acts. [...] [V]irtualization devises questions, problems, act-generating structures, lineages of processes, the machinery of becoming«.⁵⁹

In contrast,

»[a]ctualization creates a solution for the problem presented by the virtual. In doing so, it does not simply replenish its resources or provide a form for the mechanism of realization. Actualization *creates form*. It creates a radically new kind of information«.⁶⁰

In university courses, the proportion of virtualization and actualization—which must always be considered to be entangled—may have changed from 1900 to 2025. It might be that digitalization is an essential condition for shifting the relationship between virtualization and actualization, because teaching under conditions of digitality has changed insofar as the references appear more placeless and the contexts of reference more confusing. By around 2025, many objects of knowledge are frequently virtualized, leading to the blurring of existing distinctions and a focus on a (knowledge) vacuum.⁶¹ Only the primary sources, as the most relevant sources, are continuously updated and actualized in the field of history. The need to teach forces the scientific community to also convey solutions to complex problems, actualizations for the problems presented by the virtual, and not just to carry out virtualizations as problems. Digitalization does not change everything, but the significance of those infrastructures that ensure the (permanent) availability of knowledge can hardly be overstated. Not least, the boom in generative AI raises the

57 Lévy, Pierre (1998): *Becoming Virtual. Reality in the Digital Age*, New York/London: Plenum Trade.

58 Ibid., p. 75.

59 Ibid., p. 174.

60 Ibid. Italics in the original.

61 Ibid., p. 27.

question of where and what any kind of knowledge is and where it can be found.⁶² When knowledge needs to be tested at the latest, it must still be made accessible to and by students today.

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62 See the discussion by Patrizia Breil, Anne Dippel, Christoph Engemann, Estrid Sørensen and Iris van der Tuin in this volume regarding another form of knowledge: that shapes university co-working practices of researchers at virtual universities.

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