



Teaching Classics in the Digital Age

Edited by Stefan Feuser, Stephanie Merten and Katharina Wesselmann

THINK! HISTORICALLY:
TEACHING HISTORY
AND THE DIALOGUE OF
DISCIPLINES

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Katharina Wesselmann

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Introduction

The papers and videos presented here are the result of the international conference *Teaching Classics in the Digital Age* held online on the 15th and 16th of June 2020. Initially the conference should take place in Kiel but due to the Corona crisis we decided to transfer it to the virtual room. For that reason, people could easily get free access. In total, more than 120 people from all over the world participated in the conference over the two days – which is testimonial to the relevance of and the interest in the topic. In keeping with the theme of the conference, we are publishing the videos recorded during the lectures together with the articles. This hybrid publication format is new to classics, but seems adequate not only in times of crisis but also in connection with our conference topics, that is, innovative digital ways of communicating classical culture.

As the title of the conference indicates, our main focus was on methods for and experiences in teaching ‘Digital Classics’. Digital media provide new possibilities for teaching and outreach in classics. But how can we best make use of the new technologies, both at university and in communicating with the broader public? The conference *Teaching Classics in the Digital Age* aimed at presenting current approaches to digital teaching and sharing best practices by bringing together different projects and practitioners from all fields of classics (including Classical Archaeology, Greek and Latin Studies and Ancient History). Furthermore, it aimed at starting a discussion about principles, problems and the future of teaching classics in the 21st century within and beyond its single fields. We considered the following our key questions:

- How can digital methods and research approaches be implemented in teaching at university level?
- Which technical possibilities are suitable for digital teaching and how can they be used successfully?
- What are the limitations of and obstacles for applying digital teaching methods in classics?

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- How can digital methods help us to reach out to teachers and students at primary and secondary schools as well as to the broader public?
- How can digital methods contribute to the dissemination of classics as part of a lifelong education?

These questions were discussed in four panels: I ‘Tools and Platforms’, II ‘Teaching Digital Classics: Practice Examples’, III ‘How To Teach Digital Classics’, and IV ‘Visualization and Teaching’. We thank all participants for their valuable input, best practice and for lively discussions.¹

In the present publication, Section I, ‘Tools and Platforms’, is opened by Justine Diemke, Nadine Leisner and Alexandra Trachsel. They present three examples of e-Learning from the Hamburg Open Online University (HOOU). Each classics department has developed multimedia applications and playful learning scenarios like quizzes: the *eManual* of Ancient History, the online presence *Ariadne* which provides basic archaeological information about the ancient Mediterranean, and *Antike Heute in Hamburg*, an online quiz focusing on Greco-Roman mythology.

Gloria Mugelli, Giulia Re, Andrea Taddei, and Federico Boschetti describe the *EuphoriaEDU* system, a resource for digital annotation of ancient texts developed by the Laboratorio di Antropologia del Mondo Antico (LAMA), the CoPhiLab at the ILC-CNR in Pisa and the Venice Digital and Public Humanities Department. The system allows to structure textual information by connecting keywords and creating networks of concepts such as ritual actions in Greek Tragedy. It is applicable to all kinds of linguistic or cultural observations, allowing a wide range of collaboration between teachers and students from high school to university.

Konstantin Schulz shows various applications of natural language processing (NLP) to the field of classics, especially to Latin texts. He addresses different levels of linguistic analysis while also highlighting educational benefits and important theoretical pitfalls, especially in vocabulary learning. NLP can solve some problems reasonably well, like tailoring exercises to the learners’ current state of knowledge. However, some tasks still prove to be too difficult for machines at the moment, e.g. reliable and highly accurate parsing of syntax for historical languages.

Vincenzo Capozzoli presents *VERGILIUS*, a collaborative platform for studying and promoting the heritage of the University of Paris 1 Panthéon-Sorbonne, which consists of Greek antiquities, a model of the ancient city of Rome, a collection of pottery sherds from the Near East, a corpus of stamp seals from ancient Iran, several thousands of slides and photographs, the archives of former professors, a collection of plaster casts and a film library.

¹ The program is accessible at <https://www.klassarch.uni-kiel.de/de/ancient-cities-creating-a-digital-learning-environment-on-cultural-heritage-2017-1-de01-ka203-003537/teaching-classics-in-the-digital-age> (last accessed June 1st, 2021).

Since October 2011, these collections have been digitized and organised into archives and virtual exhibitions. This work has proved a valuable training instrument for students, who learn about the objects and their history but also significantly improve their IT skills.

Section II, 'Teaching Digital Classics: Practice Examples', begins with Dorthe Hutz-Nierhoff and Antje-Sophie Menschner who present 'Success Factors for Teaching Museum Studies in the Digital Age: Insights into *museOn* | *weiterbildung & netzwerk*'. By demonstrating the key factors of the blended learning format *museOn*, the authors suggest that these factors be transferred to the basic teaching of classics. While there may be obstacles such as the unfamiliarity of teaching staff with digital methods and traditional forms of examination, the digital format presents many benefits for a shift from teaching to learning and for fostering highly relevant skills such as digital interaction and collaborative working.

Katharina Meinecke describes a form of 'Practicing Science Communication in Digital Media: A Course to Write the *Antike in Wien* Blog'. In order to make students familiar with research communication to a general public and to enable them to practice both analogue and digital outreach activities, Meinecke had students write a blog and share their work in social media. An additional aim of the course was to enhance the visibility of Classical Archaeology in Vienna by highlighting the relevance of classical antiquity in the city until today through content created by the participants.

In her contribution 'Classical Studies For the New Millennium: Traditional Material Through New Methods and Perspectives', Eleni Bozia presents a variety of digital teaching examples which also address contemporary problems, such as identity politics from antiquity to contemporary times. Students are required to work on ancient representations of ethnicity, race, and citizenship which are then trained and evaluated by engaging in digital storytelling such as creating videos, or learning to use digital resources in sociolinguistic analysis of ancient and modern texts.

Micah Myers describes the project '*Mapping Cicero's Letters: Digital Visualizations in the Liberal Arts Classroom*': A team comprised of classics faculty members, instructional technologists, and undergraduate students create digital visualizations of ancient Mediterranean travel narratives and investigate them as reflections of the geospatial and travel-related conceptions of ancient authors and audiences. The project therefore represents an ideal combination of content and method: its primary learning aims are increased student facility with tabular data, data visualization, ancient Mediterranean geography and travel, and late Republican Roman history.

Section III, 'How To Teach Digital Classics', opens with the consortium *Ancient Cities* presenting their international, multilingual teaching project. Contributors Michael Blömer, Francis Brouns, Alain Duploux, Stefan Feuser, Simon Malmberg, Stephanie Merten, Christina Videbeck, and Mantha Zarmakoupi explain the production of the Massive Open Online Course (MOOC) *Discovering Greek & Roman Cities*, its

structure and learning material (such as videos, introductory texts, and quizzes), the participants' varied demographics and their feedback. Furthermore, they show how the course's materials were successfully implemented in academic teaching at the Université Paris 1 Panthéon-Sorbonne and at the University of Pennsylvania.

Torsten Bendschus and Corinna Reinhardt suggest a new teaching concept based on the didactic model of a simulation game. This simulation was attached to a (real) interdisciplinary research project at the Friedrich-Alexander-Universität Erlangen-Nürnberg in the summer term 2020 for BA and MA students. Students learned how to use computer-based methods that support the complex cultural analysis of images, such as typical iconographic elements in vase paintings. Within the simulation game, they took on different roles in collecting, annotating and analysing images from data collections.

Fernando Lozano Gómez, Alfonso Álvarez-Ossorio Rivas, and Victor Sánchez Domínguez assess the conclusions of several successive research projects on teaching innovation funded by the University of Seville. Members of the Department of Ancient History developed these projects that are indebted to game based learning. The main goal was to present history in all its complexity, without simple explanations, and to improve the student's general knowledge of the subject by promoting autonomous learning. The paper presents the new teaching materials created by the members of the project. These include an open access handbook with specific teaching tools, instructions for autonomous learning through historical role-play, and the use of timeline playing cards in the university classroom for learning History.

In Section IV, 'Visualization and Teaching', Nikolaos Arvanitis explains the process of 'Mapping Ancient Rome and Teaching 3D Technologies' using Paul Bigot's bronze model at the Institut d'art et d'archéologie in Paris to build a pedagogical project. The aim is to digitize Bigot's model in 3D and study it on a multi-folded perspective, for example in view of its use as teaching material both for students and scholars through an in-depth analysis of its construction and its methodological procedures, but also for further familiarisation of younger children with the ancient city. A 3D model visualised on a simple interactive web-GIS will be elaborated for the disclosure of the ancient city monuments on a global level, used by schools and teaching specialists through the net.


Ian Colvin and Lisa Hay present the *Cambridge School Classics Project* which has been developed to support school-level teaching. From humble beginnings like simple vocabulary testers, the program has since evolved to a large range of resources including schemes of work for civilisation topics, documentaries on aspects of ancient life, and support for reading authentic literature. By removing some of the 'performance' elements of a traditional classroom, these interactive resources can support positive learning habits, risk taking, and creativity. The core aim of the project remains 'to help make the classical world accessible to as many students as possible'.

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The conference was part of the strategic partnership *Ancient Cities. Creating a Digital Learning Environment on Cultural Heritage*² co-funded from 2017-2020 by the Erasmus+ program (grant no. 2017-1-DE01-KA203-003537). We are grateful for the financial support. Members of the project consortium were Marcel Austenfeld, Stefan Feuser, and Stephanie Merten (Kiel), Alain Duplouy, Alessia Zambon, Alexa Gallo, Alexandra Tzortzi, and Florent Alias (Paris), Francis Brouns (Heerlen), Simon Malmberg, Christina Videbeck, Tane Holm Høisæter, and Frode Ims (Bergen), Michael Blömer (Münster), Rubina Raja, and Christian Winter Bech (Aarhus), Mantha Zarmakoupi (Philadelphia) and Dimitris Plantzos (Athens).


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² <https://www.klassarch.uni-kiel.de/de/forschung/abgeschlossene-projekte/ancient-cities-creating-a-digital-learning-environment-on-cultural-heritage-strategische-partnerschaft-erasmus-pi-stefan-feuser> (last accessed February 4, 2021).

Section I:

Tools and Platforms

Classics at the Hamburg Open Online University: Three Examples of eLearning*

In recent years, the departments of Ancient History, Classical Archaeology, and Classical Philology at the University of Hamburg have been engaged in integrating digital-learning methods into the teaching of classics. Each of their projects has been implemented in collaboration with the Hamburg Open Online University (hereafter: HOOU), whose mission is to provide an interuniversity online-learning platform. As a result, each department has developed a didactic design for educational technological scenarios within the scope of its project. In addition to conveying complex facts in a more comprehensible way, one of the shared goals of these projects is to create enhanced motivation for learning through attractive multimedia applications and playful learning scenarios, such as quizzes. The scope of this article is to give a short introduction to these three HOOU projects.

eManual Alte Geschichte

The underrepresentation of Ancient History in schools makes facilitated access to Ancient History particularly important. Attractive learning scenarios such as the *eManual*, which was produced between 2016 and 2019 by a team of doctoral students under the direction of Werner Riess, can help overcome potential hesitation to learn about antiquity through the simple digital transmission of complex contents. The *eManual Alte Geschichte*¹ is a digital-learning platform offering an in-depth introduction to Ancient History through podcasts, quizzes, secondary literature, and a wide range of study materials. The platform presents Ancient History to a very broad target group with a high level of learning efficiency, and it is intended for users of all skill levels. The opportunity to study Ancient History online to this extent is innovative and suitable for home study as well as for use in upper-level secondary school classes and in all types of undergraduate-level scenarios. On the start page of the *eManual* you will find a selection of different contents

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51788>.

1 <https://emanualaltegeschichte.blogspot.uni-hamburg.de/> (last accessed May 27, 2021).

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Fig. 1: Podcasts: Archaic period.

presented in four tabs, which can be used independently. Podcasts, which are the core component of this platform, are suitable for a basic introduction to a period of Ancient History, while advanced users can immediately access sources or secondary literature to delve more deeply into the content. A total of 39 podcasts in the form of 15- to 30-minute videos provide brief introductions to all periods, from the Minoan civilization to Late Antiquity (Fig. 1).

Below each podcast, the written text is presented, and contains links to additional useful tools. Every unfamiliar term is linked to the glossary, every place name is linked to a map, and you can find images drawn from the archaeological material (Fig. 2).

Through quizzes based on each podcast, students can check whether they have successfully absorbed the knowledge, and the scores achieved facilitate self-evaluation of the learning progress.

For more in-depth engagement with the material, the platform provides long source passages from each period. Every source is provided not just with the Greek or Latin original text and the English translation, but also with three guideline questions and comments. These comments, written by our doctoral students, can serve as role models for source analysis. The material is not confined to written sources but also includes archaeological evidence. Moreover, the students are prompted to compare both types of sources (Fig. 3).

For temporal orientation, a timeline has been created, which is linked to the podcasts. The timeline features significant historical events that the user can learn about in the podcasts, in which he or she can find more details about events and periods. The timeline is interactive in the sense that you can zoom in and out to obtain different levels of granularity. Along with the large number of podcasts, quizzes, and sources, secondary literature is another significant component of the *eManual*. The site provides

Immer Kulträume, die sich zur Stadt hin öffnen, allerdings ist die genaue Kulttopographie unklar. Die Stierstränge fanden wohl nicht in diesen großen Innenhöfen statt, weil diese gepflastert waren, aber die Opferung der Stiere kann man sich hier durchaus vorstellen. Weitere religiöse Architektur stellen die Lustraböden und die Säulenkrypten dar. In Kressos liegt der zentrale Baderaum direkt neben dem **Thronsaal**, in den Säulenkrypten fanden wohl Ernte- und Reinigungsfeiern statt.

In der postpalatialen Phase, also nach 1450 vordem Jhr., wurden die kulturgebietstypischen Lustraböden in Kressos durch die Lustraböden ersetzt, die aber Treppen erreicht werden konnten.

mykenischer Einfluss bemerkbar. Es gibt viele Veränderungen, aber keinen direkten Bruch, wir greifen also immer noch im Wesentlichen eine Kontinuität im Kult. Offenbar gehen die Mykenen sehr pragmatisch mit der minoischen Kultur um. Was in ihre eigenen religiösen Vorstellungen passt, wird übernommen, wie z. B. die **Doppeltürme** zur Darstellung von Macht, was sie nicht brauchen, wird nicht weitergepflegt.

Noch ein paar Worte zu den minoischen Ritualen: Wichtig sind Prozessionen zu den Heiligtümern, wo Männer und Frauen tanzen,

Zur minoischen Religion

Die Minoische Religion geht aus Grabritualen hervor. Bald löste sich die Riten von den Gräbern und haben nur noch mit Götterverehrung zu tun. In allen Heiligtümern finden sich Gasetische, Tonphalloi, Tassen mit weiblichen Brustern, **Hygie**, also Trinkgefäße in der Form von Stieren und natürlich die typischen **Doppeltürme** aus Bronze oder Gold, die entweder zu Hause oder zu groß für eine tatsächliche Verwendung sind. Wie wir die Stierfreier entfernen, spielten Stiere wohl auch im Kult eine wichtige Rolle, vielleicht auch Stieropfer, aber es gibt keine Belege für einen eigentlichen Stiergott. Man muss aber daran denken, dass der Stier im Mythos sehr wohl mit Kreta verbunden wird. Denken Sie daran, dass sich Zeus in einen Stier verwandelt, um die schlarhe Europa nach Kreta zu entführen. Kreta ist auch die Insel des Zeus und damit auch die Insel des Stieres. Auf den allgemein bekannten Mythos von Minotaurus muss ich gar nicht weiter eingehen. Im Zentrum des Kultes stand also die Fruchtbarkeit des Menschen, worauf die Tonphalloi genauso wie die vielen weiblichen Figuren hindeuten, die entweder ein Gefäß tragen

unterworfenen minoischen Bevölkerung findet ein kultureller Verschmelzungsprozess statt. Die minoisch-mykenische Mischkultur entsteht.

Die **Linear A**-Schrift der Minoer ist eine reine Verwallungssprache. Sie diente zur Buchhaltung der Magazine und Vorräte und ist an rund 25 Orten auf Kreta belegt, nicht nur in den Palästen. Bedeutende Fundorte sind **Hagia Triada, Chania, Phaistos, Zakro**. **Linear A** ist eine Silbenschrift, von der wir rund 1000 Zeichen kennen, deren Bedeutung wir aber nicht verstehen können. 70% davon haben eine Entsprechung in **Linear B**. Daneben haben eine eigene mykenische **Linear B**. Daneben gibt es auch sog. **Monogramme**, also Zeichen, die ein ganzes Wort bezeichnen. **Linear A** verwendet auch Monogramme, d.h. Zeichen, die aus zwei oder drei Syllabogrammen zusammengesetzt sind. **Zahlzeichen** sind in **Linear A** und **B** identisch, nur gibt es in **Linear A** kein **Zeichen** für 10.000. Obwohl **Linear A** nach wie vor nicht entziffert ist, haben wir dennoch ein grundlegendes Verständnis der Texte. Zwei Zeichen sind bekannt: **KU-RO** heißt **Summe**, **Ganzes**, **PO-TO**.

Fig. 2: The written text of the podcasts.


Projekttitel: eManual Alte Geschichte
Modul (optional):
Autor: In: Homer
Lizenz: CC-BY-NC-SA

hamburg open online university

Hom. Il. 6, 399 – 493

ή οί έπειτ' ήγητο', άμα δ' άμφιπολο κίεν αύτη
400 παϊδ' έπι κόλπω έχουσα' άταλάρανα νήπιον αύτιος
Έκτοριδην άγαπητόν άλλιον άστέρι καλό,
τόν β' "Εκτωρ καλέσκει Σακιδάμον, αύτόρι οί άλλιοι
Αστυάνακ' : ούς γάρ έρωσι 'Ιλσον "Εκτωρ.
ήτοι οί μέν μείζονεν ίδιών ές πατρίδα σπηύειν
405 Ανδρομάχη θε οί άγχη παρίσταται: λέγουσιν αύτην
έν τ' άρα οί φύ χροί Έπος τ' Έρωτ' δ'
δουμένη σφίσει σε τό σόν μένος, ούδ'
παύσει τε νήπιον και έμ' άμμον, ατί
έσουσα: τόγα γάρ σε κατακτενέει
410 τόντις έσθρομθέντις: έμοι δε κ'
σεί άναρ άρσούσι χθόνα δούμου: ε

Text zum downloaden



Leitfragen:

- 1) Fassen Sie den Inhalt der Quellpassage zusammen.
- 2) Verarbeiten Sie die Beschreibung der Verabschiedung bei der Darstellung des Schicksals Trojas finden sich in der

Text zum downloaden

Kommentar:

In dieser Passage aus der Ilias Homers wird die Verabschiedung zwischen dem trojanischen Prinzen Hektor und seiner Frau Andromache beschrieben. Andromache ist in Sorge um Hektor und die Trojaner mit ihrem Sohn Astyanax und einer Dienerin auf den großen Turm gestiegen. Hier, hoch oben über Stadt und Schlachtfeld, findet Hektor sie. Die angeführte Quellpassage setzt an dieser Stelle ein. Andromache fleht ihren Mann, um der Familie und ihrer selbst willen, an, nicht in den Krieg und insbesondere den Kampf gegen Achilles zu ziehen. Für sie sei ein Leben ohne ihren Mann sinnlos, zumal sie nicht einmal mehr Familie habe, da Achilles schon ihre Brüder und ihren Vater getötet habe. Hektor entgegnet jedoch, dass es sein Stolz und seine Abkunft nicht zulaßen, sich vom Kampf fernzuhalten. Zugleich versichert er Andromache, dass sein Tod rühmlich sei und dieser Ruhm seinen Tod überdauern und seine Witwe trösten werde. Daraufhin verabschiedet er sich zuerst von seinem Sohn,

Fig. 3: Source analysis: comparison between a scene from Homer and vase painting.

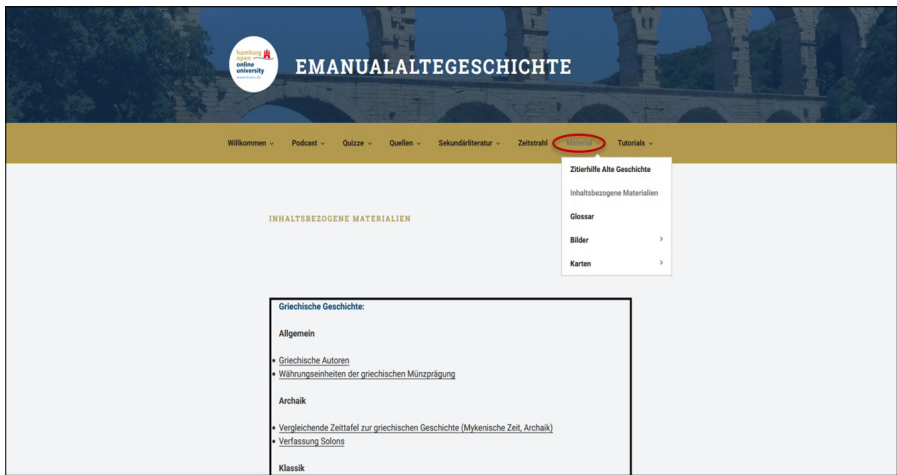


Fig. 4: The Material tab: citation system, content-related material, a glossary, pictures, and maps.

significant papers on various topics, available as PDF files and free to download. Like the sources intended to promote intensive study, each article is accompanied by guideline questions and detailed comments. The comments provide information about the author and explain difficult text passages for better reading comprehension. The Zotero library link offers access to about 800 titles of introductory literature, which can be searched by keywords.

Under the Material tab, you will find a document detailing the citation system, lots of content-related material, a glossary, pictures, and maps (Fig. 4).

The content-related material encompasses a broad range of graphics divided into periods, including timetables, constitutional and social structures, currency units, pedigrees of each dynasty, and a list of Greek and Roman writers. The user can download for free all of these materials as PDF files. The glossary summarises all technical terms in alphabetical sequence. Under Pictures, you will find a collection of archaeological material for every period. Moreover, the tab provides many maps of wars and expansions. The last tab includes video tutorials on how to use the *eManual* and its functions, guidelines for writing term papers, and suggestions for creating and giving presentations.

These valuable resources greatly facilitate intensive home study and provide both beginners and experts with an interactive learning scenario, a new experience of approaching Ancient History. The Hamburg Department of Ancient History has by now successfully established the *eManual* for its courses, seminars and lectures alike. The added value of such learning platforms can be seen in crises such as today's COVID-19 pandemic, during which digital teaching is gaining more and more traction.

Online repertorium *Ariadne* – Grundwissen zur Kultur und Archäologie des antiken Mittelmeerraumes

The online review course *Ariadne – Grundwissen zur Kultur und Archäologie des antiken Mittelmeerraumes*² was created at the Institute of Classical Archaeology from 2015 to 2017. From the beginning, *Ariadne* was intended to be a permanent learning resource for basic knowledge in Classical Archaeology. It aims to impart a genuine and sustainable fundamental understanding of the archaeological record with its artefacts and their primary data, such as dimensions, material, location, and chronology. At the same time, it offers sophisticated and cross-topic connections to enable more profound access to their socio-cultural meanings. Since an extensive fundamental knowledge of material culture is essential for cultural studies, it is usually taught in the first two semesters within an introductory course, to be expanded in the following semesters. However, it seems difficult for students to acquire this knowledge independently, merely through basic lectures. Therefore, *Ariadne* is intended to create interactive thematic learning environments to support the learning process through varied, sometimes playful repetition and contextualization, as well as the use of multiple media to guide students at the beginning of their studies.

Thus, *Ariadne* will be used in the first two semesters, parallel to the introductory lectures, as a blended-learning scenario for repetition and to deepen necessary knowledge through intensive self-study phases. Furthermore, it is open to anyone interested in archaeology for gathering information about the ancient Mediterranean.

For this purpose, we initially used the eLearning platform Olat, hosted by the university. To reach a wider public, the course was open without registration. However, since Olat is no longer supported, we immigrated the course this year to the new platform OpenOlat³, and used this opportunity to recreate and develop some of the sections. Unfortunately, the new platform is limited to users of the University of Hamburg only (Fig. 5).

The course itself is divided into 11 main chapters. The first, Theory and Methods, contains short explanations and references to further readings on topics like chronology or techniques for field working. The second section offers an overview of general developments within specific periods, beginning with the Aegean Bronze Age to Late Antiquity – this is based on the structure of our bachelor's degree. The next units contain general information about different topics of archaeology, engaging most of the areas of Greek and Roman culture.

2 <https://www.openolat.uni-hamburg.de/auth/RepositoryEntry/98634275/CourseNode/101592542087825> (last accessed: May 27, 2021; accessible only for users of Hamburg University).

3 <https://www.openolat.uni-hamburg.de> (last accessed May 27, 2021).

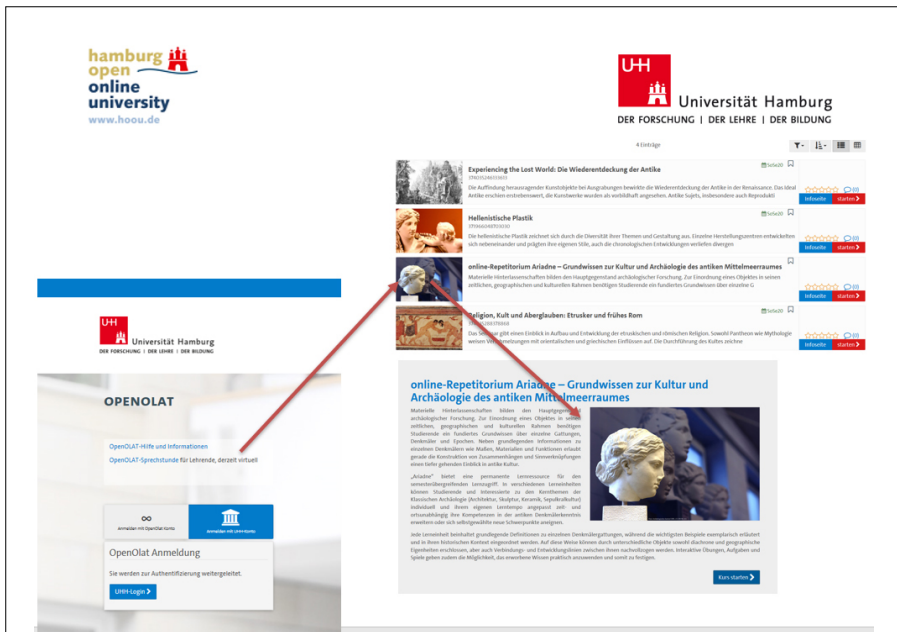


Fig. 5: How to get the online course on the platform OpenOlat.

Each of these units is structured in the same way (Fig. 6). First, a general overview of the topic is provided, using a short screencast of 10-20 minutes and an explanatory text, followed by essential questions, sources, and references for further reading so that students can work independently on the single learning units. Each artefact mentioned in the video is linked within the text, so it is possible to get detailed information about unique monuments or objects at any time, but also to emphasise aspects in context (like chronological order for example). Every artefact can, therefore, be studied independently within the unit *Denkmälerkenntnis*. It is structured as a catalogue, containing objects and monuments from each period, and provides general data (measurements, material, placement, dating, etc.), historical context, sources, and references for further reading so that these artefacts can be learned like vocabulary. Final self-tests then record personal learning successes.

In addition to this object-based content, supplementary literature references and other web links support self-study beyond the online course; a glossary complements the learning portfolio.

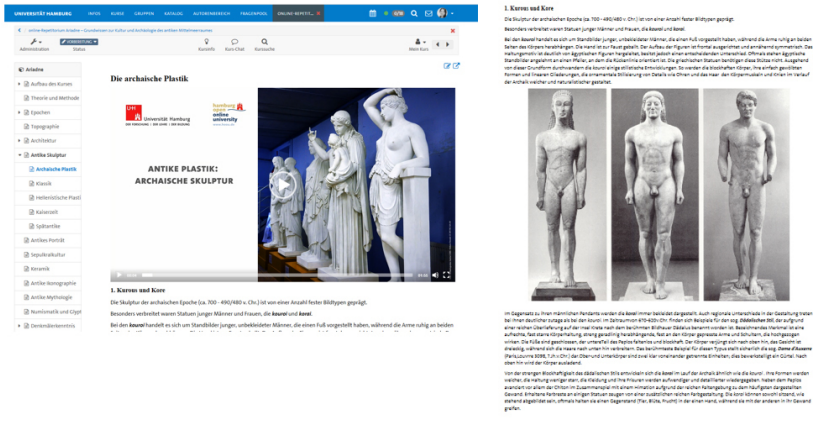


Fig. 6: Example of the general structure of chapters – here Sculpture, Archaic Period.

Antike Heute in Hamburg

*Antike Heute in Hamburg*⁴ is an online quiz focusing on Graeco-Roman mythology. It was implemented in collaboration with the HOOU between May 2018 and February 2019. It was conceived as a project that would reach beyond the university and engage with a larger audience, while simultaneously creating innovative courses for students. Indeed, students from all levels can acquire knowledge or consolidate their skills in Graeco-Roman mythology in a playful manner. In doing so, the link between the content of their studies and their immediate environment is highlighted, so that the quiz raises the students’ awareness of how relevant the topics they learn in classics are for their present-day experience. The quiz should also provide them with the necessary skills to allow them to shape the dialogue with the public at large with their own personal contributions. Therefore, the project takes as its starting point the city of Hamburg, and incorporates into the teaching the place in which the students study. This choice also has the advantage of making a strong link to the public at large, so that it becomes easy to demonstrate the connection between a modern city and the academic field of classics.

4 <https://antikeheutehh.blogs.uni-hamburg.de/> (last accessed May 27, 2021).

hamburg open online university
ANTIKE HEUTE IN HAMBURG
Ein Projekt der HOOU@UHH

Menü

FRAGE 1

00:00 00:34 Lecture2Go

Welche Figur der antiken Mythologie ist hier dargestellt?

- Hermes
- Herakles
- Ares

Reuse Rights of use Embed

Wo befindet sich die dargestellte Figur?

- Im Stadtpark
- Stephansplatz
- Jungfernstieg

Reuse Rights of use Embed

Fig. 7: AHinHH: entry 1: video and questions.

Reuse Rights of use Embed

„Landkarte: Hermes“ von Team HOOU@UHH, Universität Hamburg ist freigegeben unter Creative Commons [Zurück](https://creativecommons.org/licenses/by/4.0/)

Geflügelte Sandalen
Jeder möchte, dass seine Botschaften schnell ans Ziel kommen. Mit geflügelten Sandalen geht dies besonders gut.

Beutel
Geld kann man klauen oder erwerben. Dieser Gott beschützt beides.

Stab
Mit diesem Stab, Garant für die Legitimität des Übermitters, wappnete man sich in der Antike gegen Fake-News.

Fig. 8: AHinHH entry 1: additional guidance.

The quiz is designed so that for each of its entries the users find two questions that are related to an artefact found in the public space of Hamburg and presented in a short video. The first task consists of identifying the mythological figure represented by the artefact shown, while the second asks them to locate the artefact on a map of Hamburg (Fig. 7).

The users will find some additional guidance in case they are not familiar either with Graeco-Roman mythology or with the city of Hamburg. A detailed image with hints at some telling attributes of the mythological figure should facilitate its identification, while a map of Hamburg helps with the localisation of the artefact (Fig. 8).

Under the correct answer, the users may find further material. For the mythological figure, we provided some basic information about the figure with some indications for further readings. For the second question, we gave some background information on the artist who made the artefact, on the context in which it was created, and, if available, on the aspects of the mythological figure he or she decided to represent in this artefact.

None of these indications was meant to be exhaustive. They should leave room for further exploration, as the quiz, as well as its few questions, should trigger in the users a desire for more, so that they may go for a walk in Hamburg, or in their own cities, and look for other similar objects where mythological figures are represented in public spaces. Finally, with the quiz we also intended to highlight the richness of Hamburg with regard to artefacts in public space, and to draw attention to the substantial number of these with Graeco-Roman themes.

Authors

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Justine Diemke is working as a Research Associate at the Department of Ancient History at the University of Hamburg. For her PhD project, she examines the occurrence of depressive disorder and their assessment in ancient sources. She studied Ancient History and Classical Archaeology at the University of Hamburg from 2015-2020. After her master's degree she has been a recognized student at the University of Oxford at the Department of Classics. As a student assistant, she has been involved in the project *eManuel Alte Geschichte*. Her research interests are situated in the areas of history of emotions and violence in antiquity, digital humanities, ancient senses and the role of night in ancient literature.

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well as the reception of ancient art in modern times. Since 2011 she incorporates different concepts of eLearning into her teaching, supporting and accompanying existing concepts, as well as using digital media for experimental projects and exhibitions. For this innovative usage of digital media, she earned a teaching award of the University in 2018.

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Online Repetitorium Ariadne. <<https://www.openolat.uni-hamburg.de/auth/RepositoryEntry/98634275/Course-Node/101592542087825>> (last accessed May 27, 2021); accessible only for users of Hamburg University)

OpenOlat. <<https://www.openolat.uni-hamburg.de>> (last accessed May 27, 2021)

Learning Greek and Latin Through Digital Annotation: The *Euporia*EDU System*

The *Euporia* system: digital annotation through DSLs

Euporia is a system for the digital annotation of ancient texts, based on domain specific languages (DSLs), developed by the Laboratory of Anthropology of the Ancient World (LAMA), the CoPhiLab at the ILC-CNR in Pisa, and the Venice Centre for Digital and Public Humanities. (Fig. 1)

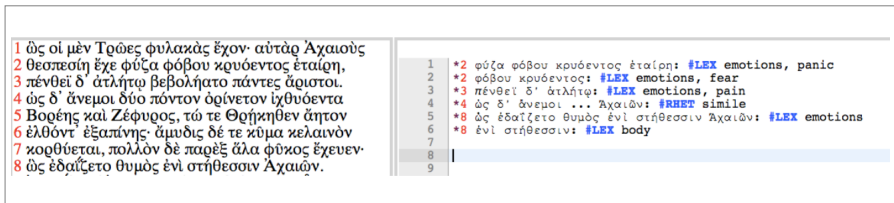


Fig. 1: *Euporia*: web interface of the annotation platform.

The annotation system, and all its components, are conceived with a user-centred approach: starting from specific research questions, the domain experts and the digital humanities specialists define the conventions of the DSL, in order to have a simple and concise annotation language, close to the usual annotation practices of classicists.¹

The stand-off annotation is carried out on a web interface, displaying the text, a modern translation (if needed), and a column for the annotation.

The text uploaded on the platform is subdivided into minimum units, such as verses, speeches, or paragraphs, according to the different genres (poetry, theatre, prose), and it is tokenised so that each word is given a unique identifier. Each token,

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51812>.

1 In Mugelli et al. 2016 we show an example of a DSL built for the study of rituals in the corpus of Greek tragedy, which allows the recording of textual variants useful for reconstructing the ritual dynamics.

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identified by a progressive number, is associated with a CTS URN² in order to ensure interoperability. Once the texts have been uploaded to the platform, the annotation process is rather simple: the user performs their annotation on the web interface, copying and pasting the words to be annotated from the left to the right column, and uses the conventions of his or her DSL to express continuity, discontinuity, variants, etc. Then the user types their annotation, expressed in the form of hashtags, or in triples according to the research needs. The annotated corpus is then converted in standard languages (TEI-XML-compliant annotations,³ and CTS for the citation system) using an ANTLR parser.⁴

Research projects: anthropology of ancient Greece

At the Laboratory of Anthropology of the Ancient World, we tested the potential of the *Euporia* system to study ancient Greek texts from a historical anthropological perspective.⁵ In particular, the first pilot project (*EuporiaRAGT*) implemented the *Euporia* system as a digital support for Gloria Mugelli's PhD research on the form and function of ritual in ancient Greek tragedy.⁶ The annotation, performed on the entire corpus of the surviving Greek tragedies, registered different ritual facts with keywords expressed in the form of hashtags: these are passages in which a ritual is performed onstage, descriptions of ritual actions, and also comments or allusions to different rites. The annotation process followed a bottom-up approach:⁷ after the markup phase, the tagset was structured in an ontology, designed in OWL with the software Protégé,⁸ following the anthropological theories on ritual action.⁹

In this way, it was possible to structure the information in order to connect the different keywords, creating networks of concepts linked to the different dynamics of the ritual norms. It was therefore possible to carry out, through SPARQL queries on the ontology, complex searches on the relationships between different concepts.

2 CTS URNs provide permanent canonical references to texts or passages of text. For example, the first word of The Persians of Aeschylus, *τάδε*, is associated with CTS URN 8:urn:cts:greekLit:tlg0085.tlg001:1@τάδε, dynamically generated from author (Aeschylus: tlg0085), work (Persians: tlg001), verse, and word. CTS specifications can be found at: <http://cite-architecture.org/ctsurm/> (last accessed: May 27, 2021).

3 <https://tei-c.org/> (last accessed May 27, 2021).

4 The process of converting annotation expressed in DSLs into standard languages is well illustrated by Bambaci, Boschetti 2020, which shows the use of the *Euporia* system for encoding critical apparatus.

5 On the theoretical foundations of the historical anthropology of the ancient world, see Di Donato 1990; Di Donato 2013. For an example of LAMA's approach to studying the texts of Greek tragedy see Taddei 2020.

6 Mugelli 2018.

7 For a different approach, cf. the Memorata Poetis project, for the annotation of Greek, Latin, and Arabic epigrams: the tagset was at first inspired by an index rerum notabilium (Boschetti et al. 2014), that was restructured in an ontology in the second phase of the project (Khan, Arrigoni, et al. 2016).

8 <https://protege.stanford.edu/> (last accessed May 27, 2021); Musen 2015.

9 Mugelli et al. 2017. On ritual action see Humphrey, Laidlaw 1994; Humphrey, Laidlaw 2006. On the use of ontologies to study literary texts see Khan, Bellandi, et al. 2016.

A search engine was then built, combining SPARQL queries on the ontology and SQL queries on the database, in order to retrieve series of textual passages related to the different tragic rituals that were discussed in the PhD dissertation.

The *Euporia* system was then adapted to Giulia Re's PhD research, focused on religious landscape in the corpus of ancient Greek tragedy: the project *EuporiaLANGT* aims at studying implicit and explicit associations starting from the elements of the ritual landscape mentioned in the plays; it required the annotation to be structured in triples, in order to begin structuring the information in the ontology during the annotation process itself.

Because they are based on the same corpus, the two annotations can be integrated, drawing from the interaction of the two different systems interesting information on ritual and religious interpretation of the texts of the Greek tragedies.

The historical anthropology of the ancient world is only one of the fields in which *Euporia* is being tested: many projects are underway, in different fields of the humanities, for which the domain experts have built different DSLs suitable for ecdotics, the study of variants, studies on the lexicon, and rhetoric.

***Euporia*EDU: toward a collaborative annotation**

PhD research projects produce considerable amounts of data, on extended corpora, to answer very specific research questions. At LAMA, when we developed the digital-annotation system as a support to PhD research, our purpose was to reproduce in a digital environment the entire process of the anthropological study on ancient texts, so that all the work 'behind the scenes' on the texts was not lost, but was reusable in other contexts. We shared not only results, but also all the rough materials used in our research, including annotations resulting from the study and reading of the text, in order to create a collaborative environment, where researchers and students can work at different levels on the same texts. This was possible because all our research is firmly anchored to the texts, the same texts that are studied, with different objectives, at the university and in secondary school.

The first didactic experiments with the *Euporia* system were carried out with students in their first year of Classics at the University of Pisa, as part of the Workshop on Greek Language, that aims to strengthen the language and translation skills of the students, and as part of the Greek Language and Literature course.

The students were given the opportunity to record on the annotation platform different types of observations on the Greek texts (on morphology, lexicon, metrics, stage directions, textual variants, and scholia), commenting on the text with keywords expressed in the form of hashtags.

The didactic experimentation, which received good feedback at the university, especially as regards the collaborative and laboratory work on the texts, encouraged us to experiment with the annotation system in the collaborative context of a secondary school, creating the *EuporiaEDU* project, to promote the digital annotation of texts in the context of the Italian *Liceo Classico* curriculum.

Teaching classics in Italy: the 'Liceo Classico'

In the last fifteen years, the Italian school system has faced a loss of interest in classical studies, conforming to the European trend that sees the study of Latin and Greek increasingly marginalised in higher education. Nonetheless, together with the gymnasium in the Netherlands, the Italian school system is one of the few in which Latin and Greek are taught for an entire school cycle in secondary school: the 'Liceo Classico' is a secondary-school course in which students from ages 14 to 19 learn ancient languages, together with scientific and humanistic core subjects; furthermore, Latin language and literature studies, with different degrees of detail, are part of other school curricula. Liceo Classico's Ancient Greek teaching system is structured into two years focused on grammar and syntax; from the third to the fifth year the study of Greek and Latin literature is supported by regular work on the translation of ancient texts in prose and poetry.¹⁰

In recent years, the Liceo Classico has registered a drop in enrolment, facing a 'crisis' that has led to the dismissal of the curriculum in many schools, especially in central-northern Italy: the percentage of Italian students who choose to enrol in Liceo Classico is rather small (6.8), in particular if compared with the 25.5 per cent of students who choose to take the Liceo Scientifico curriculum, with growing success for the course that excludes the teaching of the Latin language.

The crisis of the Liceo Classico has opened a rather heated public debate that questions the status of the Liceo Classico and, more generally, the usefulness of the humanities in the contemporary world.¹¹ At the beginning of every year, when students are asked to pre-enrol in a secondary-school course, the usefulness of classical education is once again discussed in newspapers and weeklies, with various arguments.

The Liceo Classico has historically been a very traditional and conservative institution, and one of the main arguments of its detractors is the supposed 'incompatibility' between a world based on 'new technologies' and the study of the ancient world.

The public debate on the crisis of the Liceo Classico has encouraged the publication of numerous essays, which have had some success, on the importance of the humanities.¹²

¹⁰ On the Ancient Greek and Latin curriculum of the Liceo Classico see Palmisciano 2004. On didactic strategies for teaching Ancient Greek see Taddei 2011.

¹¹ Roscalla 2016; Giunta 2017.

¹² See, for example, Dionigi 2016; Gardini 2016; Marcolongo 2016; Condello 2018.

At the same time, being a ‘threatened environment’, the Liceo Classico is open to possibilities for renewal, especially on the technological side: it is therefore a breeding ground for projects and experiments in the field of digital humanities.

***Euporia*EDU: toward a collaborative annotation for high school students**

In 2018, the *Euporia* team began a collaboration with three schools, two in the centre and one in the south of Italy, who agreed to experiment with their students using textual annotation with the *Euporia* system. The idea was to build a collaborative system, creating different virtual circles of collaboration and peer education, among schools and universities: all those involved work to define a DSL based on the type of text and the objectives of the annotation (Fig. 2). At LAMA, senior annotators (PhD students) and MA students interested in teaching Greek work together to offer support to the schools, in the form of workshops and seminars, guiding and supporting the high school students during the annotation process; digital humanities specialists take care of the prototype of our system, and train students on the basis of digital textual annotation.

On the other side, high school students contribute not only with their annotation data, but also with valuable feedback on how the system matches their learning needs.

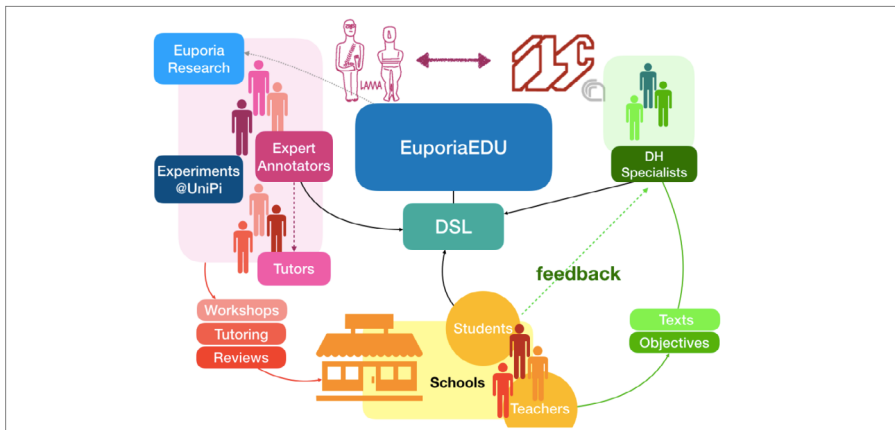


Fig. 2: The *Euporia*EDU system.

It is important to point out that the first approaches to digital annotation have been very time-consuming for schools, since teachers are currently working on the *Euporia*EDU project during their normal school hours. For this reason, during these first two years of work, we opted to leave teachers totally free to choose the text and the target of the

annotation, in order to adapt it as much as possible to their ordinary teaching program. During the last two school years, the three schools involved in the *EuporiaEDU* project started four different annotation experiments: the two projects carried out in Pisa involved the same students, who tested the system in 2018/2019 working on a text of Lysias, and continued working on Homer in 2019/2020 (Tab. 1).

Text	Year	School	Project
Aeschylus The Persians (Parodos)	2018-2020	Liceo Gargallo, Siracusa	Collaborative translation of the text; comparison with the translation by Fraccaroli; annotation of stylistic devices, compounds, named entities; observations on the text and the translation
Lysias I	2018/2019	Liceo Galilei, Pisa	Morphology; lexicon of law, house- hold, and family
Isocrates XIII	2019/2020	Liceo Volta, Colle val d'Elsa (SI)	Syntax; inferences on the different agents mentioned in the speech
Homer, Iliad IX	2019/2020	Liceo Galilei, Pisa	Morphology; semantics of speech and speech acts

Tab. 1: *EuporiaEDU* projects.

The teachers' selection of texts followed two main criteria. As far as prose texts are concerned, the work aims to strengthen students' translation skills and focuses particularly on morphology and syntax. The annotation of poetry focuses on style and on the dynamics of translation: the students presented their own translation of the text, then compared it with an existing translation and used the annotation to mark stylistic devices and semantics.

In order to keep the data produced with the *Euporia* system accessible and reusable, we chose to work on copyright-free translations: the students worked on Italian translations from the late 19th century, which have also proved particularly interesting as an exercise on the Italian language.

Euporia The Persians (Siracusa, 2018-2020)


The students from the Liceo Gargallo in Siracusa were the first to experiment with the *Euporia* system, during a School-Work Alternation project¹³ that took place over two years, concluded in June 2020 when the students took their high school final exam.¹⁴

¹³ School-Work Alternation was introduced by Law no. 53/2003 and disciplined by Legislative Decree no. 77/2005. It is addressed to students of upper secondary schools, and allows them to 'alternate' periods of training in the classroom and inside companies (or other hosting establishments).

¹⁴ The results of the project were published online in June 2020, together with an interesting report written by the students <http://www.himeros.eu/persiani/index.html> (last accessed May 27, 2021).

The students carried out a collaborative translation work on the Parodos of Aeschylus's *The Persians*, and then compared their translation with the Italian translation by Fraccaroli (19th century).¹⁵ They then used the *Euporia* system to annotate the text, focusing in particular on stylistic devices, compounds, and named entities, but also marking their observations, structured as free comments, on the characteristics of the text and the translation choices (Fig. 3).

The long work that the students conducted, in a collaborative way, on the Greek text and its translation allowed them to reflect, on the one hand, on the characteristics of the Aeschylean style, and on the other, on strategies for translating a poetic text into contemporary Italian.



HomePage | Figure Retriche | Composi | Entità nominate | Descrizione del progetto

Eschilo, *I Persiani* (1-268)

Tr. di G. Fraccaroli	Testo greco	Tr. degli studenti del Liceo Gargallo (SR)
CORO 1 Ecco i canuti de la Persa gente, 2 Che uscì la patria a conquistar de' Greci: 3 Ne le sedi per molto oro opulente 4 Serse ne clesse a sostener sue veci, 5 Serse di Dario, Serse onnipotente. —	Χορός 1 Τόδε μὲν Περσῶν τῶν οὐχομένων 2 Ἐλάδ' ἔξ' αἰὼν παρὰ κλιεῖται, 3 καὶ τῶν ἀργῶν καὶ πολυχρότων 4 ἐδάσαν φύλακας, 5 κατὰ προσηβίαν οὓς αὐτὸς ἀναξ 6 Ἐθέηρ βασιλεὺς Δαειωγενῆς 7 εἴλατο χώρας ἐφορευεῖται. 1 Τόδε μὲν Περσῶν ... / 65 χρόνων χρονόσημα : L'ingresso e la disposizione del coro sulla scena sono sottolineati dalla rigidità e dalla lentezza del metro anapestico. Subito dopo viene contestualizzato il luogo, la reggia di Susa. Segue il lungo e dettagliato catalogo degli eroi in stile epico. 1 Τόδε ... / 153 προσωπῶν : Si tratta della Parodo. La tragedia non presenta un prologo ma inizia con la Parodo che ha struttura tripartita. Due sezioni anapestiche delimitano una sezione lirica. 2 εἰς : εἰς 3 πολυχρότων = 3 per molto oro opulente : La ricchezza dell'esercito e della flotta è ancora più marcata dal quadruplice utilizzo dell'aggettivo. 3 πολυχρότων : I composi omerici che presentano il prefisso in πολυ- hanno una funzione iperbolica; questi trasmettono infatti l'immagine di un reno all'insegna della grandezza e della maestosità, l'Impero Persiano. 5 κατὰ προσηβίαν = 1 canuti : Il termine indicante la causa, προσηβία, viene sostituito nella traduzione dal termine indicante l'effetto.	CORO 1 Siamo i fedeli, i custodi dei sontuosi palazzi reali 2 colmi d'oro, quelli che lo stesso signore Serse, 3 Re, figlio di Dario, scelse perché vecchi, 4 per sorvegliare la regione. 5 quando i Persiani partirono per la terra ellenica.
6 Ah! ma l'anima mia turbano bieci 7 Auguri, e il dubbio la sgonmenta ... ah il giorno 8 Dunque mai non verrà del suo ritorno? 6 l'anima ... / 7 Auguri : Fraccaroli nella sua traduzione elimina il concetto dell'animo che si turba nelle profondità di sé stesso. 8 Dunque ... ritorna : Fraccaroli traduce i versi 8 e 9 dopo il verso 11 trasformando un'affermativa in un'interrogativa dal tono fortemente patetico.	8 ἄμμι δὲ νόστον τῷ βασιλεῖο 9 καὶ πολυπόλοισι στρατιᾷ ἡβῆ 10 κακόμηναις ἔγγιν ὀρθολοπέται 11 θυμῷ, ξέσθην δὲ βεῖζ'εἰ.	6 Per il ritorno del re 7 e dell'esercito armato d'oro, 8 l'animo, ormai profeta di sventure, 9 è profondamente angosciato e pieno di sgomento.

Fig. 3: Results of the *Euporia The Persians* project.

***Euporia Lysias I* (Pisa, 2018/2019)**

The students of the Liceo Galilei in Pisa started testing the system in 2018/2019, working on the speech by Lysias on the murder of Eratosthenes. It was a first approach with the digital-annotation process, for young students in their second year of Greek.

The teacher chose to focus on morphology, and the students performed a morphological markup of the words they found difficult to analyse, with the help of online tools (Perseus). To increase interest in elements of Greek culture strongly linked to the language, they marked all the words in the semantic field of law and family.

Even when the annotation is standardised, we find it useful to adopt the DSL close to the conventions for textual analysis that the students adopt in class with their teacher.

15 Fraccaroli 1876.

Euporia Isocrates XIII (Colle val d'Elsa, 2019/2020)

During the first term of 2019/2020, the students in the last year of Liceo Classico at the Liceo Volta in Colle val d'Elsa worked on the speech 'Against the Sophists' by Isocrates (Isocrates XIII).

In the first step of their annotation, the students focused on the syntax of the verbs. The verbal dependencies and the syntactic structure of the sentence are expressed with the DSL, so that the students do not have to deal with treebanking.¹⁶

In the second phase, we asked the students to focus on Isocrates' statements about all the people involved in the speech (mainly, the sophist and the education professionals). The students marked the different agents mentioned in the speech and then made inferences (expressed in triples) about the characteristics that the author attributes to these characters.

For example, when Isocrates states that the sophists are ready to sell off their teaching, students could infer that the sophists were greedy, and that their teaching was of little value.

Euporia Iliad IX (Pisa, 2019/2020)

Finally, during the second term of school year 2019/2020, we continued the project with the students from Pisa.

The third-year program in Liceo Classico includes the reading of a book of Homer, in this case Iliad IX. The teachers guided their students toward a very complete annotation of the morphological, linguistic, and stylistic phenomena in the Homeric text. The students then performed an annotation of the semantic field of speech and speech acts. The tutors from LAMA defined with the students a tagset of the different speech acts to be marked, starting from the distinction between nonverbal sounds and speeches and then detailing various ways of articulating the speech. (Fig. 4)

Teaching classics during COVID-19

The project with the students from the Liceo Galilei in Pisa was scheduled for the second term, with preliminary activities (meetings with teachers and an introductory workshop on the principles of digital annotation) in February 2020.

Italian schools interrupted their activity at the beginning of March due to the COVID-19 crisis. Even if it was not clear at first that remote learning would be the only resource available during the last three months of the academic year, the school closure represented for the *Euporia* team an opportunity to be in direct contact with the students, a sort of stress test that certainly improved the collaborative aspect of the project.

¹⁶ Ancient Greek Dependency Treebank (AGDT) https://perseusdl.github.io/treebank_data/ (last accessed May 27, 2021); cfr. Bamman et al. 2009; Mambrini 2011. For a teaching experiment that involved students in treebanking see Mambrini 2016.

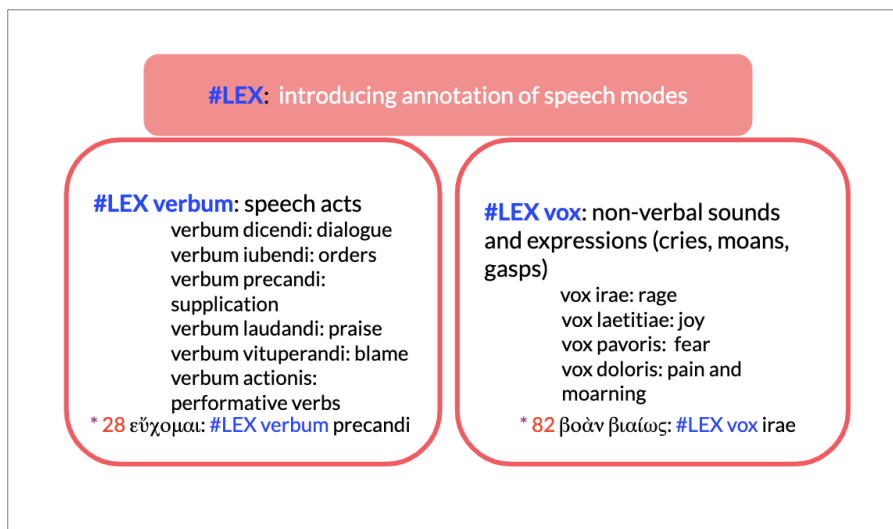


Fig. 4: Tagset for annotating speech acts in Iliad IX.

Knowing that we were dealing with students who had already become familiar with the digital-annotation task last year, we decided with the teacher to initiate the project immediately after the start of the lockdown, as a first strategy to deal with the emergency.

The students from the first phase were excited to take part in the project and were eager to communicate with the experts from LAMA, because they saw in the work on Greek a way to resume their usual school habits.

To facilitate the remote-learning process, we prepared a user guide for the annotation. Each student translated a portion of the text (10–15 lines) and performed the first phase of the morphological, stylistic, and semantic annotation on the text. The annotation then went through several stages of revision by the tutors from LAMA.

In the second term, MA students from LAMA were carrying out their internships at the school. During the lockdown they followed the remote-teaching activities organised by the school, and acted as tutors for the *Euporia* project: they reviewed the student annotations, and provided feedback on their work.

This workflow offered two advantages. First, the students had to review their annotation several times, encouraged by the tutors to add more notes, to deepen the detail of their analysis, and to improve the translation. At the same time, the work reinforced MA students' skills as future teachers, given their active role in motivating and guiding students.

In this sense, the collaborative work involved a continuous exchange of knowledge and skills that cultivated education at different levels and different kinds of feedback on students' habits and learning needs.

From research to teaching: a round trip

The activities of the various projects launched during the school year ended in May 2020 with an online workshop, during which the students working on Homer had the opportunity to meet their colleagues who had finished working on Aeschylus. During normal school activity, a workshop between schools so far away (Pisa and Siracusa) would be very difficult to organise, but in a context of remote learning it was rather simple to have 70 students online for the entire afternoon.

During the workshop, the students were able to give their feedback on the project, and show the results of their annotation; the workshop was a first opportunity to encourage dialogue between two different schools that would have never shared experience otherwise. The tutors provided students with in-depth materials, and ideas for deepening their knowledge of the texts they dealt with. Finally, the expert annotators from LAMA showed students how their data can interact with that produced by *Euporia* for research, so as to project their work into the broader framework of advanced classical studies.

The true success of the workshop was measured, however, by the fact that the question time was entirely occupied by questions from the students to their colleagues from the other high school: they were curious about their work strategies and the difficulties they had encountered, and of course they were eager to know how the pandemic had been managed in the other school.

Perspectives for data collection and reuse

The school year 2020/2021, with the management of anti-COVID 19 measures, will certainly be a very challenging year for Italian schools from an organisational point of view. The precarious situation in which schools have resumed work will also influence teaching strategies and approaches, in particular with regard to didactic experiments: it will be very difficult for schools to give space to projects that require additional hours, and the intervention of external staff.

For this reason, the *EuporiaEDU* project will need to maintain and enhance the remote-teaching approach: moving our work entirely into a digital environment facilitated communication between students and researchers, and offered great opportunities for discussion.

At the same time, the work on text carried out with the *Euporia* annotation system, based on the learning needs of the students and the teaching strategies of their teachers, is not an alternative to the usual school work on text; rather, it can be considered as an integrated digital-teaching activity: in building an annotation project on a Greek text, the objective is to maintain the customs and good practices of linguistic and literary analysis of ancient texts in the digital environment.

Working with schools is a very slow process in terms of data production, in both the quantity and quality of data, which needs to be reviewed and processed. Consequently, in the coming school years we plan to converge the work of different students on the same texts, in order to have a critical mass of data that can be made available to other students (as teaching support or in-depth tools). Students' data can then be very useful, for us, as a starting point for research on students' strategies and needs in learning ancient languages.

The aim is to involve students in a knowledge-production process (which will be increasingly structured as the project continues): among the students' feedback, a recurring theme is strong motivation in the awareness that their work on the text is not lost, but can be reused by researchers and other students.

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Natural Language Processing for Teaching Ancient Languages^{*1}

Natural languages

The notion of natural language refers to the challenge of analysing human communication. We hope to gain insight into our everyday interactions² by examining our communicative behaviour. For this task, languages like English, Farsi or Ancient Greek are presumably more informative than programming languages like C or Python, because the latter rarely serve a strictly communicative purpose, but are rather used to process data for a specific workflow. To achieve that goal, machines usually rely on their own computational capacity, consulting external resources only if explicitly asked to do so. Humans, on the other hand, tend to use joint reasoning to solve advanced problems.³

When we decide to use human language as a research object, we may encounter a few problems that are not present in constructed languages: human languages evolve continuously⁴ and involve a great deal of ambiguity and interpretation.⁵ For humans, such evolution and vagueness is desirable to retain a sufficient amount of flexibility, which is needed in dynamic environments where social interaction is neither rigid nor perfectly consistent.

For machines, however, this constant interpretative performance of humans has to be emulated artificially.⁶ Depending on our end goal, we often need several steps to decode the meaning of, for example, an ancient text (see Fig. 1). Each of those steps plays an important role in providing the necessary information for a machine to decode a given linguistic input.

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51973>.

1 This work is part of a project funded by the German Research Foundation (project number 316618374) and led by Malte Dreyer, Stefan Kipf, and Anke Lüdeling.

2 Crocker 2013, 482.

3 Textor 2011, 44.

4 Ljunglöf et al. 2010, 60.

5 Palmer 2010, 15.

6 Ljunglöf et al. 2010, 59; Palmer 2010, 9.

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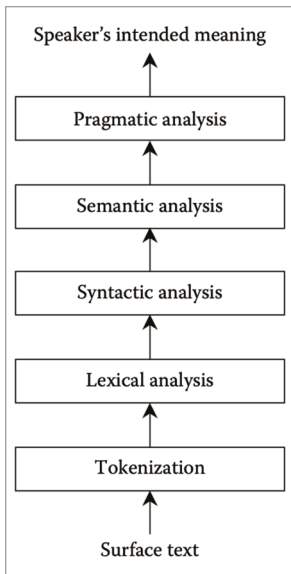


Fig. 1: Stages of natural language processing according to Dale 2010, p. 4.

Current systems for natural language processing (hereafter: NLP) are quite proficient in analysing various lexical aspects of texts in most languages. Syntax, on the other hand, is much harder to analyse, especially for languages where the availability of high-quality research data is quite limited.⁷ Unfortunately, this is true for the languages of most ancient cultures. Even for Latin, where a rich tradition survived, the majority of written evidence remains irrecoverably lost. Therefore, NLP applications for such problematic languages currently cover only a limited amount of syntactic or semantic analysis, let alone pragmatics. In the following, we shall look at several examples of what works with such applications, and what does not.

Finding the right text

Vocabulary is a crucial aspect of teaching ancient languages, which is why there have been ongoing efforts to determine a certain number of words that constitute a core vocabulary.⁸ Traditionally, it was assumed that such a basic vocabulary should be acquired in the initial learning phase, and then followed by a phase of extensive reading of ancient literature.⁹ Nowadays, however, longer learning processes are more strongly

⁷ McGillivray 2013, 3; Ragni et al. 2014; Karakanta et al. 2018, 168.

⁸ Utz 2000, 146; Jones et al. 2006; Robillard et al. 2014, 2.

⁹ Freie und Hansestadt Hamburg 2004, 10.

emphasized, even for historical languages that we only learn at schools or universities.¹⁰ What we actually need to do is to measure the lexical knowledge for a given learner at any point time, which has been notoriously difficult for humans and machines alike.¹¹

Once we know more about a learner's current lexical proficiency, another challenge awaits us: what is a suitable text passage or exercise for that person in order to further advance along the path of language learning? Basic operationalisations for this task include comparing a list of supposedly known words to a list of lemmata that occur in a text. Similar to computational models,¹² learners will often struggle to deal with lemmata that go beyond their available vocabulary. Teachers therefore usually want to provide additional help, for example in the form of explanatory contexts, glosses, dictionaries, or simple translations. Unfortunately, such supportive measures may not prove consistently effective, because we often do not know the actual degree of (un-)familiarity for a given lexeme and learner. Since vocabulary knowledge is multidimensional,¹³ computational operationalisations of lexical progression need to incorporate more than just the binary decision of 'known/unknown'. This also applies to diagnosis and feedback, where the simple dichotomy 'correct/incorrect' is often insufficient to provide accurate information. What NLP (and research on vocabulary acquisition in general) needs is a consistent model for providing information on various error types, forms of knowledge, and understanding of tasks or instructions.¹⁴ A basic starting point in working towards this goal is to apply an extensive metadata schema to exercises, which separately encodes the types of interaction, linguistic phenomena and possible embedding in a larger progression.

Assuming we could successfully identify certain words to be learned, and found text passages in which these words occur, the next step would be to create appropriate exercises for this material. Traditionally, vocabulary has been acquired by memorizing lists of word equations in the form 'Latin word = L1 word'.¹⁵ More recent approaches, on the other hand, have emphasized vocabulary acquisition in context, rather than as isolated word forms.¹⁶ Ideally, such contexts should contain authentic rather than artificial utterances¹⁷ to avoid an oversimplification of language that would lead to a shock for learners later on when they are suddenly confronted with real-world texts.¹⁸ In this regard, NLP can be employed to make use of authentic text corpora to create contextualized vocabulary exercises. At the very least, this requires pairs of words, e. g. nouns and their

10 Foley et al. 2017.

11 Chen 2011, 292; Dor,ca et al. 2013, 2092; Munser-Kiefer et al. 2018, 115; Beyer 2018, 13.

12 Parada et al. 2010, 57.

13 González-Fernández et al. 2019, 3.

14 Narciss 2008, 135.

15 Carter 1997, 2.

16 Waiblinger 2001, 160; Webb 2008, 238; Nation 2012, 353;

17 Römer 2019, 93; Tok 2010, 509.

18 Schibel 2013, 115.

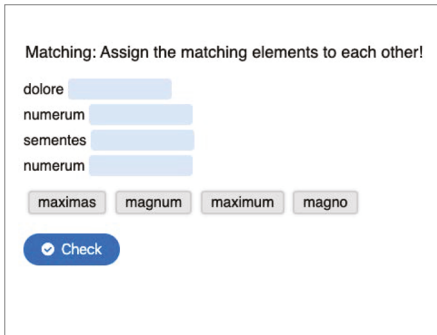


Fig. 2: Matching exercise for nouns with adjectival modifiers, created using H5P (Joubel 2018).

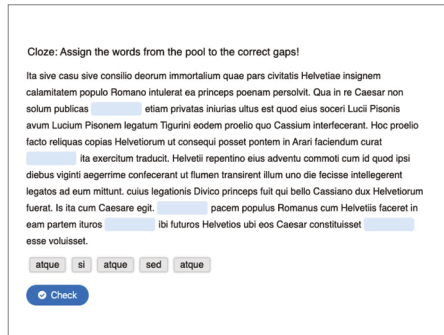


Fig. 3: Cloze exercise for conjunctions.

adjectival modifiers (see Fig. 2). Other setups may turn out to be even more effective, for example ‘keyword in context’ views,¹⁹ or cloze tests as a means of differentiating between similar conjunctions (see Fig. 3).

Using authentic language as a basis for the exercises has the added benefit of implicitly confronting learners with many linguistic patterns and structures, for example in syntax or lexis. This way, even if the focus of the exercise is on a very specific phenomenon, learners will also internalise many other properties of the target language that are not emphasised separately.²⁰ Besides, using an interactive digital system to communicate such materials can be more inclusive, more motivating, and conducive to a deeper understanding of word meaning.²¹ Furthermore, automatic evaluation of exercises enables us to provide ongoing formative, visualized feedback, and to construct individual learning paths for each person.²² This may well be one of the most important benefits of NLP for language teaching.

Treebanks and learners’ expectations

When learners acquire vocabulary, they do not just learn about the lexis, i.e. when to use which word. They also need to grasp the word’s meaning and position in various contexts. In this view, the theoretical distinction between lexicon, syntax and semantics becomes blurred, or at least highly interwoven.²³ Considering that there cannot be a full understanding of any word in a specific context without knowledge of its syntactic

19 Helm 2009, 97.

20 Röhr-Sendlmeier et al. 2012, 45.

21 Crossley et al. 2010, 71; Schmid 2010, 165–169; Harecker et al. 2011, 1–5.

22 Chen 2011, 292; Ferguson 2012, 313; Univio et al. 2019, 158.

23 Rich et al. 1991, 410; Aijmer 2009, 3; Rei et al. 2014, 75; Lehecka 2015, 6; Lebani et al. 2018, 133.

function,²⁴ we need to make sure that advanced learners' expectations, when reading the beginning of a sentence, have been shaped and trained by as many similar contexts as possible. For beginners, on the other hand, the text passages that they are confronted with have to be chosen in a way that they do not match their expectations perfectly. In this manner, they will be forced to adapt their mental representation of syntagmatic structures in the target language, thus extending their knowledge.²⁵

Historically, such experiential modifications of linguistic knowledge have been exemplified in grammar books, which often impose rather prescriptive standards and use several authentic instances of language use to support their claims, followed by a few exceptions where the general rule does not apply.²⁶ With the advent of curated text corpora of decent size even for historical languages, however, we may now replace the textual basis from which we deduce linguistic assumptions with suitable ad hoc corpora. Treebanks, i.e. syntactically annotated text collections (often including multiple authors), should be used both as a standard reference for the target language in general and as a pool for extracting information about specific sub-corpora, for example all works from a certain author. If that author's works are to be read in school, teachers can access the relevant treebank²⁷ through dedicated corpus search tools²⁸ and see which constructions are particularly important to understand the chosen texts. Furthermore, educational publishing companies may choose to base their next textbook's vocabulary only on those texts that are part of the curriculum at later stages.

Modelling the meaning of words

While NLP practitioners have access to more and more lexical and syntactic resources to provide teachers with useful materials, the same cannot be readily said about semantics. There have been efforts to create expert databases²⁹ that are supposed to represent human semantic knowledge. Unfortunately, these are often built from personal intuition rather than empirical evidence. One of the most promising approaches for overcoming this problem is distributional semantics, which defines a word's meaning by looking at its surrounding context.³⁰ It has been on the rise in recent years, especially due the hype surrounding deep learning.³¹ Furthermore, good distributional semantic models (DSMs) do not just represent semantic relations, but also morphological or

24 Gries et al. 2013, 348; Schmid et al. 2013, 551.

25 Ellis 2008, 374; Farmer et al. 2011, 2059; Hahn et al. 2019, 14.

26 Menge 1914, 334.

27 Bamman et al. 2011.

28 Krause et al. 2016.

29 Fellbaum et al. 2012, 315.

30 Harris 1954, 162; Firth 1957, 30

31 Lin 2019.

even pragmatic information³², which is not surprising given the interwovenness of the various linguistic levels that was mentioned above.

Obviously, such approaches suffer from many problems:

- They tend to ignore common knowledge that is available to every human but is never mentioned in the given texts.³³
- They struggle to adequately represent rare or metaphoric word usage.³⁴
- Their inferential power (for example by analogy) is very case-specific and cannot be easily generalised.³⁵
- They often do not model polysemy at all and do not differentiate between, for example, synonymy and syntagmatic relatedness.³⁶

Fortunately, these points have attracted attention and this has led to serious improvements, especially concerning the modelling of polysemy.³⁷ A great deal of research has been done on using textual context as a source of information on a word's meaning, for example by hiding words in a text and making a machine fill the blanks correctly³⁸ or by systematically comparing various computational operationalisations of linguistic knowledge.³⁹ Thereby, standard procedures in philology, such as finding semantically related words for a given topic in a given text corpus,⁴⁰ can be facilitated through machine learning output that is interactively visualized as a network (Fig. 4).

In such networks, users can start from a single word (*veritas*) and quickly expand on that word to find other related terms like *simulatio* (pretence), *crederet* (to trust) or *suggerendis* (to suggest). In this sense, the procedure is comparable to snowball sampling⁴¹ because once a user has found these additional terms, each one of them can be used as the basis for another search. Such search methods have been used with traditional linguistic resources as well (e.g. dictionaries, catalogues of synonyms etc.), but they have rarely been adapted to a specific researcher's target data. Using a dynamic machine learning approach enables NLP software to apply the general method (i.e. extracting word fields from a text) to almost any given corpus. The most important obstacle, then, will be to make the base architecture useful for as many cases as possible. This way, we can optimise the method for many different usage scenarios at the same time, instead of starting from scratch for every new text corpus.

32 Gries et al. 2009, 59; Gladkova et al. 2016, 8.

33 Bruni et al. 2014, 3.

34 Grigonyte et al. 2010, 404.

35 Rogers et al. 2017, 142.

36 Karan et al. 2012, 114; Faruqui et al. 2016, 4.

37 Hamilton et al. 2016, 8.

38 Devlin et al. 2018.

39 Dobó 2019, 85.

40 Cordes 2020, 43.

41 Handcock et al. 2011, 368.

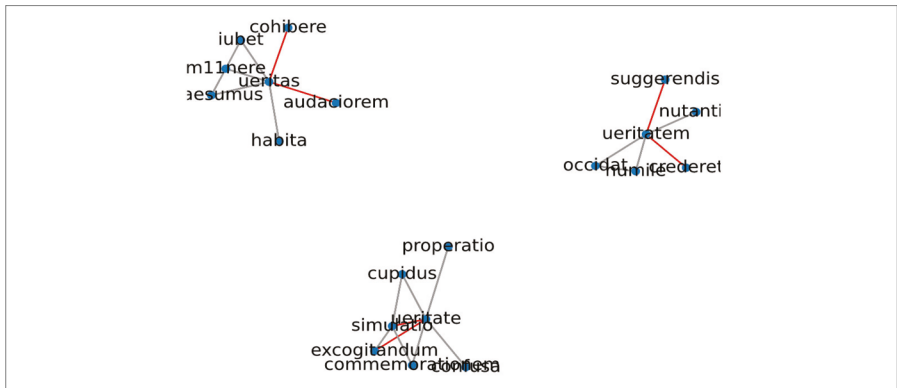


Fig. 4: Semantically related words for *veritas* in the *Panegyrici Latini*, a late antique text corpus. Relations are visualized as edges in a network, where particularly important ones are highlighted in red.

haec pro imperatore nostro in quae 5 sint uerba suscepta ope1-ae pretium est adnotare : rsi bene rem publicam et ex utilitate omnium * * * digna uota quae semper suscipiantur semper -que soluantur .

ut haec esse uera credamus quae mendacis uatum in plausus aptata cauearum .

merito necne , neutram in partem decernere audeamus , quia nec fas est affirmationi tuae derogare et onerosum confiteri uera esse quae de nobis . praesertim tam magna , dixisti .

scis enim uhi uera principis , ubi sempiterna si gloria .

quae perpetuae et constantis benit'olentiae prima **fiducia** est , **certissima** uil-tut11m et max.ima principis , 11ertas , numquam in animo esse **suspicionem** te audili .

dico enim magna **certa** -que **fiducia** : digna est hac quoque glo1-ia uestra pietas , et potest eam praestare felicitas .

o te go preparationem militum iuui , ego fugam hostium praepediui , ego Maxint1m in muros coegi et quem uos **cogebatis** mori uuluo domino reseruau' : non uideo quod possit esse iudicium quin , cum ista pars impuget tyranni fugam : illa custodiam , res publica

20 legi religionem uererer , si is , qui semper 1-es a numine tuo gestas praedicare solitus esseni , haec tanto maiora pristinis silentio **praeterirem** , per quae non pars aliqua seruata , sed uniuersa sibi est res publica

neque enim parui negotii est imperatorem totius or bis pro se peculiariter rogare , sub tantae maiestatis aspectu perficere frontem , uultum componere , 20 confirmare animum , uerba concipi per , **intrepidante** : dicere , apte desinare , expectare responsum .

quibus enim m11neribus aequari 20 haec cura principis , haec patientia potest , qua meruisti ut ille sibi nimum fortis ac p1-ope durus uideretur ?

est enim haec demum uera felicitas ac

haec est uera pietas , haec uoluptas conseruandi generis humani , exemplum dare gentibus ad matrimonia studiosius expetenda et liberos educandos , ut substituendis so successioneibus singulorum nihil obisit unumquenque esse mortalem , cum immortalis sit omnium posteritate res publica .

eterim ceterae uirtutes et bona cetera processu aetatis eueniunt , fortitudo a.nnis accedentibus roboratur , continentia disciplinae praecipit traditur , iustitia **cognitio** -ne iuris addiscitur , 6 ipsa denique illa quae uideatur rerum omnium domina esse **sapientia** perspectis homin1m moribus et exploratis rerum docetur euentis : solae cum nascentibus pariter oriuntur pietas atque felicitas ; naturalia sunt enim animorum bona et praemia fatuorum .

ibi adulescentes optimi discant , nobis quasi sollenne carmen praefantibus , maximorum principum1 **facta** celebrare (quis enim melior usus est eloquentiae ?

neque enim **fabula** est de **iconia** postarum nec **apinio** de fama ueterum saeculorum , sed **manifesta** res et **probata** , 20 sicut hodie -que testatur Herculis ara maxima et Herculei sacri custos familia Pinaria , principem illum tui generis ac nominis Pallantea moenia adisse ui

magnus uterque honor uester , sit1e eosdem maxime diligit quos scit uobis esse carissimos siue illis neminem praef ert , quamuis aliquem magis amet : proposita sunt senioribus p1-aemia , iuuenib1s exempla : adeant , 20 frequententer securas tandem ac patentes domos : quisquis **probatus** senatui uiros suspicit , hic maxime principem promeretur .

eterim ut nonj -ne Augusti admonemur elus cui primum dicitum est , ita haec optimi appellatio numquam memoriae 1'omnium sine te recurret , quotiensque posterj nostri optimum aliquem uocare **cogentur** , so toliens recordabuntur quis me1-uerit uocari .

Fig. 5: Semantically related sentences for *vera* in the *Panegyrici Latini*, a late antique text corpus. Important words are highlighted in red. Note that many sentences do not contain the query word *veritas*, but are highly relevant, nevertheless.

Methodologically speaking, snowball sampling is applicable to entire sentences and documents as well (Fig. 5). Since the amount of linguistic output here is considerably larger, users will probably not interact with it in the same way as with the network. Instead, such lists can be seen as a semantic equivalent of 'keyword in context' views, i.e. depicting descriptions of the same target entity (here: factuality as designated by the input word *vera*) in various contexts. This is especially useful for teachers who do not want to convey the meaning of one specific term, but rather of an entire concept or topic, which in turn is often essential to a deep understanding of ancient texts.

Another important aspect resides in the interpretability of NLP results.⁴² Especially in the case of semantics, finding relevant responses to a given query often includes complex modelling,⁴³ specific statistical measures⁴⁴ or searching in additional resources.⁴⁵ Usually, the ability of the underlying algorithms to explain results and the ability of those who applied the algorithm to explain why it produced those results, is less important for teachers than for researchers, but from an epistemological and educational perspective, there is much to be learned by applying introspection to the decision processes of artificial intelligence. This becomes apparent in cases where machines produce convincing visualizations using improper modelling. A good example is the stylometric study of Jeremi Ochab,⁴⁶ in which a seemingly simple decision process (i.e. authorship attribution) is made more complicated by many confounding variables, such as text length or topic.⁴⁷

Conclusion

In the end, teachers have to be aware that NLP can solve some problems better than others. It is quite suitable for training learners' vocabulary or even syntactic expectations by confronting them with interactive, individualized exercises and materials that have been tailored to their current state of knowledge. However, a teacher cannot rely solely on software because human domain-specific expertise and social sensitivity are needed to provide elaborate advanced feedback to the students. Moreover, machines may retrieve and visualize relevant search results very efficiently, but they must not take interpretation and decision-making out of the learners' hands because those processes constitute the core of consensus negotiation, and thus knowledge acquisition.

Besides, even in the easy cases, we must always be aware of risks such as systematic bias, weak statistical measures or overly suggestive visualizations. Apart from such implicit or hidden weaknesses, some tasks are known to be too difficult for contemporary machines, for example reliable and highly accurate parsing of syntax for historical languages. Fortunately, surpassing contemporary abilities is, in this case, arguably a question of a few years rather than decades. Other more complex tasks such as word sense disambiguation may need considerably more time to meet a similar milestone.

42 Doran et al. 2017, 4.

43 Divjak et al. 2009, 274; Weale et al. 2009, 29.

44 Hagiwara et al. 2009, 566.

45 Ono et al. 2015, 984–988.

46 Ochab et al. 2019.

47 Golcher et al. 2011, 31–33; Ochab et al. 2019, 141.

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Useful resources

- interactive exercises: [H5P](#)
- Latin vocabulary exercises: [MachinaCallida](#)
- visualization for linguistic annotations: [CONLLU Viewer](#)
- annotated ancient texts: [AGLDT](#) & [PROIEL](#)
- corpus search and visualization: [ANNIS](#)

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VERGILIUS: A Collaborative Platform for Studying and Promoting the Heritage of the University Paris 1 Panthéon-Sorbonne*

Introduction

The Department of Art History and Archaeology of the University Paris 1 Panthéon-Sorbonne has a rich heritage, which has long remained largely unknown.¹ In addition to the Greek antiquities and the model of ancient Rome, the department also holds a rich collection of pottery sherds from the Near East, a corpus of stamp seals from ancient Iran, several thousand slides and photographs, the archives of former professors, and a collection of plaster casts,² as well as a film library.³ Since October 2011, these collections have been placed at the core of an important project aiming to inventory, study, valorise and disseminate these collections.⁴ A pivotal point was the September 2015 opening of an e-Centre for digital tools (*Pôle images et technologies numériques*), whose aims include the promotion of digital approaches to the teaching of art history and archaeology, and the study and dissemination of the heritage collections held by our department.⁵

Within this framework, two main issues arose: Firstly, how should we transform the university heritage into a heuristic and teaching instrument through new technologies? Secondly, who should be the protagonists of this operation?

The following case studies will show that the digital dissemination of heritage, in all its forms, is actually a multi-layered process requiring the definition and follow up of a precise working protocol.

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51974>.

1 For a general overview: Tosti, Duploux 2018.

2 Martinez 2005.

3 This film library is actually the third largest in France, and is a joint collection of both Paris 1 Panthéon-Sorbonne and Paris 3 Sorbonne Nouvelle.

4 The first step was the inventory and study produced under the supervision of Alain Duploux of the Greek antiquities, achieved through the elaboration of a relational database, which is already accessible online: <http://agias.huma-num.fr> (last accessed May 27, 2021). See also: Duploux, Asselineau, 2016; Duploux, Asselineau 2017; Asselineau 2017; Duploux, Bruschini- Chaumet 2019.

5 <https://www.pantheonsorbonne.fr/ufr/ufr03/ufr-presentation/pole-images-et-technologies-numeriques/> (last accessed May 27, 2021). This e-Centre, built to replace the old photo lab, is part of the digital turn that has taken over many universities and research institutions in the last two decades, with particularly promising results in the field of archeology.

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Methodology and working protocol

Moving from the materiality of the objects to their digitisation and dissemination, the following steps have been implemented:

Materiality of the collections	Digitisation and dissemination of the data
Conservation	Data structuring and processing: 2D and 3D scanning
Understanding and contextualising	Data entry, uploading and storage: metadata and online collections
Analysing and describing	Data visualisation: virtual exhibitions

Our collections have long been completely neglected, left unmaintained and in some cases damaged. The first tasks were to sort and clean the objects, to reconstruct the context in which they were collected, and to evaluate their scientific interest and pedagogical value. This was achieved with the collaboration of a few department members, but was mostly carried out by students, who were absolutely central of the project. BA and MA students from our department (as well as *Erasmus+* students) were the true protagonists of the project, dedicating many hours of their internship to the various steps of the *chaîne opératoire*.

Students immediately realized that the university collections were not only ‘anti-quarian’ objects to be passively admired, but also active agents of their own training. However, it should be pointed out that our students have no specific IT skills. In fact, if GIS and database training are usually part of an archaeology curriculum, the digital turn in the humanities still requires the implementation of many other skills within their academic training. The active involvement of students in our project was therefore meant, on the one hand, to develop their ability to deal with an archaeological artefact, an archive, or a whole collection in terms of description, analysis, interpretation, and conservation. On the other hand it was also intended to strengthen their digital skills by leading them to seek out solutions to the various technical or documentary issues they faced in the process.

To fulfil the requirements linked to the digital teaching and dissemination of our particular heritage to our students and to a wider community, a user-friendly digital architecture was sought. The idea was to focus on content and methodology, rather than on technology. Very often, the choice of a complex digital solution not only

makes us, as scholars in the humanities, dependent on the help of IT specialists, but it also prevents us from understanding the logic and rules of knowledge production. Conversely, I wanted to place my project in a 'win-win' logic: while the university acquires data and enriches its digital archive, the students also develop their skills for the job market. Accordingly, I chose Omeka Classic, a quite simple and modular open access CMS. Eventually, in November 2016, I launched *VERGILIUS*, the portal dedicated to the heritage of the Department of Art History and Archaeology of Paris 1. Before illustrating the main features of this portal and the way I adapted the structure of Omeka to our pedagogical needs, I will start with an overview of the project, focusing on the main issues and solutions.

Before *VERGILIUS*: surfing between data and metadata

Slides and photos from former professors and researchers

One of the most important collections held by our department consists of thousands of slides and photographs for teaching and research. Some are images taken from books, others are original photographs taken by researchers and academics throughout the 20th century.

In the case of images from books, it seemed useless to digitize these slides or photos for which we have no copyright ownership; they can be accessed directly in the original publications they were taken from or in the large iconographic online databases made available by well-known repositories of archaeological iconography, like the Perseus Project, Arachne, the digital LIMC, the Beazley Archive, etc. For this series, we established a global inventory in order to identify the subjects and understand the teaching methods in the department before the advent of new technologies.

The slides of images taken by former researchers and academics are of course much more interesting. They offer unpublished images of archaeological sites that may have completely changed over the years, either because of the progress of excavations or, in the case of the Near East, due to their destruction during conflicts, or by ISIS. The department also owns a significant series of slides belonging to one of its former professors, Ernest Will.⁶ Having travelled extensively between the 30s and 70s, he left an impressive number of photographs. Thanks to his pictures, it is now possible, for example, to visually travel along the Nile river as it was during the 1950s⁷ or to discover a forgotten, and now almost completely inaccessible Syria.⁸

6 For more information about Ernest Will, see also: <https://nordoc.hypotheses.org/1163> (last accessed May 27, 2021).

7 <https://vergilius.pantheonsorbonne.fr/items/show/52#c=&m=&s=&cv=&xywh=-56%2C-491%2C2772%2C3501> (last accessed May 27, 2021).

8 <https://vergilius.pantheonsorbonne.fr/collections/show/111> (last accessed May 27, 2021).

Large parts of these collections were inventoried, digitised and referenced. During these operations, special attention was given to metadata, which presented a real challenge for students. We chose two open-sourced pieces of software, XnView and Geosetter, which allow users to modify the textual and geographic metadata embedded in image files. These indexing and referencing operations are now necessary to ensure that our resources will not become ‘lost in translation’ in the world wide web. In the long run, a precise indexation will allow researchers to find them in national and international research platforms (such as *Isidore* in France), which are based on sophisticated queries of metadata. Working on these old pictures requires a detailed workflow and therefore allows for specific training. Students should deal with scanning and image processing issues: in doing so, they are forced to transform the photograph into an agent of their training, both digital and archaeological. Through this process they learn how to describe an archaeological artefact using metadata. Sometimes a careful analysis even allowed students to date images. For example, while no information is available on the date of Will’s travels up and down the Nile, Will’s photographs of Abu Simbel temples in Upper Egypt, near the border with Sudan, correspond to the situation before the construction of the Aswan Dam, allowing the students to date Will’s travel to before 1965–1966, when the temples were dismantled and reassembled in a location uphill.⁹

The collection of pottery sherds from the Near East

Another interesting case study is represented by the – still unpublished – collection of pottery sherds from the Near East, whose creation dates back to the 1970s. This collection is made up of about 1500 fragments, mainly collected on the surface by former academics and researchers from Paris 1 during site tours, except for a small set coming from a systematic excavation on an Iranian site, Tureng Tepe. The pieces are largely Mesopotamian in origin, with a distinct series from Arabia. Chronologically, most of the sherds date to the Neolithic and Bronze Ages. The objective of this study collection is to establish, through the technological study of a wide spectrum of pottery productions, a reference atlas for students and pottery specialists.¹⁰

For the technological processing of each sherd, students worked under the supervision of pottery specialists François Gilligny and Sophie Meri, and produced descriptive cards to be filled manually. For the database – that represents the digital translation of these cards –, I chose the FileMaker Pro proprietary solution, which allowed in few weeks to come up with a very user-friendly and powerful tool. Even if the interface has still to be improved, the data entry has already started. Thanks to a FileMaker Server provided free of charge by the Huma-Num national research infrastructure, the

⁹ <https://vergilius.pantheonsorbonne.fr/collections/show/129> (last accessed May 27, 2021).

¹⁰ For a similar French university project, already available online and based on the CMS Omeka S, see <https://teknotek.pretech.cnrs.fr/s/fr/page/accueil> (last accessed May 27, 2021).

database (named ‘TEchSSON’) is already accessible online to the project managers and to Paris 1 students.¹¹ Once completed, it will be open to the general public, which will make it a broadly accessible teaching and a research tool that can demonstrate the potential of a relational database for the analysis and understanding of ancient pottery technologies. A few 3D models of the most interesting sherds were also produced, introducing students to photogrammetry. We chose the proprietary software PhotoScan (now Metashape) for the first steps (point and dense cloud) and the open source software Meshlab and Cloud Compare for further processing.¹² By training students to photogrammetry, we initiated the production of 3D models, which are now used in our pottery courses, while allowing the dissemination of the data beyond our university. Here, we see how training, teaching and heritage dissemination can merge into a win-win logic.¹³

The assemblage of seal impressions from Ancient Iran

The last case study presented here is the assemblage of 495 modern impressions of ancient Iranian seals created during the 1950s and the 1960s and related to the work of Jean Deshayes, then a professor at the University of Paris.¹⁴ During this period Deshayes was involved in various projects led by French archaeologist Jean-Claude Gardin – one of the founders of archaeological computing – on the development of automatic data recording in archaeology.¹⁵ The assemblage of seal impressions could be traced back to these years and related to this epistemological framework, which is in turn part of the foundation of modern digital archaeology. In order to inventory and study this assemblage we produced a relational database (CESIA id. *Corpus des empreintes des sceaux de l’Iran Ancien*), once again using FileMaker Pro.¹⁶ This tool, already available online to the project managers thanks to the FileMaker Server provided by Huma-Num,¹⁷ is aimed at describing all relevant features of a cylinder or stamp seal, including its size, shape and form (material data) and its iconography (immaterial data). It combines scientific needs with patrimonial ones, while introducing our students to the principles of relational databases, as well as allowing us to communicate our university heritage (and scientific production) to a wider audience.

11 <https://fm01.db.huma-num.fr/fmi/webd/TEchSSON> (last accessed May 27, 2021).

12 Some of these 3D models are already available on the Sketchfab account of the University: <https://sketchfab.com/Sorbonne-university-Paris1> (last accessed May 27, 2021).

13 For a first overview, combining 3D and RTI techniques, see Ferrari, Giligny 2019.

14 Huot 1980.

15 See Gardin 1991.

16 A MA-thesis was dedicated to this topic: Antinori 2018.

17 <https://fm01.db.huma-num.fr/fmi/webd/CESIA> (last accessed May 27, 2021).

VERGILIUS: From data processing to data sharing

In 2016, *VERGILIUS* was launched as a unified access portal, gathering all the department's iconographic and heritage resources. The tool is based on Omeka Classic (version 2.4.1), a free and user-friendly CMS developed by the Roy Rosenzweig Center for History and New Media.¹⁸ Operating at the crossroad of web content management systems, archive management systems and museum management systems, it allows users to create or collaborate on a website to display collections and to build virtual exhibitions. It also offers a series of themes and plugins that can extend its functionalities.¹⁹ Omeka uses the Dublin Core metadata standard to manage metadata,²⁰ as do French national libraries or the national scientific search engine Isidore.²¹ Omeka therefore fits the pedagogical and institutional needs of both our department and this particular pedagogical project very well. It also manages users according to various access privileges: a super-user, who has all privileges of administration and management (members of our IT System department); various administrators (professors and researchers of our Department), who have the right to access and modify documents, collections and tags; and contributors (students), who have the right to add and edit the documents they have created. *VERGILIUS* is the result of this network operation, moving from the server configuration and the back-office set-up (installation of several plugins and metadata specification) to data entry of university collections. Although the layout is still a work in progress with some technical issues that need to be fixed, large parts of our collections are already available. The core of the portal is the panel 'Images & Archives', which includes all the image libraries already processed.²²

1. Digitised images, mostly from personal slides or pictures shared by professors and researchers from the department.
2. Digitised Archives.
3. Virtual exhibitions.

Hierarchisation of the collections was also an important part of the project. Materials are organised in sub-categories, each one including one or more items (the item representing the primary entity of the Omeka structure). Except for the archive collection, all collections are organised by topographical order. A special attention was given to the geolocation of each item, i.e. each image or archive. The idea was to digitally and virtually reconstruct the original context of these objects, which were once stored in boxes

18 <https://omeka.org/classic> (last accessed May 27, 2021).

19 For a short overview on this tool, Leblanc 2019.

20 <https://archivengines.wordpress.com/2011/09/24/dublin-core/> (last accessed May 27, 2021). Cf. Morel-Pair 2005.

21 <https://isidore.science/> (last accessed May 27, 2021). See also <https://www.huma-num.fr/sites/default/files/guide-isidore.pdf> (last accessed May 27, 2021).

22 <https://vergilius.pantheonsorbonne.fr/collection-tree> (last accessed May 27, 2021).

or on shelves, and were thus alienated from their unique location in time and space. An important feature of our portal is the wide chronological and cultural span of its content. Through a simple search bar, it nevertheless allows users to identify aggregations which cut across space and time, creating connections between materials from a wide variety of locations and periods, as well as from different collections.

In *VERGILIUS* metadata can be filled in using free text, but in most cases, we implemented lists of values or codes from a controlled vocabulary. Especially for the archives folder, we decided to add specific metadata in addition to those inherent to Dublin Core, trying to digitally reproduce the archives' materiality. The archives of Bohumil Soudský – a former professor who introduced European Bronze and Iron age archaeology into Paris 1 teaching in the early 1970s²³ – are a good example in this respect.²⁴ They consist of personal notes, drawings, press clippings, excavation files, and a large number of student homeworks and exams. We followed a precise protocol: from sorting and ranking to inventory, then from scanning to uploading a selection of the more interesting pieces. Through data uploading we created a detailed hierarchical tree, which corresponds accurately to the physical organisation of the archives in the shelves of our department. In order to further exploit these resources, we used the Neatline plugin²⁵ to create a virtual exhibition showing the main stages of Soudský's education and scientific career on an interactive map.²⁶ This is a good example of Omeka's flexibility, which not only allows users to store and manage data, but also to produce new data. In other words, after data collecting and data processing, we finally reach real data visualisation: a completely new resource with a great heuristic potential, produced by students for both students and scholars alike.

Conclusion

Even if various technical issues and textual or iconographical errors will still need require attention during the coming months, we are proud of this experiment, through which we have been able to combine materiality and virtuality, traditional approaches and digital humanities, 2D and 3D, description and visualisation, and teaching and dissemination. Thanks to the involvement of students, our department is promoting its material heritage, while creating a new and unique digital heritage. But the students themselves have also been able to profit greatly from this project in their academic training, especially in light of a job market whose credo is, now more than ever before, 'Think Digital'.


23 Demoule 1989.

24 <https://vergilius.pantheonsorbonne.fr/collections/show/101> (last accessed May 27, 2021).

25 This plugin, released by the University of Virginia (<https://neatline.org/>), (last accessed May 27, 2021) is an interactive tool for telling stories using maps, timelines, and exhibition resources. Like the Story Maps developed by ESRI, it allows to the general public to maps with various kinds of spatial data.

26 <https://vergilius.pantheonsorbonne.fr/neatline/show/bohupil-soudsky-innovations-archeologiques-entre-prague-et-paris> (last accessed May 27, 2021).

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Section II:

Teaching Digital Classics: Practice Examples

Success Factors for Teaching Museum Studies in the Digital Age: Insights Into *museOn* | *weiterbildung & netzwerk**

Teaching of classics before and during the COVID-19 crisis

A short survey among students from several German universities, attending various subjects in ancient studies, reveals a uniform picture of basic teaching of classics before the COVID-19 crisis: the conventional combination of lecture, seminar, and exercise is the most common format. Lectures and seminars follow a routinely repetitive structure and focus on the auditory and visual teaching of content. Students work on a seminar topic by analysing more specific subtopics in self-study (acquisition, investigation activities) and presenting their results in lecture form, followed by producing a written record. Digitally supported forms of teaching are almost completely avoided.

Some core competencies of humanities work are addressed: critical questioning of research opinions and facts through their evaluation, scientific writing, discussion, and presentation. So-called future skills, as postulated by Stifterverband in cooperation with McKinsey, such as problem-solving, creativity, collaboration, digital interaction, and learning, are neglected. As a result, students are insufficiently prepared for their future scientific practice, and even less for a job in a professional environment. Do traditional teaching formats achieve the best possible learning outcome? How can digital teaching and learning formats help us to gear study programs toward competence?

Since the beginning of the COVID-19 crisis, lecturers have been forced to switch entirely to digital teaching within a few weeks. This has presented them with numerous challenges, ranging from technical difficulties – lacking knowledge of digital formats, methods, and tools – to a fundamental scepticism about digital formats. Quite often, attempts have been made to ‘translate’ the same type of ‘traditional’ teaching on a 1:1 ratio into the virtual world, which has led to a certain amount of frustration among students and lecturers and, in some cases, the desire to return to the status quo as soon

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51975>.

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as possible. Not only in view of pandemic-driven needs, but especially in view of the potential and added values of digital teaching and learning formats, the focus needs to shift back toward the didactically effective planning, designing, and teaching of courses.

Project background: objectives, target group, programme structure

By funding *museOn* | *weiterbildung & netzwerk*,¹ the Federal Ministry of Education and Research (BMBF) has been supporting the establishment of an academic continuing-education programme for the museum and cultural sector since 2014. It is part of the programme 'Aufstieg durch Bildung: Offene Hochschulen' (running from October 2014 to July 2020). The project *museOn* pursues two goals: On the one hand, the development of further education courses is intended to support a targeted professionalisation of museums and their staff. On the other hand, the development of a museum of the future is to be promoted through an ongoing discourse among an emerging network of museum experts.

Accordingly, the target group includes people who work in various areas of museums and cultural institutions, from volunteers and service personnel to museum directors, with very heterogeneous prior knowledge and professional experience, regionally scattered throughout the German-speaking world, with highly specific needs and interests in continuing education.

The *museOn* curriculum is therefore designed as a small-scale modular building-block system, based on the main tasks of museums: collecting, exhibiting, mediating/educating, managing, and marketing (Fig. 1).

The courses focus on highly relevant and pressing topics (e.g. sustainability management, digital strategies, and heritage interpretation), but also on basic topics such as public relations, exhibition planning, and curating. The modules can be studied as individual courses or cumulatively as a Certificate of Advanced Studies (CAS) or a Diploma of Advanced Studies (DAS) with/accredited by/under the auspices of Swissuni.² The programme is designed in such a way that by allowing the participants to choose flexibly from more than 50 courses, they can tailor their own further education to their level of knowledge and interests as well as to their professional and private situation. In addition to their work, participants dedicate approximately five hours per week over a period of five weeks to a topic, mainly online, in a mentored group setting. The courses have been developed with the professional support of museum experts and scientists.

1 <https://www.museon.uni-freiburg.de/> (last accessed May 27, 2021).

2 <http://www.swissuni.ch/> (last accessed May 27, 2021).

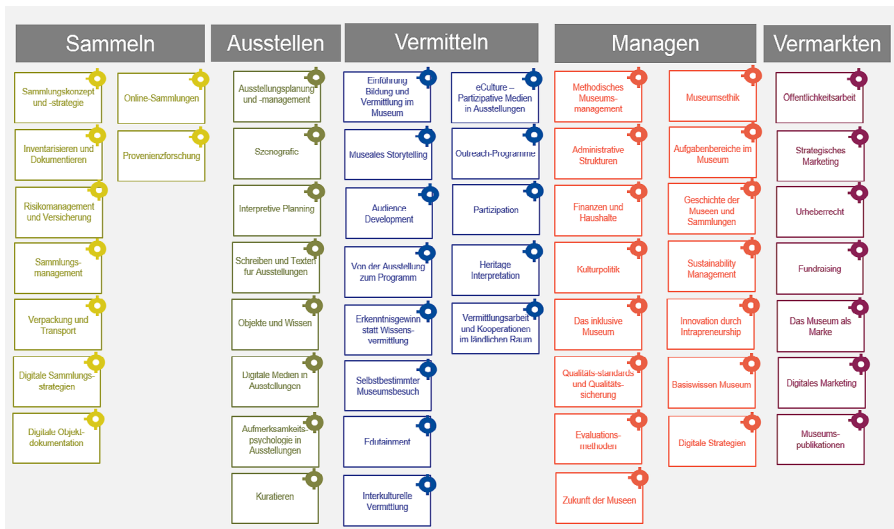


Fig. 1: *museOn* curriculum: building block system.

Since 2016, a total of 380 students have participated in 160 courses in both test and regular study operations. The majority of students have consecutively completed several courses; among them, almost 120 have obtained a CAS degree and nearly 20 have even earned a DAS degree. The number of dropouts is extremely low – especially compared to pure online formats such as MOOCs. A total of 70 experts, 12 e-tutors, and the *museOn* team (about 8 part-time staff) have been involved in developing and conducting the courses throughout the entire project phase.

Didactic design

Courses through *museOn* are designed in a blended-learning format. This means that most of the course (80–100%) can be studied online on the digital-learning platform.³ Mostly asynchronous phases are interconnected with synchronous contact periods with the entire group, either independent of location via web conference and/or at a museum as a place of observation and action in a laboratory-like setting.

The didactic design is built upon on a constructivist understanding of education and focuses on problem- and task-based learning with a high emphasis on practice

3 FRAMAS – Freiburger Akademie für Museums-, Ausstellungs- und Sammlungswissen *museOn* | *weiterbildung & netzwerk* (Hrsg.), *Wissenschaftliche Weiterbildung für die Museumswelt. Didaktisches Design* (Freiburg 2017), https://www.museon.uni-freiburg.de/wp-content/uploads/2017/05/museOn-Heft-03_03-2017-Didaktisches-Design.pdf (last accessed May 27, 2021).

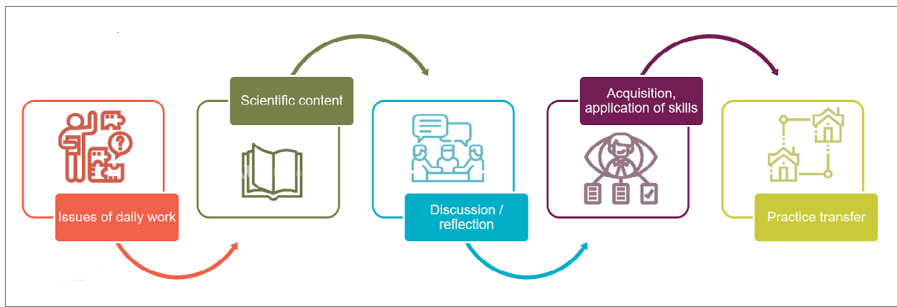


Fig. 2: Didactic design.

transfer. With the help of expert input, interactive reflection, discussion, and advice the participants can acquire new knowledge based on problems from their everyday work. Meaningful and relevant tasks enable the transfer of new insights into practice (Fig. 2).

Participants of the course ‘Exhibition Planning’ are, for example, given the task to submit a plan for a real or fictitious small-scale special exhibition, combined with a presentation or written conceptualisation for their fellow students. To accomplish their tasks, students use various multimedia resources such as e-lectures, interactive videos, texts, or learning modules as well as real-life materials. Depending on the learning goal of the task, they work either alone, in tandems, or in small groups using the various communication and collaboration tools available, such as an Etherpad on ILIAS or a whiteboard in a synchronous web meeting. Self-directed learning is key, but in each course the students are intensively accompanied and supported by a tandem consisting of a subject-matter expert and an e-tutor throughout the five-week period.

Example: ‘Objects and Knowledge’

In order to illustrate how our courses are structured, the following example provides insight into one of the theoretical courses, called ‘Objects and Knowledge’ (conducted by Prof. Dr. Ralf von den Hoff and Antje-Sophie Menschner, M.A.).⁴ Artefacts, objects, and things convey knowledge in museums and exhibitions, or generate knowledge. They are therefore of central importance for curators. The aim of the course is, on the one hand, to raise awareness of the various field of the meaning of objects. On the other hand, sensitivity is cultivated/deepened for different forms of the use of this knowledge,

⁴ For a detailed course description cf. <https://www.museon.uni-freiburg.de/weiterbilden/kurse-termine/ausstellen#6> (last accessed May 27, 2021).

specifically in the exhibition context. Therefore, the course reflects the interactions between the way objects are handled in museum presentations and the knowledge that is conveyed to visitors about the objects through the methods of staging chosen.

For this purpose, the students read various texts and discuss essential terms in small groups with the help of an Etherpad, a tool that can be used synchronously and asynchronously. As soon as the students agree on a definition, it is transferred to a glossary that can eventually be printed and used as a basis for further work.

The second part of the course is about selecting objects and analysing their different meanings in a blog post on ILIAS that can be commented on by fellow students. Again, small teams develop two concepts for each object to demonstrate how it could be exhibited in a museum. For a blue jug, for example, the development of two proposals suggests entirely different approaches to the object. In an online meeting, the participants discuss the different proposals and approaches to the object.

Success factors in continuing education

Since 2016, the *museOn* programme has been regularly and extensively evaluated both quantitatively and qualitatively at course and programme level. The statements of participants, subject-matter experts, and e-tutors are triangulated and feed into the process of continuous quality improvement.

At the end of 2019, a comprehensive survey was carried out among 24 CAS graduates. The specific aim of the survey was to assess the sustainability of the programme and the transfer success and longer-term effects of participation for the professional situations of the graduates.

The quality of the CAS programme was rated good or very good by 87.5% of the graduates. From the graduates' point of view, the CAS programme is particularly suitable for career starters. Reasons given for recommendation included the high degree of flexibility and diversity, the up-to-dateness and relevance of the topics, the possibility of gaining insight into other museum areas, and expanding competence as well as networking and exchange.

In addition, the expansion of professional, methodological and digital skills, and the linking of theory and practice play a particular role for the participants. According to the survey results, the vast majority of participants were able to expand digital and non-digital key competences as listed here.

In terms of practice transfer, most of the participants were able to integrate their study contents into their professional activities, use them as a starting point for developing new ideas, and adapt them to different situations. Most of those surveyed found their participation in the continuing-education programme beneficial for their career

development. As a result of their participation, graduates feel more confident in their working environment and indicate that their work quality has improved. The majority are more satisfied with their work.

Both from the many evaluations carried out and from the experience gained during the development and delivery of more than 50 courses, a number of factors have proven to be crucial for the learning outcomes of the participants:

- At programme level, the high degree of modularity enables flexible and learner-centred studying.
- Study contents are relevant to individual professional goals, are up-to-date, and are dynamically adaptable.
- Competence orientation, including all levels of Bloom's taxonomy,⁵ as well as identified future skills, constructively aligned with learning activities and assessment formats, are crucial for learning success. Theory-practice transfer is ensured through problem- and task-based learning.
- The didactic design is based on a constructivist understanding of education, in which learning from and with each other in learning communities is encouraged.
- The learning setting is designed in such a way that teaching and learning activities are coherently arranged in face-to-face and online phases, and the chosen mix of methods, media, and social forms is beneficial for learning.
- Lecturers are prepared for their changing role and requirements in a blended-learning setting, with expert authors and teachers as learning initiators and coaches and e-tutors as learning facilitators.

Conclusions for basic university education

Based upon the key factors identified for learning success in a comprehensive digital continuing-education programme, a number of benefits can be deduced for teaching, study, and even research in classics, and these are considered below.

At present, depending on the size of the institute, prospective antiquities scholars have little opportunity to influence their profile within their specialisation, for example by choosing seminar topics that interest them, due to the very limited number of seminars available. If, for instance, students had access to additional recorded lectures from their own institute or from others, they could more easily acquire fundamental knowledge in subjects that their study programme does not offer.

⁵ Anderson, Krathwohl 2001, 67–68.

Digital formats can facilitate learning for ALL types and learners and significantly increase the range of learning activities, encompassing not only acquisition but also investigation, discussion, collaboration, practice, and production. Through the use of multimedia tasks and tools, various senses are addressed, and students can study the material at their own pace. As a result, different thought processes are triggered, and long-term memory retention is supported. Multimedia also allows for creative learning outcomes such as videos, podcasts, presentations, and virtual exhibitions, i.e. learner-generated content that can be shared with others and re-used by others. E-portfolios can serve purposes of reflection and synthesis.

Flipping the classroom by shifting acquisition activities into a preparatory online self-learning phase gives room for joint in-depth discussions. Alternatively, a discussion in the seminar room, which is restricted by attention and time pressure, can be continued online.

At the same time, skills that will be beneficial for students in their professional lives, such as digital interaction and collaborative working, are trained incidentally. This is particularly important in classical studies, where few elements prepare students for their professional future. Yet in order to maintain its attractiveness as a subject, classics must not turn a blind eye to students' employability. Digital skills are already required in a variety of future professions, whether in museums, publishing houses, or in teaching.

Despite these obvious benefits, when attempting to establish a comprehensive and consistent approach to digital teaching and learning in basic humanities, existing framework conditions have to be taken into account, and a number of challenges will have to be tackled, as considered below.

While for participants in a continuing-education program, the priority of their studies very often ranks third after work and private life, for students, studying is their main occupation. As canonical study programs for students are geographically and chronologically tied to accommodate teaching staff and certain infrastructure (university), the advantages of digital teaching to study independently of time and place are not relevant. Meeting on campus during the day is not only easier but also socially more rewarding. As soon as digital-learning units are fixed in the examination regulations, it must be ensured that every student has the necessary equipment at their disposal. Can that be demanded from students with financially weaker backgrounds, or can universities be made responsible for providing the equipment needed?

In contrast to students of today's generation, who as so-called digital natives are basically familiar with using digital devices, tools, and structures in personal contexts, teaching staff may be less digitally fluent. Due to the rather high age demographics among university professors, many are hardly familiar with the potential of digital formats and tools, and usually lack digital-learning concepts and ideas about appropriate tasks beyond uploading documents. Accordingly, their attitude toward digital-teaching methods often remains sceptical, and they regard traditional classroom teaching as the

only true form of teaching. To develop skills and to convey the added value of digital or blended learning and teaching formats among lecturers, special training programmes are needed.

In addition, tightly knit examination regulations often leave little space to accommodate smaller learning modules or alternative forms of assessment in the curriculum. If relaxation of the examination regulations cannot be achieved, the only option is to force the digital-learning tasks into this corset.

Moreover, subject-specific conventions determine research practice: archaeological research still seems to be strongly influenced by individual protagonists, institutes, and regions, trying to differentiate themselves through their expertise, which secures jobs, legitimises research positions, and builds their recognition among colleagues. Behind this lies a collective research habitus. These conventions, which can be found not only in research but also in teaching, are well established and can only be changed slowly. It is therefore crucial that digital formats are used in a targeted and structured manner. Improvable elements from the traditional classroom should be replaced synergistically with digital elements and formats. It is not a question of either classroom or digital teaching. It is a question of how to sensibly unite the two.

However, even if considerable adaptation at different levels is required to successfully implement digital teaching, the effort is worthwhile in view of better educated students who can survive in the job market of the future, in view of lecturers who themselves continue to learn, and in view of an entire research discipline that can also ensure its quality nationwide, make content sustainably available, and network more easily.

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Practicing Science Communication in Digital Media: A Course to Write the *Antike in Wien* Blog^{*}

Communicating research to the general public and disseminating research results is becoming increasingly important in academia. In November 2019, Germany's federal minister of education and research Anja Karliczek announced that science communication would be an integral part of the ministry's future research funding strategy and published a statement paper on the topic.¹ Many funding opportunities already require outreach activities, as is demonstrated by the ERC's *Social Media Guide for EU Funded Research and Innovation Projects* in the Horizon 2020 program.² In addition, the public relations departments of, for example, museums or archaeological parks offer job opportunities especially for archaeology graduates with a bachelor's degree. However, while scholarly writing for an academic audience is traditionally part of the classics curriculum, science communication in digital media is rarely practiced during university studies. To fill this gap, I designed and taught a course entitled *Antike in Wien* ('Antiquity in Vienna') at the University of Vienna's Department of Classical Archaeology in 2017. The intention of this course was to make students familiar with research communication to a general public and to enable them to practice both analogue and digital outreach activities and research communication skills by giving guided tours, writing a blog, and sharing their work in social media. An additional aim of the course was to enhance the visibility of classical archaeology in Vienna by highlighting the relevance of classical antiquity in the city until today through content created by the participants. In this short contribution I wish to give an overview of this course, including an introduction to blog writing and social media for science communication, and review some results we gained from tracking our digital activities.

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51976>.

1 Bundesministerium für Bildung und Forschung 2019a and 2019b. See also the ministry's webpage on science communication (Wissenschaftskommunikation).

2 European Commission 2020. The guide gives a useful overview of different social media platforms, explains how to create an account, offers insights into default settings for posts, and some general advice on the appropriate style and tone for social media. It also addresses important topics such as possible target audiences; the question which audiences can be reached on which platform is not considered, though.

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The *Antike in Wien* course focused on one specific topic in order to provide practical experience in science communication: Vienna's antique tradition. This topic offered several advantages: on the one hand, students could easily relate to this topic, as it allowed them to explore their resident city. On the other hand, the locality of the course topic enabled us to easily visit the places we discussed and shared in our communication activities, so that the students could also prepare and try out analogue outreach activities without the need to travel.

The course, valid 4.00 ECTS, was offered in the bachelor's curriculum as part of the required module *Excavation, Preservation of Monuments, Museum Studies* (Pflichtmodul 'Grabung und Survey, Denkmalpflege, Museumskunde') which at the time comprised all practical courses. The course itself was only offered once in the summer of 2017, in my last semester at the University of Vienna. Eighteen students participated, all except one from the Classical Archaeology Department, and including several Erasmus exchange students.

The recipe: science communication in different media

I started preparing the course by producing a short 'rough and dirty' video for YouTube to advertise the course.³ In one weekend, I recorded short sequences for the video on my walks through Vienna's city centre. The video served as an introduction to the blog written during the course, and was published in the online course catalogue in place of a descriptive text.

During the course, the students practiced three consecutive communication steps: 1) giving guided tours at chosen monuments, sites, and collections in Vienna, 2) writing a blog on the places we visited, and 3) sharing both the blog articles and impressions from the guided tours on social media. Our starting point was thus an analogue outreach activity whose results were then distributed in different digital media channels.

Guided tours

The first step of our communication funnel were guided tours, a very familiar analogue outreach activity utilised in museums, university collections, and archaeological sites around the globe. The monuments, sites, and collections we selected were all easily accessible within Vienna so that anyone who might become interested through our outreach activities could visit them without obstacles. After a visit to the Kunsthistorisches Museum with a first guided tour conducted by Georg Plattner, director of the museum's antiquities collection, the students took over: each week, they prepared guided tours at one or two sites, individually or in groups of two, depending on the size of the site. We visited well-known landmarks such as the Karlskirche, the Theseus temple in the Volks-

³ The video is embedded in the blog *Antike in Wien* 2017a.



Fig. 1: Guided tour in the Schönbrunn castle gardens (photo: K. Meinecke).

garten, the parliament and the Academy of Fine Arts, both built by Theophil Hansen in the second half of the nineteenth century, as well as lesser known monuments such as the Tegethoff monument in the shape of a *columna rostrata* at Praterstern. Collections we visited included Sigmund Freud's antiquities at the Sigmund-Freud-Museum, the Roman inscriptions integrated into the walls of the staircase at Vienna's national library, as well as the city's two plaster cast collections, one held at the Academy of Fine Arts and the other within our own department.⁴ We also explored Vienna's Roman history in the city centre, including a visit to the Römermuseum. Outdoors, we headed to the Biedermeier cemetery of St. Marx and the Schönbrunn castle gardens with their fake Roman ruins (Fig. 1), and finished our course with a walk through Vienna's historic city centre looking out for antique elements in extant architecture and statues. Since we wanted to present ancient sculptures or monuments which may have served as models for the architects and artists and show them as comparisons for the monuments we discussed, the students prepared handouts for the participants to consult during the guided tours. After each tour, we held a group discussion on how the classical tradition could be made more visible and accessible to visitors through information panels, markers on the floor, apps with audio guides, or similar measures at the relevant sites and monuments.

⁴ The two plaster cast collections are the only sites we visited which are less easily accessible, as they are only open by appointment to interested visitors; see the blog post on 'Gipssammlungen in Wien', <<https://antikeinwien.wordpress.com/2017/06/02/gipssammlungen-in-wien/>> (last accessed May 27, 2021).

The blog

At the heart of the project was the blog *Antike in Wien*. Proceeding from the guided tours they had prepared the students wrote an article for the blog, writing either individually or in groups of two. In preparation for the course, I set up the blog on the blog hosting platform *WordPress.com*. In the simplest version, this site is free to use and independent of university resources. It uses the popular content management system WordPress and is easy to use (I already had experience with it from previous private blog projects). In addition, it conveniently enables tracking of the blog's performance through its integrated statistical tools.

By definition of the Cambridge Dictionary, a 'blog' is a "a regular record of your thoughts, opinions, or experiences that you put on the internet for other people to read".⁵ Blogs in academia can be characterised as "the missing link between raw materials and traditional research output", such as publications in print or online journals, monographs, and edited volumes.⁶ In the humanities, blogs are written especially to give insights into scholarly work routines, to share hypotheses or unpublished ideas, or to express the researcher's subjective opinion in a first person narrative, which is less accepted in more traditional publication genres.⁷ Blogs in the humanities are mostly aimed at an academic audience: a recent survey of academic blogs on the platform *de.hypotheses* by Mareike König revealed that a small majority of scholarly bloggers (52%) write for other academics, while only 13% blog for the general public.⁸ These blogs thus mainly serve networking purposes and are used to make the authors, their ideas, and research topics known to the academic community.⁹ Surprisingly, blogs in the humanities are only seldom used to communicate with a wider public.

In our course, we chose a different approach. Instead of targeting other academics, we wrote for a non-academic, general audience interested in culture, the history of Vienna, classical antiquity and its tradition, as well as other, similar topics. Our blog served as a digital outreach activity but was nevertheless meant to be research-based. It was thus essential that all information presented was well-researched, correct, and up-to-date. Since the objective of the blog was to make readers curious to discover and visit collections and monuments across Vienna, our posts also contained all the necessary information for visitors to access the sites, monuments, and collections we presented.

Defining the target audience and the general objective are among the first essential steps when setting up a blog, as they determine the content of your posts. In addition, it is helpful to decide on further criteria for the content and formal layout of the texts in

5 Cambridge Dictionary s. v. 'blog'.

6 König 2020a.

7 Ibid.

8 König 2019, 19: 18% of the interviewed said they were not blogging for everyone or not for any specific audience, 10% answered that their audience varied depending on the topic of the blog article, and 2% had not been thinking about their audience at all.

9 König 2020b. For further details see König 2020a. Also compare the blog article and podcast by Schumacher 2020.

advance, especially if the blog is written collaboratively by several authors, as was the case in our course, in order to give the blog a certain consistency and recognizability. I therefore defined the following formal criteria for the structure of the blog posts:

- The text should have a maximum length of 600 words and no footnotes. In general, online texts should not be too long, as reading habits on the internet differ from reading printed texts. Readers often skim online texts and display a shorter attention span.¹⁰ Therefore, an informative title and first paragraph are essential. For the same reason, online texts should be written in a simple, easily comprehensible, and somewhat conversational language, avoiding complicated sentence structures and unexplained technical terms. Since students generally experience writing longer texts, rather than shorter ones, during their studies, the word limit turned out to be the most challenging of the criteria for the course participants. Most blog posts therefore turned out slightly longer, at around 800–1000 words.
- As our blog was meant to be research-based, between one and three essential references should be included at the end of each article for anyone who wants to read more on the topic.
- Each article should contain between one and five informative pictures of the discussed site, monument, or collection. The pictures should have a caption which should include the photographer's name and any other relevant copyright information. Respecting copyright was a major part of the assignment and as such, for all pictures taken inside of museums, the students were obliged to contact the institutions and ask for permission to publish the photos online. All participating institutions generously granted permission.¹¹
- Finally, the text should contain information for visitors regarding access to the places discussed in the text. Therefore, we included a link to the official website where information on opening hours, ticket prices, and so on could be found, and we embedded a Google map with the address. We deliberately omitted opening hours and other such information from the text of the posts, so as to reduce the amount of maintenance required to keep the information up to date.
- At the end of each article, the author's name should be stated.

While in general it can be useful to develop a specific tonality for the blog texts to ensure a certain consistency across the different articles, in this course, I deliberately chose not to give the participants too precise instructions (apart from the word limit and the general recommendations for writing online texts). I did not interfere with the

¹⁰ Two examples for studies on reading on the internet are Nielsen 1997 and Pernice 2017.

¹¹ I would like to take the opportunity to thank all the participating institutions for generously granting us access, often for free or with reduced entrance fees, as well as permission to publish the photos made by the students on the blog.

outline, the use of sub-headings, or how the content was presented, because I wanted the students to develop their own approach to their relevant topics and above all to have fun writing these texts for a general public. It was important that they kept in mind the audience for whom they were writing. I encouraged them to include anecdotes or interesting details to keep their readers' attention, and for the majority of the articles this worked out very well. We ended up with very diverse posts that, for example, discussed antique elements to be discovered in architecture, made readers curious with titles quoting Sigmund Freud or Monty Python's "Life of Brian", or were written in the form of a dialogue between empress Maria Theresia and her architect. In our case, this variety made the blog authentic – it was, after all, a blog written by students.

As I wanted to give the students as much freedom as possible when writing their blog posts, we did not implement any criteria for SEO (search engine optimization) in the texts either. For example, we did not conduct any keyword research. As a research-based blog, our focus was more on the content and the information we wanted to communicate than on the number of clicks on our website. As far as I can see, SEO is not a significant topic in science communication yet, especially in German-speaking academia.¹² SEO may merit inclusion, however, depending on the aim of your blog, your audience and topic, as well as your potential competition. For universities competing for students, it might be interesting to appear further up in the search engine result pages than their competitors.¹³ The same is true if you want your blog to be easily found in a search engine when someone researches a certain topic, for example a colleague or a journalist. Therefore, implementing SEO may help to enhance the visibility of a scholarly blog.

A central characteristic of blogs is that new content is posted on a regular basis. This helps build an audience, keeps readers interested, and motivates them to return to the blog. To ensure that new content appeared regularly, we followed a time schedule for the publication of our blog articles: they should go online three weeks after the guided tours. This gave the students one week to write the article, one week for peer feedback and revisions, and one week for me to give a final feedback and for the publication of the article. For most blog posts, this schedule worked out well, and they were published on time.

An essential part of our blog-writing process was the peer review. For this, I created a forum in Moodle, the University of Vienna's e-learning platform, in which the students uploaded their texts, and their fellow students could then comment on them. This method allowed the students to reflect on their work and learn from each other. Compared to my previous experiences with peer reviews in courses at BA level, this particular peer review process worked astonishingly well. Almost all students regularly commented

¹² A high-ranking article giving first insights into SEO for science communication that appears among the first search results in Google for the keywords "SEO Wissenschaftskommunikation" is Geu 2020.

¹³ Dunkhase 2020.

on their fellow students' articles. With some guidelines at hand,¹⁴ their feedback was respectful and fair, and they appropriately pointed out the texts' strong points as well as passages that needed improvement. The peer review therefore not only enhanced motivation among the participants, but also contributed to the quality of the blog articles.

When the blog articles were ready for publication, I either invited students to insert their texts and images on Wordpress.com together with me, so they could experience the process first-hand, or I uploaded their posts for them, depending on the students' interest and time constraints.¹⁵ The uploading process is generally more time consuming than expected: apart from inserting the text into the online editing form, images had to be uploaded and captions added, a featured image for the preview chosen and cropped if necessary, a category added, and a Google link created to embed the map. For this reason it was not always possible to upload the posts together with the authors.

Social media

As the final step in our communication funnel, we promoted our activities on social media. At the beginning of the course, I defined two hashtags for sharing the link to the blog articles as well as impressions from the course: '#AntikeinWien', the name and topic of the course, and '#ikavienna', the abbreviation of the Department of Classical Archaeology (Institut für Klassische Archäologie – IKA) in Vienna. The latter hashtag already existed prior to the course and had been started by Dominik Hagmann, then one of the student assistants in the department, to share department news on Twitter. Unlike the #AntikeinWien hashtag, it is still being used in this context on various social media platforms by different users, in project channels as well as by students in their personal accounts.¹⁶

In the news forum of the e-learning course on Moodle, I posted an announcement whenever a new blog article was published so that the students could start sharing it on social media. The students were free to decide whether they wanted to use social media and if so, which platform they preferred. The most popular platform amongst the students for this purpose turned out to be the social networking website Facebook. Facebook allows registered users to publish messages including photos, videos, and links, which depending on the user's personal settings can be read either only by the user's friends or are openly accessible. From the blog's statistics, it became evident

14 I provided the guidelines for the peer review at the beginning of the course. They included which questions the feedback should answer and how it should be written: for example, in a positive, constructive manner offering perspectives for future work, in a respectful and appropriate tone, subjectively formulating own impressions and observations. And, most important: always keep in mind how you personally want to receive feedback.

15 Because I set up the blog with my private Wordpress.com account, unfortunately I could not then pass on the log-in data.

16 See, for example, how this hashtag is openly promoted on the official page of Roman archaeology at the Department of Classical Archaeology, University of Vienna 2020.

that a lot of readers were redirected to the blog from Facebook. I myself used the microblogging service Twitter to share impressions from the guided tours and announce the publication of new blog posts. Twitter allows posts of 280 characters (at the time only 140) which can include links and photos; posts are openly visible to anyone on the internet. Dominik Hagmann also tweeted about the articles, both in his personal account and through the department's official Roman archaeology account. None of the students chose to use Twitter, as is discussed further down.

Apart from Facebook, the other platform preferred by the students was Instagram. Instagram is mostly used to share photos which are freely accessible to anyone on the internet. Since it is not possible to integrate links into Instagram posts, though, it was more difficult to promote the blog on this platform. Students shared some pictures from the guided tours, and they also began to use the course's hashtags for activities which were not part of the course itself on Instagram.

In addition, we collaborated with the university's PR department in a takeover of the university's official Instagram account (@univienne). At that time, the university's account was managed on a weekly rotation between different members of the university, each of whom shared pictures with short texts on a certain topic. Two students from our course took over the account at the end of June 2017 and shared impressions from our guided tours as well as pictures about studying Classical Archaeology in Vienna. They shared the link to our blog in the description of their first photo, and during their takeover of the university's Instagram it was also inserted into the account's bio, the only place where a clickable link is possible on that platform. The advantage of the takeover was that we reached all the university's followers and did not have to build our own audience first. The takeover was very well received and gained a lot of likes and positive comments.

The choice of platforms used by the students in the course reflects the general use of these social media services in the German-speaking regions. A study on online communities conducted by the German public broadcasting services ARD and ZDF in 2019 questioned 2000 people in Germany aged 14 and above who used social media at least once a week.¹⁷ The study revealed that of the platforms we used during the course, Facebook is the most popular among all age groups: 31% of the respondents used Facebook at least once a week. Among those aged 14 to 49, half of the social media users regularly visit Facebook (48% of those aged 14–29 and 46% of those aged 30–49), while older age groups use it much less. For Instagram, there is a clear preference in the younger age group: while 59% of those aged 14–29 use Instagram, only 17% of those aged 30–49 and even less in higher age groups reported checking this platform at least once a week. Twitter is not especially popular with any age group in Germany: it was only used by 4% of the overall respondents and 6% of those aged 14–29, while among

¹⁷ This statistic was part of the 'ARD/ZDF Onlinestudie 2020' (see 'ARD/ZDF Onlinestudie 2020').

those aged 30–49 the percentage was slightly higher at 7%. Therefore, it did not come as a surprise that the students were not using Twitter and did not create Twitter profiles for the course.

As already indicated above, the various platforms not only have different user groups, they are also accessed for diverse purposes.¹⁸ Both Facebook and Instagram are used mostly to communicate with friends. Facebook is especially useful for private conversations because of its networking setup. As almost all institutions, companies, restaurants, bands, and other cultural and business entities have a Facebook page, this platform is also consulted to learn about events. Twitter, in contrast, is especially popular for acquiring information, reading the news, or following influencers and topics of personal or professional interest. Again, this is reflected by the fact that many institutions, companies, politicians, journalists – and academics – run a Twitter account. Therefore, when setting up a social media profile, the intended audience and the kind of information you wish to share should be considered. To keep in touch with and make projects known to institutions, funding agencies, politicians, journalists, and other academics, Twitter may be a good choice. For reaching students and sharing pictures from activities and events, Instagram might be the preferred medium. Facebook, through its relatively large audience in comparison to other platforms and fairly even distribution among age groups, remains a good platform for announcements of any kind.

Tracking the blog's success

A convenient feature of *Wordpress.com* is the integrated analytics tool which automatically compiles statistics to track reader behaviour. These statistics quickly give an overview of the traffic on the blog and its origin. In total, we published thirteen articles on the blog. Since setting it up in February 2017, the blog had 3328 visitors and 8561 views.¹⁹ As expected, readers come mostly from Austria (5218 views from February 2017 to August 2020) and Germany (1944 views in the same time period). Most visitors accessed the blog via the homepage. Among the articles which were accessed directly, the article on the Karlskirche was the most popular with 595 views, followed by the article on Freud's collection of antiquities with 476 views, and the article on Vienna's Roman history with 398 views.

The all-time statistics show that the blog performed best in the year the course took place (Fig. 2). The strongest months were May to July 2017, the three months when we published the articles and promoted them on social media. The strongest day ever,

¹⁸ See, for example, Snapchat's Apposphere study which questioned 1,005 app users aged 13–44 (2020).

¹⁹ One view means that the page with the article was opened; each visitor thus most likely read multiple articles or at least viewed multiple pages.

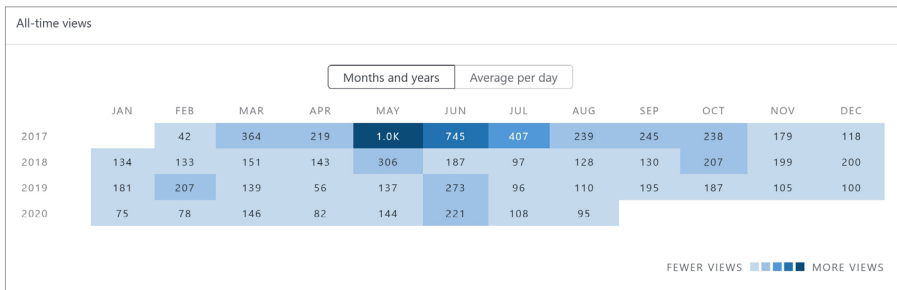


Fig. 2: All-time views on the blog from the *Wordpress.com* statistics tool (screenshot from antikeinwien.wordpress.com, accessed August 16, 2020).

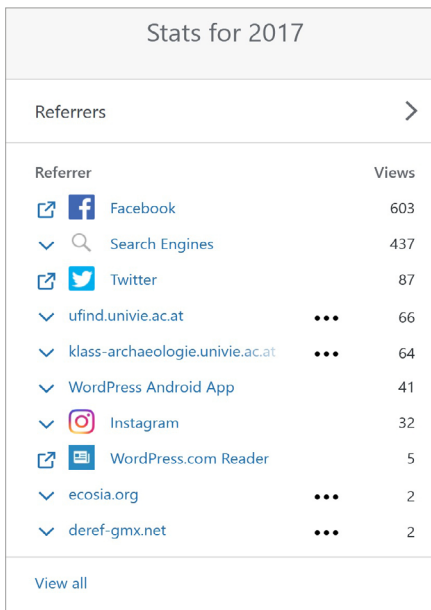


Fig. 3: Referral statistics for 2017 from the *Wordpress.com* statistics tool (screenshot from antikeinwien.wordpress.com, accessed August 16, 2020).

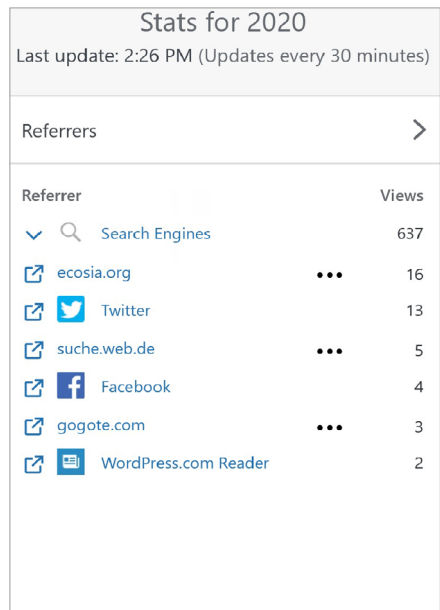


Fig. 4: Referral statistics for 2020 from the *Wordpress.com* statistics tool (screenshot from antikeinwien.wordpress.com, accessed August 16, 2020).

May 3, 2017, was the day after the post on Freud’s collection was published. The numbers of views decreased rapidly when we stopped promoting the blog. While the site had 3806 views from February to December 2017, it dropped to 2015 in 2018 and down to 949 from January to August 2020. Nevertheless, these numbers demonstrate

that the blog articles are still being read. A recent strong month was June 2020 with 221 views, the month in which the *Teaching Classics in the Digital Age* conference took place and I again promoted the blog on Twitter as well as in my conference presentation.

As the referral statistics reveal, sharing the blog posts on social media had a significant impact on the number of visitors on our page. In 2017 (Fig. 3), 603 referrals to the blog came from Facebook, 87 from Twitter, and only 32 from Instagram. The latter shows that although the students' Instagram posts had hundreds of likes during the takeover in June, hardly any of the readers clicked the link to the blog in the bio or copied the link from the first post. An Instagram profile might therefore help to raise awareness for a project, but is less significant in generating traffic to a promoted website. In 2020, the vast majority of referrals came from search engines, while only 13 clicked a link to the blog on Twitter and 4 were redirected from Facebook (Fig. 4). Positively speaking, even without SEO, the articles are obviously still listed high enough in search engines' search results to be found by potential readers. The blog thus continues to promote the relevance of classical antiquity and its continued legacy in Vienna. However, with continuous promotion via social media, the numbers of views could probably be much higher.

Learnings and outlook

The *Antike in Wien* course was a good opportunity not only to practice, but also to track the effects of research communication. A mixture of different analogue and digital outreach activities served to promote content to different audiences. This choice of outreach activities and social media channels as well as the content produced for them should all be tailored to the expected audience, the desired outcome of the communication, and the style of the chosen medium. Nevertheless, it takes time and continuous posting to build an audience which keeps returning to your website or social media profile. Evaluating the blog's reader statistics showed that promoting content through social media obviously helps to generate traffic to your website. Nevertheless, when no new content is produced and old content is not redistributed, the number of visitors rapidly declines.

From a teaching perspective, the students' feedback on the course revealed that the participants enjoyed learning new things about their city, writing about their discoveries in the blog articles, and sharing their work with friends on social media. The blog not only provided an easy way to practice writing for a larger, general audience, but also to make the students' work visible. This was a motivational factor which should not be underestimated and, together with the peer review process, contributed to the high quality of the texts on the blog.

The *Antike in Wien* course was an experiment that did not follow any established course format in the curriculum. Unfortunately it was offered only once, because I left Vienna shortly after. Nevertheless, as there are many monuments, museums, and sites reflecting Vienna's antique tradition still waiting to be explored, I hope there will be an opportunity for a sequel course to continue the blog in the future. I would like to improve or adapt some of the elements of the course, should I teach it again. In this first course, I chose the monuments we visited and defined the criteria for the blog posts prior to the course, as the focus was on the field trips and the writing experience. For a subsequent course, I would consider shifting the focus to the conception of the blog: the students as a group could research and select which sites to discuss in their blog articles and make agreements with the relevant institutions. After analysing best practice examples, they could then define a target audience and develop criteria for the texts as well as a tonality for the social media posts. In addition, I would make social media usage mandatory. Instead of having the students use only their private profiles, I would perhaps set up an *Antike in Wien* profile on each platform, which could then be taken over by a different student or group of students every week or with the publication of each new blog article. This way, students could explore different ways of posting on various social media platforms without having to set up or use their private profiles. A further idea would be to include YouTube as another, very popular social media platform, for which the course participants could produce short videos on their chosen monuments. As other conference participants pointed out in the discussion of my presentation, even without guided tours (and during times of online teaching), skills such as the conceptualization of a blog, content creation for a general audience, and posting on social media can also be taught and practiced online, and with contact restrictions. I do hope that in the future there will be an opportunity for a sequel of the *Antike in Wien* course with the suggested improvements, enabling the revival of the blog and the '#AntikeinWien' hashtag and to further enhance students' science communication skills.

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Classical Studies for the New Millennium: Traditional Material Through New Methods and Perspectives^{*}

Introduction

The last decade has seen a re-evaluation of the humanities and sciences in the university environment. Changes in the economic and political landscapes have incurred social ‘problématiques’ that reflect and are in turn reflected in academic curricula. Several recent publications have taken it upon themselves to defend liberal arts education, while university administration under the pressure of market value has questioned the role of the humanities. During this time, digital humanities has claimed a role in research and teaching, and for this reason on occasion has been interpreted as an attempt at a humanities revival, and perhaps even an admission of technology’s seminal ubiquity. In this paper, I reconsider digital humanities and argue that it should be appreciated as a novel methodology that effectuates a more holistic pedagogical approach both for the humanities and, even more specifically, for classics and the sciences. It is not a matter of one versus the other but of one effectuating and actualising the other.¹

This paper explores the role of classical education in a media-oriented era and identifies pedagogical practices that better elucidate the content of Graeco-Roman studies by relating them to contemporary issues and embracing diverse digital technologies. The paper presents results of a variety of techniques employed over the past five years in four classics and digital humanities courses as well as in a co-taught interdisciplinary offering with a classics component. This study argues that classical languages and cultures, as well as digital technologies, should be appreciated anew – one against the backdrop of the other. It is only then that what seems pure theory – as is the case with classics – or merely *ars gratia artis* – as can be the case with technology – acquires a more substantive and inferential existence that enhances students’ perception of the self and the world.

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51977>.

1 Zakaria 2015 makes a very convincing case for the exigency of liberal arts education and the quintessential skills that can educate students to be productive, well-rounded, and adaptable adults. For another in-depth discussion of the humanities and their contribution to democratic societies, see Nussbaum 2010.

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Contemporising a classics course

One of the major issues of our time is the individual's sense of identity and belonging. The majority of people in the academic world and beyond would claim that classics is outdated and unable to be part of this conversation, let alone contribute to it. Additionally, we should acknowledge the ways in which classics has been misinterpreted and misused by disingenuous and misguided agendas with regard to such issues.² As an instructor, I believe that the most efficacious way to openly address such discussions and contribute to bettering the world is to educate future generations – our students. It is our duty to teach them how to read ancient sources and learn from the past.

To this end, I designed a course that prompts students to explore the world around them and their sense of belonging by effectuating traditional classics concepts through modern perspectives and digital methodologies. The title of the course is *Identity of the Self from Classical Antiquity to the Digital Era*. Throughout the class, students work on classical and modern texts on ethnicity, race, and citizenship and engage with digital storytelling to create stories actualising these issues. Another parameter of our perception of the self relates to our conception of the world's glocal (both global and local) dynamics. So I use virtual-reality applications and 3D scanning and 3D printing of copies of Graeco-Roman artefacts in class to enhance the students' understanding of the relevance of classical antiquity in the modern world and the connections between time and space. Ultimately, they experientially comprehend ideas of one world history and world cultural heritage.

More specifically, students learn to identify, describe, and explain the fundamentals of identity in the classical world, while being able to correlate it with today's concepts and the personal need to define ourselves as individuals and global citizens. They are trained to analyse and evaluate ancient practices and learn how to study history and why that matters – ultimately becoming able to appreciate the significance of the famous quote attributed to Mark Twain: "History doesn't repeat itself, but it often rhymes". Beginning with ancient Athens, we consider fundamental concepts, such as democracy, but also question the exclusion of non-native born individuals. Students are assigned readings from Edith Hall's *Inventing the Barbarian*³ to modern publications in social studies and biology, such as Stephen Gould's article *The Geometer of Race*⁴ and Jared Diamond's *Race Without Color*.⁵ More importantly, the students have to create a video in class, using any free software, to vocalise and share their understanding of Athenian citizenship, inclusion or lack thereof, and relate it to personal thoughts and

2 For discussions, see Allen 2015, Dee 2003, and Zuckerberg 2018 for an extensive relevant bibliography.

3 Hall 1989.

4 Gould 1994.

5 Diamond 1994.

experiences. This is a group activity that enhances different skillsets and interests, while engaging all the students in diverse capacities – some students write the script, others take part in the skit, and others are in charge of the video production. Moving to the Roman Empire, we study and explore the viability of naturalisation within the borders of the Empire and explore the effect that language and culture acquisition had on the citizens of the Empire. During class, students reflect on Claudius' Lyon tablet, that bears the proposal to admit Gauls to the Roman Senate.⁶ The students have to contemplate, question, and ultimately argue cases of migration, naturalisation, glocalisation,⁷ and belonging, while also consulting secondary bibliography on these issues.⁸

To this end, the course brings everything to a more current context, as I ask the students to take a test, designed by Harvard University, that studies implicit bias based on gender, ethnicity, and other distinguishable characteristics.⁹ The point is to learn about historical perspectives and subsequently to be in a position to enhance their perception of 'us' and 'them' in our world.

Other topics to which students are sensitised are war victims, veterans, trauma, and giving marginalised groups a voice. Once more, the current sociopolitical landscape has normalised behaviors of exclusion and stigmatisation that need to be discussed. Ancient civilisations, the Homeric culture of heroes, and Aeschylus' *Persians* are only a small number of texts that can be wrongly interpreted by the untrained eye as simply glorifying war, which is only half the story. Therefore, this module and the class discussions are structured around Euripides' *Helen* and *Trojan Women* and are aimed to help students who share similar experiences vocalise their stance, to prompt others to empathise, and hopefully to urge everyone to consider more carefully and critically the world around them.¹⁰

During the last weeks of the semester, students engage with the concept of world heritage, embracing the mission of digital humanities to internationalise history and culture. The students are trained in exploring digital technologies, such as online museum exhibits and digital preservation of historical sites, to consider how such advances can help them understand themselves as agents in world history. To this end, at the end of the semester the students also practice 3D scanning and 3D printing and discuss how a 'foreign' artefact when 're-physicalised' in our classroom can become part of

6 For an extensive discussion of the tablet, its meaning and ramifications, and further bibliography, see Griffin 1982.

7 The term 'glocalisation' has a long history that begins in discussions of territory. There have been long scholarly debates as to its origins and its meaning. Most scholars agree that the term first appeared in the work of Roland Robertson, a sociologist, and Erik Swyngedouw, a geographer. The term became more prominent, widely used, and debated during the 1980s and mostly in the 1990s. For a very comprehensive and enlightening history of the term, see Robertson 2018.

8 Geschiere 2011 discusses autochthony in Africa and Europe. Iredale 1999 and Mahroum 2001 point to the skills and competencies of immigrants as instrumental in their integration. Sense of belonging (Baumeister, Leary 1995) and well-being (Phinney et al. 2001) are also key factors in fostering positive emotional processes and contribute to well-adjusted social interactions. Weingrod / Levi 2006 actually talk about "multiple citizenships," and Lerner et al. 2007 argue that immigrants use their identity of origin as an interpretive tool to construct another one.

9 <https://implicit.harvard.edu/implicit/takeatest.html> (last accessed August 17, 2020).

10 For modern associations and perspectives, see Pillinger 2019 and particularly pages 74–107: 'Rewriting Her-story: Euripides' *Trojan Women*.' See also Son 2016.

our experience.¹¹ They engage with 3D-scanning tools and technologies to digitise and ultimately digitally preserve an artefact of interest from the Harn Museum of Art at the University of Florida. The students then have to reconsider technology, authenticity,¹² and digital preservation in the face of environmental and war catastrophes¹³ as well as the very act of re-experiencing historical artefacts on our own terms.¹⁴

Language matters: moulding conscious speakers

Two other courses I developed pertain to the promotion of the study of language, including but not limited to the teaching of Greek and Latin. Greek, Latin, and any foreign language for that matter, are admittedly considered by students difficult to master, and more often than not inconsequential or useless to their future career path (an issue with which many of us have to contend). However, the foundational *gravitas* of language comprehension and cultural communication cannot be disputed. In this course, students are assigned a variety of readings, including Edward Said's *Return to Philology*,¹⁵ in which they consider statements such as the following:

“Humanism, I think, is the means, perhaps the consciousness we have for providing that kind of finally antinomian or oppositional analysis between the space of words and their various origins and deployments in physical and social place, from text to actualized site of either appropriation or resistance, to transmission, to readings and interpretation, from private to public, from silence to explication and utterance, and back again [...] all of it occurring in the world, on the ground of daily life and history and hopes, and the search for knowledge and justice, and then perhaps also for liberation.”¹⁶

They are also challenged to consider the power, significance, and monumental impact of language and to reconsider their notions of classics and the humanities. For instance, based on Amazon's artificial-intelligence machine that was meant to facilitate that company's hiring process, we discuss the power of language in issues of inclusion, marginalisation, and diversity, and how ultimately it leads to the shaping of our society.¹⁷

11 Carrozzino 2010

12 For discussions on authenticity, see Di Giuseppantonio Di Franco, Galeazzi, Vassallo 2018.

13 See Meskell 2018 for the history and perennial pertinence of UNESCO and the art of conservation.

14 Danto 2008, Jacks 2008, Nieves 2008.

15 Said 2004.

16 Said 2004, 83

17 Dastin 2018.

In language-focused classes, the use of treebanking analysis through the *Perseids* framework has, of course, proven beneficial.¹⁸ Moving beyond the morphosyntactic surface, though, I have combined this linguistic granulation with comparative analysis of other ancient and/or modern languages to explore styles of writing that can be more or less influential. Such an approach to language can also contribute to more profound apprehension of language as the most pervasive social tool. To this end, students have used software such as *Stylo*,¹⁹ *Voyant*,²⁰ *InfraNodus*,²¹ and *Wordclouds*²² to study political speeches, compare translations of Greek and Latin texts to determine discrepancies between the original and its translation, and have also compared ancient texts, such as Euripides' *Italicize*, and their modern adaptations to redefine classical reception. One student noticed that in the historically earlier American presidential debates the personal pronoun 'we' was used more frequently than 'I.' Another student examined parameters that influenced the translators of Virgil's *Aeneid* – whether historical circumstances, backgrounds, country of origin, or the agendas of the translators. Another worked on consensual and forced relationships in the ancient world to find similarities with modern-day '#MeToo' stories. And another student tried to explore morphosyntactic similarities between Roman historical and biographical works.

Thus, the seminal backbone of these courses is to teach students about the politics of language and to alert them to the dangers of doubting their pervasive involvement in and huge impact on our lives.

Digitising humanities, humanising the digital, or both?

I have also developed a transdisciplinary course titled *Digital Tools for the Arts and Humanities* that was designed not only to bring together students from different disciplines, but also to open a discussion about technology's role in the arts and the humanities as well as the role of the humanities and the arts in technology, and to promote re-appreciation of the need for disciplinary confluences. The course effects collaboration among digital scientists, scientists, social scientists, artists, and humanists. The core idea could be encapsulated in the project titled *The Next Rembrandt* in which computer engineers and artists collaborated to study the painting techniques and intricacies of Rembrandt and then proceeded to produce new artwork that would most resemble the painter's mastery.²³ Of course, we do not fail to discuss the pitfalls of such collaborations,

18 perseids.org (last accessed April 12, 2021); Crane 2012.

19 https://computationalstylistics.github.io/stylo_nutshell/ (last accessed April 12, 2021).

20 <https://voyant-tools.org/> (last accessed April 12, 2021).

21 <https://infranodus.com/> (last accessed April 12, 2021).

22 <https://www.wordclouds.com/> (last accessed April 12, 2021).

23 <https://www.nextrembrandt.com/> (last accessed April 12, 2021).

particularly when not conducted appropriately – observing the boundaries of each discipline while also engaging with their convergences.

During the course of the semester we discuss humanities, digital humanities, and human-centric computing. We explore text-, image-, and audio-based tools and projects. Furthermore, we work with visualisation tools, treebank annotation through the *Perseids* framework, 3D digitisation, *Stylo*, xml, html, and open-software-development APIs such as *Google Maps*.

The main idea is for the students to learn how to use a variety of tools that they will then re-conceptualise and re-contextualise in their own areas of research. To this end, the students' projects are meant to showcase that language can be studied from a linguistics perspective by a humanist, as an advertising component for online shopping, or an efficient promotional tool for social networking.

Also, the course is taught within the parameters of the *Sunoikisis* digital classics consortium.²⁴ Each week we have a two-hour session on a particular tool and its potential uses and then a one-hour session on the same or related tool or project as presented by a colleague through the *Sunoikisis* program. The multifaceted expertise in this consortium provides the students of this course with the possibility to attend lectures by experts in several different fields, and consequently to broaden not only their research perspectives but also their way of considering other disciplines. Another unique approach of the *Sunoikisis* program is the fact that several of the projects are presented by their creators.

More specifically, for the *Treebank Annotation* sessions, albeit focused on classical Greek and Latin texts, I have had students who annotated not only in one of the classical languages but also in Indian and Hebrew. The session on *Named Entity Recognition: SNAP and Recogito* inspired a project on the Silk Road in the past and present, in which the group designed their own interactive map. In the students' own words:

“The Silk Road constituted a route of goods, ideas, and cultures throughout the centuries. Connecting the furthest ends of the known world from East to West, it has been an invisible yet concrete network, which fostered intercultural encounters and economical exchanges in what could be considered the first stages of modern globalization. Nowadays, the Silk Road does not exist anymore as a trade route as it was before. Nonetheless, its existence perpetuates in the form of a framework to interpret the world. Recent events have highlighted once more how important the Silk Road is in the awareness of the people who live in the areas touched by it. Migrants who are crowding the European shores follow the same path that goods from the furthest Eastern regions would do in their last leg into the Old Continent. The One Belt One Road plan proposed by the Chinese

24 <https://www.dh.uni-leipzig.de/wo/sunoikisisdc/> (last accessed April 12, 2021)

government traces the original Silk Road to form a continuous trade and investment network to promote a transcontinental economic development zone among numerous emerging markets stretching from East, Central, and South Asia to the Middle East and Africa. The project will try to offer a multilayer representation of the Silk Road for what it meant in the past, and for what it offers to the understanding of current events.”

Finally, another project examined the authorship of a group of letters written under a pen name and attributed to Benjamin Franklin. Again, in the students’ own words:

“Ben Franklin used many different pseudonyms with full personas. However, the story of why Franklin invented Silence Dogood is interesting. As a teenager, he was working at his older brother’s newspaper shop in Boston called ‘The New England Courant’. He wanted to write for the newspaper, but his brother, somewhat of a bully, wouldn’t let him. So, 16 years old, he posed as an older widow named Silence Dogood, writing 14 letters and sending them to be printed at the shop of his brother every two weeks. The letters were consistently published in The Courant until his identity was discovered by his brother, prompting him to flee to Philadelphia. To clarify our method of proving our concept that Silence Dogood was one of Ben Franklin’s pen names was one in authenticity of authorship. We will first talk about our review of the pre-name cluster graph generated in Stylo that provides the Delta distance between the Silence Dogood Letters, the Busy Body Letters, and Franklin’s letters. The variance of the Delta distance that exists in this data set ranged from 0.9 to 0.6. This 0.3 variance supports our concept that there exists a high probability that the Silence Dogood letters and Busy Body’s letters were both written by the same author. After determining this, we compared the Delta distance of the three future writings that are known to be authored by Ben Franklin. The resulting cluster analysis shows that the text in Letter 7 and Letter 10 written by Silence Dogood aligns almost perfectly with the text in two of the letters that are known be written by Ben Franklin. One of these letters was to Sir Hans Sloan (1725) and the other was to Miss Jane Franklin (1746). The text from all three of Franklin’s letters falls at ~ 0.85 on the Cluster analysis.”

Techne: the technological and cultural making of our world

In 2018 I was awarded an Andrew Mellon ‘Research into Teaching’ grant. One of the deliverables was to design and offer a multidisciplinary, team-taught course that explores the separation between nature and culture as humans develop and use technology to

imagine and modify the environments they occupy and ultimately create the technosphere.²⁵ Examining a range of technologies and technological advances from different time periods and contexts, students gain a better understanding of how technology has shaped our lives and the world. The class includes an experiential learning component. In the beginning of the semester, each student is given a box with the *UF Quest* game that we designed.²⁶ Using an old aerial photograph of the University of Florida campus as a map and a GPS app as a guide, students visit and ‘interact’ with artefacts and sites of interest throughout campus while they reflect on how they experience them in their everyday life. Upon completion of the assignment, they are given a 3D-printed, scaled-down replica of the respective site or artefact.

In my classical-studies module, students explore concepts of cultural productions in the Graeco-Roman world and their effect on our understanding of world history. More specifically, we study both technological and cultural inventions of the ancient world (legal, social, athletic, and artistic) to determine how a cultural technosphere was constructed and subsequently re-authenticated, globalised, and eternalised.²⁷ Then the students have to actualise their understanding of the past by engaging in an experiential activity. They have to visit the Hippodrome Theatre in Gainesville, Florida, which is designed as an ancient Greek temple, and take a video while they reflect on the traces of the Graeco-Roman world in their everyday lives and embark upon a unique adventure through space and time, thus hopefully appreciating the historical continuum and its repercussions for our society.

Conclusion

In conclusion, this paper demonstrated renewed methodologies for classical studies that embrace the globality of the discipline against the backdrop of the individual’s sense of self, re-envisioning classical studies and by extension the humanities as seminal disciplines for the renewed understanding and betterment of the world around us. And in this spirit, I would like to close with the words of Norman Augustine, the former Lockheed Martin CEO, who stressed the importance of both scientific skills and humanistic thought:

“So what does business need from our education system? One answer is that it needs more employees who excel in science and engineering [...] But that is only the beginning; one cannot live by equations alone. The need is increasing

25 <https://research.dwi.ufl.edu/projects/technosphere/> (last accessed April 12, 2021).

26 <https://research.dwi.ufl.edu/projects/technosphere/index.php/course/> (last accessed April 12, 2021).

27 The readings assigned range from ancient Graeco-Roman contributions to the modern world, both with respect to tangible and intangible heritage, to Harari’s book *Sapiens: A Brief History of Humankind* (2015) to bridge civilisations and consider the world as a whole.

for workers with greater foreign-language skills and an expanded knowledge of economics, history, and geography [...] Certainly when it comes to life's major decisions, would it not be well for leaders and employees of our government and our nation's firms to have knowledge of the world's great philosophers and the provocative dilemmas found in the works of great authors and playwrights? I believe the answer is a resounding 'yes.'"²⁸

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²⁸ Zakaria 2010, 89–90

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Mapping Cicero's Letters: Digital Visualisations in the Liberal Arts Classroom^{*1}

Introduction

Mapping Ancient Texts (hereafter: MAT) is an ongoing digital-visualisation project undertaken by a team at Kenyon College consisting of a Classics faculty member, instructional technologists, and undergraduate students.² MAT's goal is to create digital visualisations of ancient Mediterranean travel narratives, and to investigate these travel narratives as reflections of the geospatial and travel-related conceptions of ancient authors and audiences. MAT's visualisations have applications for teaching and research. This paper focuses on the pedagogical dimension of the project. All the visualisations discussed here are available on the project website.³

Background

My interest in digital visualisations of the ancient world stems from broader research into the rhetoric and representation of travel and geographical space in Latin literature.⁴ Roman imperialism both made possible and depended upon networks of trade, trafficking, travel, and transport that traversed the Mediterranean basin and beyond.⁵ My other research, along with MAT, is inspired more broadly by the so-called 'spatial turn'

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51979>.

1 I would like to give special thanks to Joseph M. Murphy for his contributions to the technical discussion in this paper. Any errors that remain are my responsibility alone. I am also grateful to the editors of this publication for the opportunity to contribute.

2 Current and former team members are: Micah Myers, Kenyon College Department of Classics (PI); Joseph M. Murphy, Director, Kenyon College Center for Innovative Pedagogy; Alex Alderman, Instructional Technologist, Kenyon College Center for Innovative Pedagogy; and undergraduate researchers Natalie Ayers, Haley Gabrielle, and Daniel Olivieri. MAT has received support from Kenyon College's Center for Innovative Pedagogy and Department of Classics, the Great Lakes College Association, and the Five Colleges of Ohio CODEX Initiative. Although both 'digital visualisation' and 'digital map' appropriately describe what we create in this project, we prefer 'digital visualisation' since it encompasses a broader spectrum of types of images.

3 <http://mappingancienttexts.net> (last accessed March 29, 2021).

4 Myers 2011, 2018, 2019; Myers, Zimmerman Damer forthcoming.

5 For globalised perspectives of the Roman world, see esp. Hingley 2005; Pitts, Versluys 2015; Loar, MacDonald, Padilla Peratta 2018, scholarship that builds on fundamental work by Horden, Purcell 2000; Morris 2003. For network analysis of the ancient Mediterranean, see Malkin 2003; Malkin, Constantakopoulou, Panagopoulou 2009.

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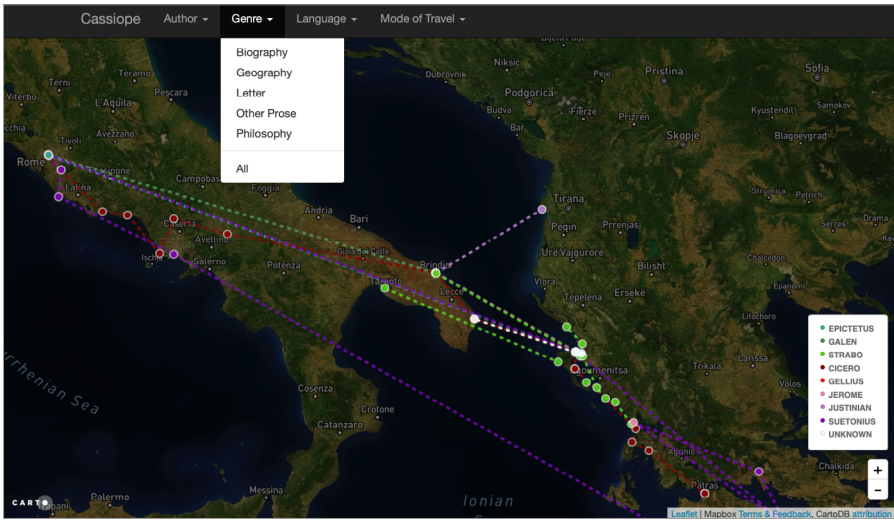


Fig.1: Screenshot of MAT visualisation of all travel narratives mentioning the port of Cassiope. The user interface allows filtering by author, genre, language, and mode of travel.

and ‘mobility turn’ that have occurred across cultural studies. The spatial turn analyses space not as an objective, inert dimension in which activity occurs, but as socially and politically constructed, and as an important factor in the shaping of individuals and societies. The mobility turn emphasises movement (and sedentariness) of humans and things in the places and spaces that the spatial turn brings to the forefront.⁶

These are exciting times to be asking questions about ancient Mediterranean geography and travel. The publication in 2000 of the *Barrington Atlas of the Greek and Roman World* brought a new level of precision to our understanding of where things were in the ancient world.⁷ The *Barrington Atlas* has provided a foundation for a variety of digital projects, including the *Ancient World Mapping Center*,⁸ *Pleiades*,⁹ the *Pelagios Network*,¹⁰ the *Digital Atlas of Roman and Medieval Civilizations*,¹¹ *Orbis: The Stanford Geospatial Network Model of the Roman World*,¹² *Mapping Greek Lyric*,¹³ and *Topos Text*.¹⁴ MAT builds upon these other projects, with the goal of creating geospatial digital

6 Spatial turn: Lefebvre 1991 [1974]; Bourdieu 1977; Tuan 1978; Soja 1989, 1996; Hubbard, Kitchin, Valentine 2004. Mobility turn: Hannam, Sheller, Urry 2006; Sheller, Urry 2006; Cresswell 2011.

7 Talbert 2000.

8 <https://awmc.unc.edu/wordpress/> (last accessed March 29, 2021).

9 <https://pleiades.stoa.org> (last accessed March 29, 2021).

10 <https://pelagios.org> (last accessed March 29, 2021).

11 <https://darmc.harvard.edu> (last accessed March 29, 2021).

12 <https://orbis.stanford.edu> (last accessed March 29, 2021).

13 <http://lyricmappingproject.stanford.edu/bubblemap.html> (last accessed March 29, 2021).

14 <https://topostext.org> (last accessed March 29, 2021).

interfaces capable of visualising multiple travel narratives simultaneously. I emphasise the ‘travel’ in ‘travel narrative’, since one thing that distinguishes our project is the manner in which it visualises not just places, but also movement between places.

Our first visualisation for MAT charted all references in classical literature to the port of Cassiope on the Ionian island of Corcyra, modern Corfu (Fig. 1). The visualisation allows users to view and read multiple travel narratives mapped onto the places that the narratives describe. Users can also filter the data in the visualisation based on criteria such as language, author, or, as seen in Figure 1, genre. The Cassiope visualisation provided a proof of concept using a limited data set. This paper looks at pedagogical applications of the sort of digital visualisation and digital cartography that we used in the prototype. I shall focus primarily on the results from a course at Kenyon College in which students use the web application *Carto* to create visualisations from geospatial information in Cicero’s letters. This paper explores how these projects can teach important technical skills as part of a classics course, and engage students in detailed analysis of Roman mobility and history. I also discuss some challenges we have faced in using evolving technologies in an undergraduate classroom setting at a liberal arts college.

Mapping Cicero’s Letters: methods

The *Mapping Cicero’s Letters* project approaches Cicero’s epistolary correspondences as travel texts in so far as they move – or purport to move – from author to addressee, and frequently make reference to journeys that Cicero and his correspondents undertook.¹⁵ The data for *Mapping Cicero’s Letters* is created by Kenyon College students enrolled in a course on ancient travel, geography, and ethnography. We have run the project three times: in 2016, 2018, and 2020. I co-teach the project with Joseph Murphy, Director of the Kenyon College Center for Innovative Pedagogy. It is the only digital project that the students undertake in the course, although they are introduced to other digital resources over the course of the term. The course has no prerequisites; all readings are in English. Students range from first-years who have never previously taken a classics course to senior classics majors. The students are not expected to have any technical background, and most do not. In 2016, 16 students took part in the project. We capped the course at that number to make conducting this project for the first time more manageable. In 2018, 24 students participated. In 2020, the course size was again capped, this time because the class was taught as a three-hour seminar; 17 students took part. In 2020 the project was conducted remotely due to the COVID-19 pandemic.

The end goal of *Mapping Cicero’s Letters* is to have students, working in groups of two, create original tabular datasets and digital visualisations based on the geospa-

¹⁵ Rossi 2011 offers a comprehensive study of travel in Cicero’s letters.

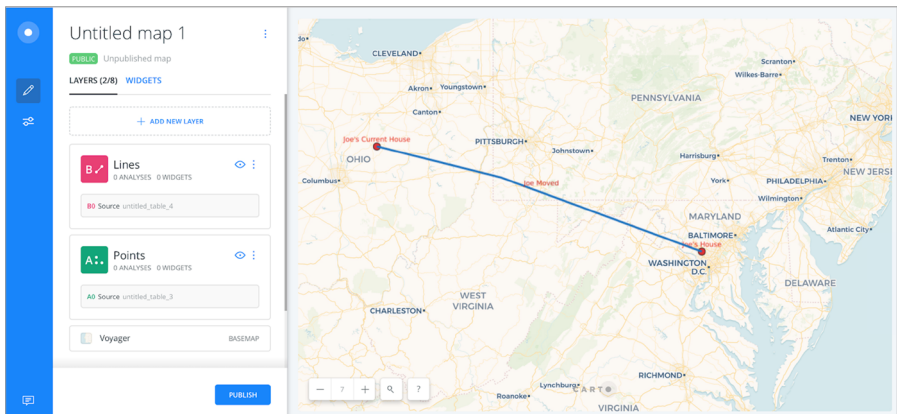


Fig. 2: Example of introductory exercise in which students create a visualisation of their journey from home to Kenyon College using *Carto*.

tial information in epistles from the corpus of Cicero’s letters, and to contribute to a collective dataset. The project’s primary learning aims are increased student facility with: (1) tabular data; (2) data visualisation; (3) ancient Mediterranean geography and travel; and (4) late Republican Roman history. In 2016 and 2018 we moved from our normal classroom to a computer lab for this project; there we conducted a mix of instructional tutorials to teach the skills required to complete the project and in-class independent project time, during which students worked on data creation and visualisation while we were available to answer questions. In 2020 we used a mix of remote synchronous and asynchronous instruction, as well as independent work time and drop-in virtual office hours to substitute for the in-class time that we would have devoted to the project. To complete the project, students learn and make use of a variety of skills, ranging from traditional close reading of texts to the database-management language SQL.

At the beginning of the project, students are paired off into groups of two.¹⁶ Next they are introduced to *Carto*, a GIS-based web mapping application that offers free academic accounts.¹⁷ *Carto* has a fairly easy learning curve and offers a variety of useful features for styling and customising visualisations. After the students sign up for *Carto* accounts, we familiarise them with the platform and with broader concepts about digital maps. Through a hands-on activity in which the students map their own journeys from home to college, we introduce the concept of map layers, in this case a points layer and a lines layer. In this activity, students create two points for their visualisation: one

16 An odd number of students in the 2020 iteration of the project necessitated a group of three as well. Documentation and video tutorials covering everything discussed in this section in greater detail are available at <http://mappingancienttexts.net/category/documentation/> (last accessed March 29, 2021).

17 <https://carto.com> (last accessed March 29, 2021).

representing where they consider home, one for the location of Kenyon College. They then create a line, what we term a 'journey segment', linking the two. The resulting visualisation represents their journey from home to Kenyon (Fig. 2). They also learn about the relationship between a layer and its underlying datasets, and how points, lines, and polygons function on a map in *Carto*. Students also learn to use *Carto's* CSS interface, which allows them to customise the appearance of their visualisation, including changing the size and colour of elements and labeling points and lines.

Having learned about Cicero earlier in the course, students are now introduced to his letters. Each group of two is assigned a set of 20 letters, from either *ad Familiares* or *ad Atticum*, for their visualisations.¹⁸ Groups then read their assigned letters, and attempt to identify information about the locations of the author and recipient. The former is often supplied by the letter header or at its conclusion. The location of the recipient can be more challenging to ascertain. In addition to analysing the contents of the letters to identify the location of the recipient, students often consult D. R. Shackleton Bailey's commentaries.¹⁹ For this step, students frequently get help from the instructors or a fellow student who knows Latin and is familiar with using a commentary. Students are also asked to make note of any references to travel within their letters. Once students have identified the locations of the authors and recipients of their letters, they use the Pleiades gazetteer to find the coordinates and the Pleiades URI for each location.

The students next begin the process of transforming the information gleaned from the letters into tabular data in Excel following templates that we provide. As in the visualisation created in the introductory exercise, their visualisations of the letters have two layers, a points layer and a journey-segments layer, so they initially create two separate data files. The points-layer file includes columns with the name of the location of the author or recipient, evidence for the location, the name of the person associated with that point, the name of the letter, the composition date, and any relevant passage relating to travel (Fig. 3).²⁰ Each letter is therefore represented as two points in two rows of data: one point for the author and a second for the recipient. The format of the journey-segments file is similar. Each letter has one journey segment corresponding to the two points where the author and recipient are (e.g. 'Rome to Mutina'). Instead of geographical coordinates, each segment is given two unique location IDs, which students use later to link the two points associated with each letter (Fig. 4).

18 Students have been assigned different letters during each iteration. So far, students have collectively covered *ad Familiares* 1-390 and *ad Atticum* 20-132.

19 Shackleton Bailey 1965-70, 1977. There are instances in which the location cannot be ascertained or done so with certainty. This uncertainty can be indicated in the notes column of their data.

20 Dates are represented as a single date as well as a *terminus ante quem* and *terminus post quem*. This system allows us to make use of the time-filtering torque feature in *Carto* and to reflect the different specificity for the dates of Cicero's letters, which varies from as precise as, e.g. the morning of a certain day to as vague as, e.g. a season of a year. There are well-known uncertainties relating to the dates of some letters. See esp. Shackleton Bailey 1977, 24; White 2010, 74-75 with 202 n. 52. For the larger questions relating to approaching Cicero's letters chronologically, see Beard 2002; Gibson 2012, 2013; McCutcheon 2016.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1	Point	Reference for location	Places URL	ID Number	Latitude	Longitude	Author/Recipient	Citation (SB)	Citation (Vulg)	Language	Genre	Composition Date	Terminus post quem	Terminus ante quem	Travel References
2	Tostum	Wester	https://places.ubla.org/place/421028	S2020	41.79436	12.71819	A. Cicero	281 VI.25	Latin	Letter	24 August 49 BC	0046-8-31 BC	0046-8-24 BC		
3	Rome	Letter 280	https://places.ubla.org/place/420225	S2021	41.89179	12.88197	R. N. Pagan Gellus	381 VI.25	Latin	Letter	24 August 49 BC	0046-8-31 BC	0046-8-24 BC		
4	Lutina	Wester	https://places.ubla.org/place/420723	S2003	41.49865	12.75622	A. Cicero	302 VI.19	Latin	Letter	28 August 45 BC	0046-8-28 BC	0046-8-28 BC		↑ always thought his Paeninus slope

Fig. 3: Sample 'Points' file.

	A	B	C	D	E	F	G	H	I	J	K	L
Journey Segment	Starting Location	Final Location	Location ID	Author	Citation (SB)	Citation (Vulg)	Language	Genre	Composition Date	Terminus post quem for w/c	Terminus ante quem for work	Notes
Rome to Rome	S201	S202	Cicero		221 VI.22	Latin	Letter	May 48 BCE	0046-6-1 BC	0046-6-31 BC		Domitius has return
Rome to Corduba	S203	S204	Cicero		222 VI.10b	Latin	Letter	September 48 BCE	0046-9-1 BC	0046-9-30 BC		
Rome to Corduba	S206	S206	Cicero	223	VI.10a	Latin	Letter	September 48 BCE	0046-9-1 BC	0046-9-30 BC		
Rome to Corduba	S207	S208	Cicero		224 VI.11	Latin	Letter	June 45 BCE	0046-6-1 BC	0046-6-30 BC		↑ now that your high!
Rome to Rome	S209	S2010	Cicero		225 IV.13	Latin	Letter	August 46 BCE	0046-8-1 BC	0046-8-31 BC		↑ lack not only many
Rome to Thessalonica	S2011	S2012	Cicero		226 VI.12	Latin	Letter	October 46 BCE	0046-10-31 BC	0046-10-31 BC		
Rome to Hadrumetum	S2013	S2014	Cicero		227 VI.13	Latin	Letter	September 46 BCE	0046-9-1 BC	0046-9-30 BC		↑ have begun to enter
Rome to Hadrumetum	S2015	S2016	Cicero		228 VI.14	Latin	Letter	26 November 46 BCE	0046-11-26 BC	0046-11-26 BC		
Rome to Mytilene	S2017	S2018	Cicero		229 IV.8	Latin	Letter	August 46 BCE	0046-8-1 BC	0046-8-31 BC		
Rome to Mytilene	S2019	S2020	Cicero		230 IV.7	Latin	Letter	September 46 BCE	0046-9-1 BC	0046-9-30 BC		Marcellus is being for

Fig. 4: Sample 'Journey Segments' file.

Students next import their tabular data into *Carto*, where the data requires customisation and manipulation through the application of SQL statements. In the students' data, every reference to Rome, for example, has the exact same geographical coordinates. *Carto* renders multiple points with the same coordinates as if they were a single point. To address this issue and to connect their points with journey segments, students learn to apply two SQL statements. The first one scatters identical points so that they no longer overlap, but continue to be in the general vicinity of the location to which they refer. Applying a second SQL statement links scattered points with their corresponding journey segments by using the unique location IDs mentioned above. Applying the second SQL statement also requires the students to create two additional tabular-data files drawn from the original two. Students are also encouraged to use *Carto's* CSS interface to customise the appearance of their visualisations.

At the conclusion of the project each student group presents their visualisations in class. As part of their presentations, they are also required to have researched two places mentioned in their assigned letters, and to offer an in-depth analysis of one letter. Groups also contribute their data to a combined dataset, which allows us to create visualisations of the entire class's data. Examples of these collective visualisations are available on the project website, including visualisations that use *Carto's* cluster feature to show the frequency that places are mentioned and *Carto's* torque feature, where the points appear and disappear to reflect the chronology of the letters.

Mapping Cicero's Letters: results and discussion

In both the 2016 and 2018 versions of the project, all groups succeeded in creating visualisations, with quality ranging from exemplary to marginal. In 2020, because the project was taught remotely, each member of a group was responsible for creating a visualisation of half of the assigned letters. One student did not complete the project. On the exemplary end of student performance, some students discovered additional *Carto*

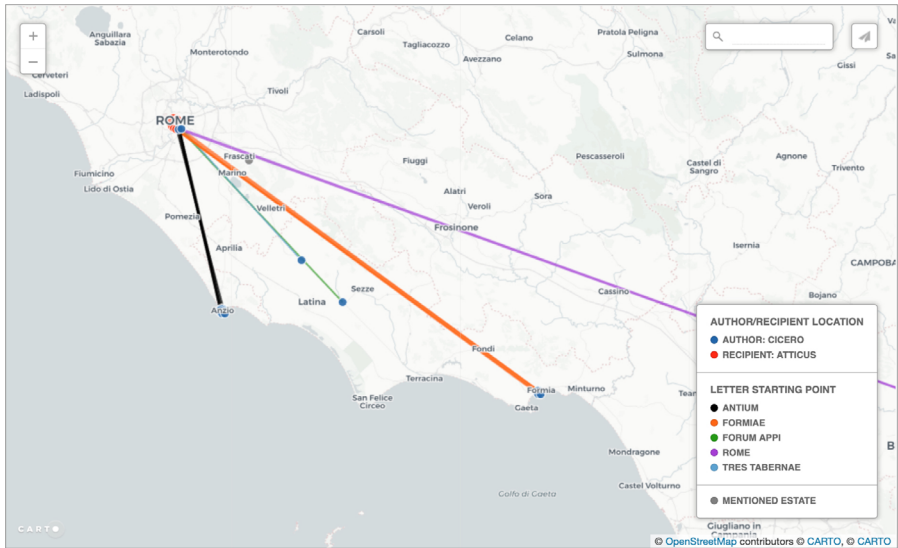


Fig. 5: Student-created visualisation of selection from Cicero's Letters to Atticus. Credit: Sean Deryck and Kate Zibas.

features on their own, for instance how to label and colour-code journey segments (Fig. 5). On the other side of the spectrum, some maps had obvious errors, such as points that were geo-referenced incorrectly to places outside the Roman world. Nonetheless, all the students but one created visualisations, which was a minimum threshold for passing the assignment. Moreover, all students overcame various obstacles to get their data visualised, demonstrating resilience and problem-solving skills. This section of the paper will discuss some of the factors that we suspect affected student performance. Carrying out this project has taught us about some of the challenges and benefits of conducting digital projects in a college classroom. I hope that these reflections are applicable not only to our specific project, but also to other digital-visualisation projects undertaken in pedagogical contexts in classics and beyond.

a) The platform

We chose *Carto* while the project team was attending a digital humanities workshop in 2015. This workshop allowed us to make rapid prototypes, comparing options that included *Carto*, *Neatline*, *ArcGIS*, and *ArcGIS StoryMaps*. In the time allotted, we had the most success working with *Carto*, and chose that platform. For pedagogical purposes, a web-based system like *Carto* also has advantages over locally installed software, since students are more able to work on their own computers or in computer labs across campus. At a virtual workshop in the summer of 2020, we began reappraising digital visualisation options. We had some success creating network charts in *Flou-*

rish,²¹ which we may use in future iterations of the project to complement the visualisations that we create in *Carto*.²²

Relying on *Carto*, as with any third-party-hosted software solution, requires flexibility, however. For example, *Carto* released a significant redesign prior to the 2018 iteration of the project. This redesign forced us to rewrite almost all of our documentation on short notice. In addition, *Carto*, like many apps, has bugs that occasionally present issues. A few student groups have dealt with bugs during the project. Our experience with *Carto*'s redesign and its bugs speaks to a fundamental challenge in combining classics with the digital: we work in a discipline in which change has typically been slow and deliberate; digital platforms evolve quickly and are frequently released in beta versions. Making use of them often requires dexterity and adaptability.

b) From one computer to many

Another related issue is the challenges that arise when students attempt to recreate on many different machines workflows that function successfully for us on a handful of computers in our research group. We anticipated that this could be an issue, so we attempted to create a consistent computing environment by giving students access to known machines in a computer lab. Students nonetheless have run into a variety of issues. Some issues arise from students choosing to use their own computers, or Google Sheets rather than Excel. Other issues stem from corrupted files or aforementioned bugs in *Carto*. Even small things like SQL reading quotation marks on Apple computers differently than on Windows-based PCs are larger issues at the class scale than they are at the research-group level. In some cases students actually discover methods that are successful when they do things their own way. Our workflow review in 2018 did not notice new integrations between *Carto*, *Dropbox*, and *Office 365*. Enterprising students discovered these connections, which proved to be quite elegant solutions. For example, the *Dropbox* and *Office 365* integrations allow students to edit the Excel sheets online instead of making local copies as we suggest. The *Carto-Dropbox* integration also permits students to link their *Carto* accounts to *Dropbox* files instead of uploading them separately. There are instances, however, where students using these integrations have run into trouble, and we have initially been at a disadvantage providing support.

The workflow that we provide students to guide them through creating their visualisations draws heavily on internal documentation produced in the MAT research group. At points during each iteration of the project, we have discovered 'expert blind spots' where the documentation assumes higher levels of knowledge about classics

²¹ <https://flourish.studio> (last accessed March 29, 2021).

²² Marley 2018 has done extensive work on social networks in Cicero's texts. See also Marley's visualisations on the Digital Cicero website: <http://bam.lib.uiowa.edu/digitalcicero/> (last accessed March 29, 2021).

or *Carto* than is appropriate. This issue is one of the common pitfalls of translating workflows from a research-group setting to the classroom environment. We have resolved some of these while producing the workflow handouts; others have only been recognised when students interpret the documentation in creative but incorrect ways. Streamlining our documentation to reduce opportunities for unproductive error is an ongoing project.

c) SQL

As mentioned above, once the students upload their data into *Carto*, they are required to transform it with SQL statements that scatter the points so that all references to a given location are visible, and create lines that connect the points. We give students template code and instructions to change particular variables in order to accomplish this task. Our goal here is quite modest: we simply wish students to get a little experience tweaking code to make specific datasets work. In future iterations of the project, we would like to explain a little more of the grammar of SQL to give students a better sense of how the code functions. Equipping the students with better understanding would help them troubleshoot their own code. General troubleshooting in SQL and beyond and productive error reporting are technical skills we are considering teaching more intentionally in this project.

d) Group work

The team aspect of this project also presents in particular ways in relation to the platform and the technical skills required. In the early stages, as students research and analyse Cicero's letters, working in teams of two functions well. Every student has a partner on both research and technical questions, and we observe good collaborative activity during class sessions. Once the datasets are uploaded into *Carto*, however, we have noted many teams working with one person's hands on the keyboard and the other team member watching. Sometimes this person is actively engaged with error-checking and problem-solving. In other instances they appear less involved. Since the students give a joint presentation as the culmination of the project, they are incentivised not to disengage entirely. We do, nonetheless, have concerns whether the learning experiences are equivalent. Free-rider problems are endemic to group work, although the individualised account structure in *Carto* may make them more likely in this project.

Overall, we have deemed this project a success, and we plan to continue it with a new set of Cicero's letters when the course is next taught. Students are introduced to aspects of the classical world – from Cicero to letter writing to Mediterranean geography – in a new way. In addition, they either improve upon existing technical skills or, more often, develop new ones.

Conclusion

In the *Mapping Cicero's Letters* project, our goals are the introduction and improvement of fundamental skills. Some are traditional skills like close reading, interpretation, and analysis. Others are newer, such as working with tabular data, digital visualisation, CSS, and SQL. It is our intention that all of these skills might become foundations for more complex research in the future. Yet putting aside the technological details that this paper has outlined, projects like these require students to spend a great deal of time thinking about, and thinking with, the geography of the ancient Mediterranean. And so they offer a particularly active way to promote learning about the spaces in which the discipline of classics works.

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Section III:

How to Teach Digital Classics

Ancient Cities: Teaching and Learning in the Digital Age^{*}

The humanities in general and classics and classical archaeology in particular need to test, promote, and implement high quality digital learning material appropriate for teaching at the university and school levels, and for reaching out to a broader audience. The strategic partnership *Ancient Cities. Creating a Digital Learning Environment on Cultural Heritage* has been established to produce and offer high level and open educational material. It was funded by the ERASMUS+ programme from 2017 to 2020, and brought together experts in ancient civilizations and e-learning practices. Led by the Kiel University, the project brought the following universities into partnership: Aarhus Universitet (Denmark), the National and Kapodistrian University of Athens (Greece, since 2018), Universitetet i Bergen (Norway), University of Birmingham (United Kingdom, 2017-2018), Université Paris 1 Panthéon-Sorbonne (France) and the Open Universiteit (Netherlands). This strategic partnership focused on the ancient city, as this is an important topic in the education of students in the fields of archaeology, history, and art history.

In our project we created the freely available Massive Open Online Course (MOOC) *Discovering Greek & Roman Cities* for a broad audience and developed learning material for a pan-European digital learning module on ancient cities for use at universities. The guiding question was: How can digital teaching be implemented in the historical humanities and how can digitization appeal to different target groups?

In this paper we provide an overview of the MOOC's structure and learning material, and of the participants' demographics and feedback. Following this, we demonstrate how we implemented the learning material in our teaching at university level.

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51989>.

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The MOOC *Discovering Greek & Roman Cities*

The MOOC *Discovering Greek & Roman Cities* was aimed at a broad audience: essentially anyone interested in archaeology, art and cultural history, architecture, and history. Participation did not require any previous knowledge, and the course was accessible online free of charge after a registration on the *Open edX* MOOC platform of the Open Universiteit. The course ran twice: in autumn 2019 and in spring 2020 during the first Covid-19 lockdown. Course materials were multilingual and available in German, English and French. We recently added Greek and Turkish subtitles to all video content to provide accessibility to as many people as possible. As the platform used (*Open edX, Ginkgo release*) did not support multi-lingual content, we chose to provide multiple languages on a single page, rather than having separate pages in English, German and French. Since our group of teachers was multilingual, we encouraged learners to post in the MOOC forum in English, French and German.

The overall aims of *Discovering Greek & Roman Cities* were not only to communicate knowledge about the layout and function of ancient cities and their historical development, but also to spark interest in and to stimulate the discussion of the (ancient) cultural heritage in one's own city.¹ With experts from different backgrounds and the trilingual course we wanted to break up national perspectives and bring together an international group of learners. To the best of our knowledge, *Discovering Greek & Roman Cities* is the first multilingual MOOC devoted to archaeology.²

The course opened with a welcome section designed to familiarise learners with the platform, to ensure they could take full advantage of this form of online learning, even if they were not accustomed to it. The course consisted of eight modules, each of which centred on a key aspect of ancient urbanism. The modules became available consecutively every week. The introductory module was followed by modules on life, religion, politics, death, infrastructure, and the economy of ancient cities. The final module focused on the legacy of ancient cities and the role of ancient heritage in our cities today. The topics were chosen to provide an overview of the multivalent character of ancient Greek and Roman cities and the ways in which we study them today. As we wanted students to get exposure to first-hand knowledge of the subject matter, the expertise of the MOOC's partners was a defining factor in planning the modules. However, certain important topics – such as race, gender and the agency of subaltern communities – were

1 Students from the participating institutions were involved in the planning and development of the MOOC *Discovering Greek & Roman Cities* during a winter school in Paris (March 2018) and a spring school in Aarhus (April 2019). - We are very grateful to Susan Alcock, Sebastian Heath, and Peter Heslin for their advice, suggestions and criticism during the planning and creation of the MOOC *Discovering Greek & Roman Cities*. During our project meetings in Paris in March 2018, Susan Alcock gave important suggestions and insights for the early planning of the course. Sebastian Heath and Peter Heslin reviewed a first version of the course and helped us avoid errors, inaccuracies, and one-sided representations.

2 The first MOOC devoted to archaeology was *Archaeology's Dirty Little Secrets* produced by Brown University with Susan Alcock as lead instructor. The course was offered in Summer 2013 and Spring 2014. For the course design, content etc. see Alcock, Dufton, Durusu-Tanrıöver 2015. For further courses related to archaeological topics see the brief survey by Rodríguez-Álvarez 2017.

not addressed in-depth in the asynchronous videos of the online course. Such topics were tackled in synchronous meetings and online discussions, when the modules were implemented in university courses.

Each module consisted of three to six videos of up to 10 minutes in length that were produced by experts from five different countries. The videos were either shot on archaeological sites, or in modern urban settings: the setting was determined by the video's topic and learning goals, as well as general financial and administrative possibilities and restrictions. On the one hand, we wanted to give viewers access to first-hand information direct from archaeological sites, by interviewing specialists in the field. On the other hand, we also aimed to connect ancient and modern cities by recording some videos in a contemporary architectural environment.

These clips were accompanied by small narratives, which served to introduce the videos, as well as learning goals, and key images and maps. The introductory texts – written by project member Christina Videbech – were deliberately written using a light tone influenced by popular fictional writing in order to capture the student's imagination. Each text was written using the keywords from individual modules to ensure continuity within each module. Although these narratives were fictional, they were based in archaeological research. In terms of active learning, participants could choose between three assignments to work on, answer quiz questions to test their knowledge, and go deeper into the subject matter using the provided lists of selected literature and links. The multiple-choice quizzes could help the students internalise what they had learned throughout the module. However, rather than simply providing a means for students to assess and calculate their knowledge and skills, these quizzes were designed as a further learning tool, often adding new knowledge to that already acquired, and encouraging the student to think further. The two main objectives in selecting the reading lists were to provide necessary background knowledge for the students to work on assignments, and provide the opportunity to further explore a topic. The links functioned as opportunities to learn about life in the ancient city from other sources such as videos, reconstructions, and popular culture resources. They were chosen for accessibility and easy comprehension, but had to be based on sound research or otherwise encourage lively discussion.

In the MOOC, an online forum facilitated virtual discussions and exchange among the learners and with the teachers. The learners were encouraged to post their assignments to the forum and to comment on other learners' assignments. Teachers and specially appointed student assistants monitored the online forum, where they commented on assignments, answered questions, and participated in discussions. During the second run of the MOOC, especially successful students from the first run were selected to act as special participants in the forum. Once a week, we held an online 'Office Hour' where at least one of the teachers was available to ask questions regarding the

MOOC and to lead discussions. Eventually, the participants who had watched all the videos and correctly answered 80% of the quiz questions received an official certificate confirming their successful participation in the course.

The textual material produced for the MOOC was based on dialogue-based learning, an educational approach with strong historical roots in scholarship on learning and dissemination.³ Dialogue-based learning is increasingly being used in Scandinavian educational institutions, but also in museums of art and archaeology.⁴ It is based on the theory that meaning and learning are developed through dialogue between both students and teachers.⁵ Studies show that the heterogeneous backgrounds and inputs of a dialogue's participants contribute different viewpoints, and thereby increase learning.⁶

Who were the people taking our course? To provide us with information, participants were invited to answer a questionnaire regarding their expectations of the MOOC before starting the course and another one regarding their experiences at the end. More than half of the respondents did not have previous experience with e-learning or MOOCs, and preferred the more traditional modes of learning such as completing assignments and quizzes, watching videos, reading texts, and interacting with the teacher.

In terms of demographics, in the two runs we had a combined total of 4,800 enrolled learners and the 20 to 30 years age group was most strongly represented, probably mainly due to the fact that many students participated. Almost 60% of the participants were female. Around two-thirds of participants in the first run, and almost half the participants in the second run held a bachelor's or master's degree. Participants in the first run came from 63 countries across all continents, with the majority coming from France (24%), Germany (18%), Greece (10%), Norway (9%), the United States (7%), the United Kingdom, Netherlands, and Turkey (each 4%). Participants in the second run came from 74 countries, with the majority coming from Germany (34%), France (14%), and the Netherlands (13%).

What were the learners' expectations and experiences? For both runs, the main reasons given for enrolment were to expand or refresh existing knowledge on the topic, or to gain new knowledge on the topic; some participants enrolled out of curiosity. While 6% of respondents in the first run indicated that they enrolled to obtain a certificate, 16% of respondents from the second run expressed interest in earning a certificate. Generally, respondents did not have experience with e-learning or MOOCs and preferred the more traditional modes of learning, such as assignments and quizzes, watching videos, reading texts, and teacher-student interaction. They were less fond of reading comments or discussing issues with other learners. Although the whole MOOC structure

3 Dysthe 2013, 52–77.

4 Dysthe 2013, 45–80.

5 Dysthe 2013, 45–46.

6 Dysthe 2013, 77; Dysthe, Bernhardt, Esbjørn, 2013, 197–203.

was multilingual, English seemed to be the preferred language, even if there was no outspoken preference for language of content, video or user interface. Overall, learners' responses about their experiences in the MOOC were very positive. However, the MOOC might not cater sufficiently for learners who have no experience with e-learning. Most learners assumed they could only study new content from when we sent the weekly message, and did not understand that they could study whenever and wherever they wanted. Because of this lack of e-learning experience, learners also had issues navigating the platform. The platform did not support multilingual content, and our choice of presenting all languages on a single page was suboptimal. Thus, a multilingual MOOC remains an issue; not just because content has to be provided in multiple languages, but also because communication with learners needs to occur in multiple languages.

Do we consider the MOOC as a success? It is difficult to measure this with regard to both qualitative and quantitative parameters, however overall we regard the MOOC as a success. In terms of qualitative assessment, the questionnaires we received provided very positive feedback on the course (even though there were also some negative ratings that need to be taken into account). Learners appreciated the multilingual character of the MOOC. Furthermore, during online Office Hours and in the MOOC's forum, learners gave very positive responses on the videos and the learning material. The intensified use of teaching assistants to monitor the discussion forum in the second run was also received positively, because participants were provided with more meaningful and extensive feedback on their assignments, and it stimulated participants to post and discuss in German or French instead of having to write in English.

On a quantitative level, we are satisfied with the number of approximately 2,400 enrolled learners per run, especially since the course was not hosted on any of the large platforms such as Coursera or FutureLearn with their possibilities for dissemination and a huge body of registered learners. For the first run the total number of 307 certificates issued shows that at least 13% of enrolled participants watched all the videos and submitted all eight quizzes with a score of at least 80%. For the second run 500 certificates were issued, indicating 21% of enrolled participants had achieved the same goals. This ratio is in the upper range for successful completion, compared to other MOOCs.⁷ However, one has to keep in mind that learners also acquire knowledge and initiate their own learning activities without formally finishing a MOOC.⁸

After the two rounds of the MOOC, we have made the teaching material produced – texts, maps, videos – freely available on the internet via Creative Commons (CC) license. All 34 videos of the MOOC have been available on YouTube since the beginning of

7 In the MOOC *Archaeology's Dirty Little Secrets* 16,5% (summer 2013) respectively 10,2% (spring 2014) of active students received completion certificates (Alcock, Dufton, Durusu-Tanrıöver 2015, 19–20). For a general overview of MOOC completion rate see Jordan 2014, 147–150, Khalil, Ebner 2014, and Bates 2019, 232–236.

8 For a study of learning activities and outcomes of so-called invisible learners see Dalsgaard, Gislev 2019.

April, 2020.⁹ To date, the videos have been viewed more than 60.000 times with a total viewing time of over 4.200 hours. We will also measure the success of the MOOC in the future use of the materials for teaching in universities, schools, and adult education.

Implementation of learning material

The production of high-quality learning material brings us to the project's second main objective: the implementation and usage of the material for pan-European and international multilingual teaching on university level. So far, the learning material developed for *Discovering Greek & Roman Cities* has been implemented at the Université Paris 1 Panthéon-Sorbonne, and at the University of Pennsylvania. In Paris, the MOOC was implemented in the 2019 autumn semester of two dual bachelor programs: the 'Bachelor of Art History and Archaeology with Law, and the 'Bachelor of Art History and Archaeology with History'. Based on blended learning, the course applied the educational approach of the 'flipped classroom', which combines phases of self-learning through video lectures with physical courses. A series of ten extra video lectures was shot in French to provide additional learning material. Each week, students were asked to watch the videos (about one hour of video content per week) and/or read the related transcripts before attending the main lecture. Online quizzes were offered to allow students to test their comprehension of the material. Students were also asked to contribute, through an online collaborative text editor, and a collective glossary compilation aimed at a self-identification of important concepts. Instead of a one-way teaching experience, the main lecture course was devoted to various activities promoting discussion and exchange of ideas with students.

In the feedback phase, 93% of the students considered the online material fitting and well-designed for the successful acquisition of the course content. The majority considered the videos to be very profitable, although it was often commented that they were too long. 80% of the students watched all or some of the videos produced for the MOOC that were shot in English or German, with the majority considering the subtitles as a (necessary) incentive to watch them. Regarding the 'flipped classroom', student responses confirmed it was rewarding, but also time-consuming. A minority of students also strongly rejected this approach, having no previous experience of fully autonomous learning. In university education systems marked by Covid-19 and social distancing measures, this experiment has proven very relevant in terms of pedagogy during the 2020-2021 academic year, as it will probably be in a post-Covid world.

At the University of Pennsylvania the learning material was implemented in an online course entitled 'Ancient Cities' offered in the second half of the 2020 spring term

⁹ The project's YouTube channel *Discovering Greek & Roman Cities* is available at <https://www.youtube.com/channel/UCxLaX-7Dae-9jLpWo1BZluMw> (last accessed January 5, 2021).

for the Bachelor of Applied Arts and Sciences Degree of the university's liberal arts and professional studies online program. In contrast to Paris, these students were prepared to enrol in distance learning. The course was offered in the classics course block, which aims to introduce the classical world and develop an understanding of ancient cultures through historical and contemporary lenses. The structure followed the MOOC structure (Modules 1–8) and a few extra videos were created on additional topics to complement the existing video lectures. In addition, a weekly 1-hour synchronous lecture designed to complement and summarise the aim and scope of each module was provided. Students found the course well-structured and appreciated the thematic interweaving of topics referencing both Greek and Roman cities. They also enjoyed the MOOC's weekly assignments, which enabled them to engage with the material in a creative fashion. In addition to the weekly assignments, two written assignments were created: a 5-page (double-spaced) response to one of the readings, and a 12-page (double-spaced) research paper for which students could choose from a selection of topics addressed in the weekly synchronous meetings.

These examples demonstrate how the pan-European digital learning material created for *Discovering Greek & Roman Cities* has already been integrated into the curricula of various partner universities successfully. As the videos and learning material are released under the non-commercial Creative Commons license Attribution-NonCommercial-NoDerivatives 4.0 International (CC-BY-NC-ND 4.0), they may be used by university and secondary-school teachers, as well as in adult education, and can in every case be tailored to the needs of the teachers and learners involved. We highly encourage others to work with the open educational resources we have produced and to send us feedback on their experiences.

Conclusion


A major challenge for archaeology, as a material and object-oriented discipline, is to transfer direct experiences of sites, materials and objects to an internet based learning experience. We sought to solve this by relating videos, assignments, and quizzes to specific locations and artefacts, which we also encouraged students to experience directly if possible. Another aim was to raise the participants' awareness of the legacy of ancient cities, and to engage with that heritage on a global, national, and local level. This tied in with our goal of making students interact with that heritage in all its manifestations, especially in their own hometowns. The achievement of these aims was dependent upon active participation from the students. This is why we decided early on to adapt a dialogue-based teaching pedagogy, where assignments, the discussion forum, and the live discussions during the Office Hour were used to encourage students to interact with the study materials and find their own answers.

We have learned a great deal about how to develop, produce, and run a MOOC (for many of us it was a novel experience), as well as about the rewards and pitfalls of online distance learning. The collaborative and interdisciplinary approach (archaeology/classics and didactics of distance learning) was particularly rewarding, as were the diverse international perspectives. In general, we consider MOOCs a good tool for public outreach and engagement with the broader public – even though the production of such tools is time-consuming and requires considerable resources. Furthermore, especially during the Covid-19 crisis, university students have also successfully participated in our MOOC. The learning material we created can be utilised for blended learning scenarios at university level. Unfortunately, we are still far away from an integrated and homogenous pan-European higher education system. Thus, the incompatibility of university calendars across Europe and the diversity of curricula and levels in which each of the partners were teaching made it impossible to create an international learning module beyond local and national curricula. We hope that this will be remedied in the near future and we strongly encourage stakeholders to facilitate international teaching and learning opportunities.

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Simulating Digital Classics in Classical Teaching: A New Approach for New Demands in the Education of Classical Archaeology*

***Forschendes Lernen*¹ and digital classics: multiple demands**

Linking research and teaching is a central goal in academic curricula,² and arguably represents the most promising approach for the demands of working in the ‘new’ field of digital classics. Since the future of young researchers will include not only the use of existing digital methods but even more the development of new methods within interdisciplinary teams, academic teaching must choose appropriate didactic models in the students’ curriculum. In order to become ‘digital classicists’, the required qualification profile for students of classical archaeology will inevitably change in the future. As experts in their discipline, these students will of course have to develop relevant research questions, detect problems of method, recognise and evaluate promising approaches, discuss these, and contribute to research networks by using their specialised, deep knowledge. In addition, students will have to do this in an environment of new and promising, computer-based methods and possibilities, which they normally will not be able to develop on their own, but in cooperation with computer scientists. Because of these interdisciplinary projects, students need to be trained in self-determined project management and teamwork, in which the sharing and development of both individual and collective skills is indispensable. Therefore, academic teaching at universities is today confronted with various notably demanding challenges.

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1 After: Huber 2014, 25–26. For an equivalent in English, see e.g. learning by doing research/learning by inquiry. The phrase research-based learning (as used for similar approaches) is ambiguous, see Huber 2014, 27–28.

2 For the problems of defining different ways of linking research and teaching, see e.g. Jenkins et al. 2007, 28–29 (after Healey) and Huber 2014, 22–29 (with more references). For linking research and teaching in general, see e.g.: Healey 2005, 67–78; Huber 2009, 9–35.

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To combine teaching and research in the field of classics can fill the gap between theoretical education and practice-oriented training. In order to develop the students' skills during their entire study programme, such courses should be implemented in regular academic teaching and not only in degree theses, as is more common. With this in mind, the concept of *Forschendes Lernen*³ requires a didactic model that involves the students in the active development of digital methods that are strongly connected to a 'traditional' research question. This is of high importance, because the students should equally increase their knowledge of the subject and its appropriate methods and develop further academic and professional skills. In addition, the didactic model should encourage the creative potential of the students in a way that will be highly conducive to their future work. Because these conditions will only result in an experimental course, the students will thereby obtain for themselves the experience of trial-and-error while making their own decisions.

According to this principle, we carried out a teaching project within the Institute of Classical Archaeology at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) in the summer term of 2020 for BA and MA students together. In order to enable our students to take part in the fast-moving world of digital classics apart from the use of already extant digital tools, we connected the course to an ongoing research project called *ICONOGRAPHICS: Computational Understanding of Iconography and Narration in Visual Cultural Heritage*, also located at the FAU. This provided the complex infrastructure required for such an experimental course. The course was implemented as a practice course with 2 credits (*European Credit Transfer System*) in the 'Basismodul'/basic module of the BA study programme, complementing other courses (seminar and lecture) in this module. Students of the MA study programme have taken this course within the 'Ergänzungsbereich'/supplementary area with 2 credits (*European Credit Transfer System*). This area allows students to choose courses according to their specific interests.

The interdisciplinary research project *Iconographics* as a point of reference

In this interdisciplinary research project, which is funded by the Emerging Fields Initiative (EFI) of the FAU, together with Peter Bell, Andreas Maier, and Ute Verstegen, we were able to take initial steps towards developing computer-based methods that support the complex cultural analysis of images. When it comes to ancient images and their cultural significance, little research exists that applies computer-based methods.⁴

³ See the differentiation in: Huber 2014, 22–29.

⁴ See, for example, with regard to Greek vase paintings: Crowley, Zisserman 2013 and the project EGRAPHSEN of Martin Langner, University of Göttingen/Germany, and Lars Schmidt-Thieme, University of Hildesheim/Germany, <https://www.uni-goettingen.de/de/598165.html> (last accessed April 4, 2021).

Since our project represents a collaboration among the traditional humanities by focusing on image studies on the one hand (art history, classical archaeology, and christian archaeology), and the informatic sciences (computer vision) on the other, we address the question of how complex image structures and narrative image systems could be analysed in a more comprehensive (and perhaps quicker) way with the help of computer-based methods. In so doing, we do not aim to replace or imitate the human researcher, but to help them in their work – for example by providing additional information in situations of comparison, where similarity is traditionally judged on a more subjective basis. As an example, we focus on the relationship between the protagonists in vase paintings analysed through the use of specific gestures and postures. By characterising these schemes in a formal way and detecting them automatically, we hope to find visual similarities within the vast corpus of vase paintings and thereby to reveal meaningful image relations that help us to understand the cultural meaning of the scenes.

The simulation game *Digital Object Recognition and Iconographics*

The experimental course was planned as a simulation game in order to support the targeted skills and competences of the students in a curricular environment. From its origins in China and over centuries of use, predominantly for training men in a military context, the simulation game was first applied within a university environment in 1908, at the Harvard Business School.⁵ After its initial use for the teaching of economics, since the 1950s other fields, such as human resources management and legal studies, have also come to apply the method as an educational approach. However, its use in the humanities in German universities is still fairly rare.⁶

A simulation game is a verbal model that offers its users the opportunity to simulate social conflicts and processes of decision-making within a pre-structured teaching space. It demands cooperative forms of learning in terms of the users' predefined roles and groups in which the students are realistically and effectively confronted with a range of complex situations. Within these structures, students have to act responsibly and according to roles that might demand skills and character traits contrary to their own personalities. Consequences, results, and repercussions are experienced directly and become visible quickly.

Taking into consideration the curricular framework and the targeted educational objectives, the method was also adapted to the distinctive conditions of the scientific field of classical archaeology. A simulation game for this context had to be designed from

⁵ On simulation games as a teaching method see: Rogers, Godloe 1973, 729–732; Geuting 2000, 15–62; Klippert 2008; Kriz 2009; Rohr, den Ouden, Zepp 2013.

⁶ Economics: Koller 1969, esp. 55–94. For a recent example, see: Rogmans 2018, 92–103. See also Porter, Riley, Ruffer 2004, 426–443. Management: Otoi 2012, 845–849; Wardaszko 2018, 69–98. Law: Bird 2001, 203–237; Kese, Zoller 2013, C 2.4. An exception in the humanities is the simulation game 'Deutungssätze', especially developed for hermeneutic science: Kampmann, Knoch 2013, D 4.3.

targeted group:	Students of Classical Archaeology		
dimensions:			
fields of competence:	knowledge	values & attitudes	skills
subject-specific / professional	basic knowledge about theories and techniques of image analysis and interpretation application of this knowledge in description and categorization of images insights into techniques of Digital Humanities	hermeneutic attitude	target group specific scientific argumentation analytical and creative dealing with ancient imagery evaluating and connecting different methodical approaches
social	confrontation with basics of scientific communication and negotiation	(empathic) consciousness of own and other interests	assertiveness / willingness to compromise cooperation capacity for communication and teamwork
self-competence / reflective	knowledge about key points of competence-oriented teaching and learning	basic attitude of autonomous learning and working motivation to learn self-reliantly	ostentive documentation of own progresses presentation of complex relations shift of perspective / role
methodical	sovereign and target group specific presentation expertise of image studies methods in Classical Archaeology differentiate, characterize and evaluate different methodical perspectives (first) experience with methods of Digital Humanities	target group specific action	target group specific presentation

Tab. 1: Model of the targeted learning objectives and competences (T. Bendschus, after: Walzik 2012 and Kampmann, Knoch 2013).

scratch, so that the learning and training of specific classical-archaeological content and skills could be introduced within a highly practice- and output-oriented digital seminar.

Thus, we created a simulation game in which the students fulfil different roles as classical archaeologists in a fictional interdisciplinary project that also involves digital humanities and computer science. In this way, we hoped to impart the multiplicity and

interdisciplinary nature of methodical and subject-specific competences and skills that we wanted to target, as demonstrated by a profile of learning objectives (Tab. 1) that applies Sebastian Walzik's biaxial competence model to the simulation game.⁷

The simulation focuses on the fictional research project *Digital Object Recognition and Iconographics*, in which both lecturers function as principal investigators (PIs). This project is supported by Ronak Kosti and Prathmesh Madhu of the Pattern Recognition Lab at FAU as computer-vision experts. The fictional project is divided into two sub-projects, the first of which is entitled *Understanding Iconography with Computer Vision*, and whose aim is to investigate scenes of Heracles' and Apollo's struggle over the tripod as case studies for mythological scenes in Attic vase paintings of the 6th and 5th centuries BC. The research questions consider, for example, which individuals are always or almost always present in the particular scenes, which objects appear most frequently, and how they contribute to characterising and identifying the scene and its key figures. A second team forms the sub-project *Recognising Objects and their Significance in Attic Vase Painting Using Deep Learning Methods*, which investigates the occurrence and function of given objects in black- and red-figure vase paintings, such as the club, the tripod, and the lion's scalp. The research questions focus on the similarities and differences between the depiction of these objects, their association with certain figures, as well as their situational or attributive occurrence. For this project, we deliberately chose objects that also occur in the first team's scenes in order to encourage comparability and cooperation. Both sub-projects were directed to involve certain state-of-the-art digital methods and to evaluate the benefits of their use, including for basic techniques of digital humanities such as labelling and annotating within images. In addition, it was required not only to reflect on the possible benefits for classical archaeology, but also to communicate directly and cooperate with the supporting computer-vision experts. This necessarily involves changing one's perspective, dealing with a very different view on the material and images, comprehensibly expressing one's wishes and demands, and finding solutions cooperatively.

Each of the teams consists of the following roles and their respective tasks, supplemented by homework (e.g. writing summaries of selected book chapters):

- A team leader who takes co-responsibility for reaching the project's goals, conceptualises the team's overall cooperative structure, takes care of internal communication, holds meetings, communicates with the PIs and the other team leader, documents all progress, and writes a final report.
- A scientific-communication manager who is informed about the character of this position, takes co-responsibility for reaching the project's goals, conceptualises the team's overall cooperative structure, takes care of internal communication, communicates with the PIs, and writes two press releases.

7 Walzik 2012. See again: Kampmann, Knoch 2013, 66–69.

- A scientist who collects the images, image credits, and metadata from online databases,⁸ communicates about a reasonable selection of metadata, and contributes to the internal scientific report for the team leader.
- A scientist who makes annotations in the images using the VGG Image Annotator 2.0.10,⁹ saves and shares the annotations in different formats, communicates about a reasonable selection of metadata, and contributes to the internal scientific report for the team leader.
- A scientist who analyses the images iconographically according to the project's research questions and contributes to the internal scientific report for the team leader.

Given the limitations of the training seminar's curricular framework for advanced students, we structured the simulation game according to Heinz Klippert's phasing,¹⁰ which includes various stages based upon one another (Tab. 2). This scheme was adapted for a purely digital seminar that consisted of three bloc virtual ZOOM meetings, as well as group-working phases between each one, for which we created a communication structure on the university's online teaching platform StudOn.¹¹

In the first of three virtual meetings, we introduced the scenario of the game to the students. Tutorials and other materials were handed out, groups were formed, and roles were assigned accordingly. So-called 'team cards' (Fig. 1) informed the members of each sub-project's research questions, tasks, goals, and schedules, whereas 'role cards' (Fig. 2) gave information about each of the five predefined roles in each sub-project.

During the first group-working phase, the teams worked individually on their tasks and developed strategies to target their respective questions. Besides collecting images from the online databases-selecting and documenting the significant metadata-annotations were made on the collected images – markings of significant objects in polygonal or rectangle boxes – and sent to the computer-vision experts in order to train the computer model in recognising the annotated objects and giving predictions in other images. The transfer of 50 images, including metadata and annotations, was requested for a given deadline. Furthermore, the team leaders and scientific managers prepared the organisation of the second virtual meeting.

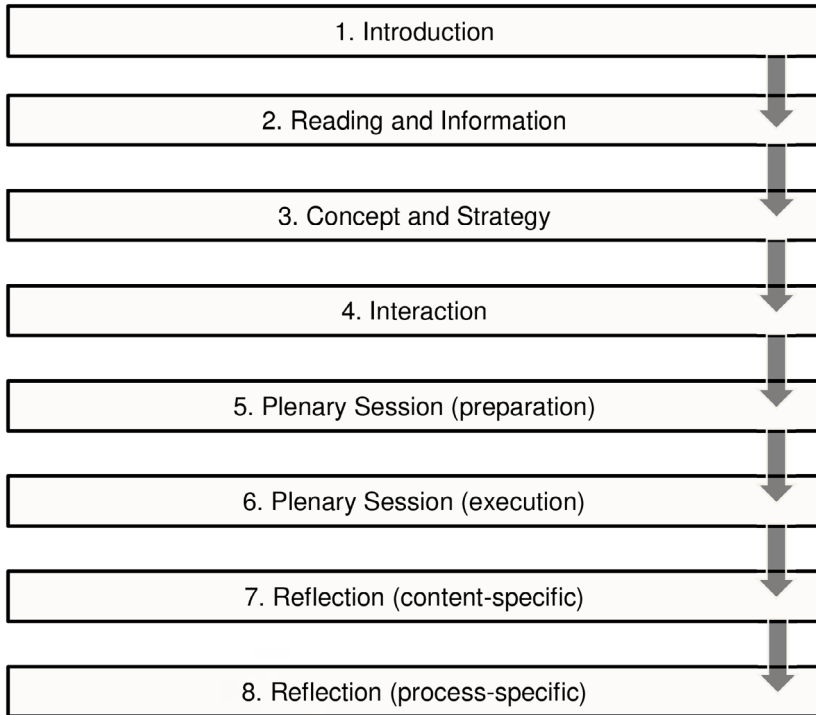
The second ZOOM meeting was held as a workshop in which the first results and problems were presented. As guests, the two computer scientists joined this meeting and offered feedback on the students' work, allowing for corrections and adjustments, especially with the annotations in the second group-working phase. The discussion was fruitful concerning the requirements, possibilities, and limitations of

8 ArkuBiD, <http://www.arkubid.uni-bonn.de/> (last accessed April 4, 2021) and Beazley Archive Pottery Database, <https://www.beazley.ox.ac.uk> (last accessed April 4, 2021).

9 <http://www.robots.ox.ac.uk/~vgg/software/via/> (last accessed April 4, 2021).

10 Klippert 2008.

11 <http://www.studon.fau.de> (last accessed April 4, 2021).



Tab. 2: General sequence of a simulation game (T. Bendschus, after: Klippert 2008).

the digital methods in supporting the classical-archaeological research. This in turn became a realistic simulation of an interdisciplinary research project, in which different perspectives and approaches communicated about the best possible solutions for various challenges.

In the second group-working phase, the teams worked independently on enhancing the data, adjusting the annotations, and correcting the metadata. Lastly, the scientific summaries, final reports, and various fictional press releases were required to be written, as well as the complete collection of images, metadata, and annotations to be provided.

Finally, a third virtual meeting was held in order to present and discuss the final results of the computer model and the classical-archaeological analysis, and to consider how one could contribute to the other. Besides this content-specific reflection, a major part of this phase of the simulation game was to give personal feedback and to reflect conclusively on each participant's individual experience in the so-called process-specific reflection phase.

Team 2: Recognizing Objects and their Significance in Attic Vase Painting Using Deep Learning Methods

TeamleiterIn: ####

Kommunikation & Orga: ####



Wissenschaftler 1: ####

Wissenschaftler 2: ####

Wissenschaftler 3: ####

Das Teilprojekt 2 des Forschungsprojekts „Digital Object Recognition and Iconographics“ (Prof. Dr. Corinna Reinhardt, Dr. Torsten Bendschus):

- Das Projekt untersucht mythische Bilder in der attischen Vasenmalerei und aktuelle Möglichkeiten, die Erforschung damit verbundener geisteswissenschaftlicher Fragestellungen mit Hilfe von Methoden der Computer Vision und Digital Humanities zu unterstützen. Zu diesem Zweck werden attische Vasenbilder des 6. und 5. Jhs. v. Chr. gesammelt, die eines oder mehrere folgender Objekte beinhalten: Dreifuß, Keule (Waffe), Kopfbedeckung mit Löwenkalp (Löwenexuvie), Löwenfell, Bogen (Waffe), geflügelte Schuhe. Als Ausgangsbasis für die weiterführende Forschung dienen diese Materialsammlung, die dazugehörigen Metadaten und eigenständig durchgeführte Annotationen (d.h. Markierungen der erwähnten Objekte im Bild) sowie die wissenschaftliche Einbettung. Die Daten werden Experten des Erlanger Pattern Recognition Lab zur Verfügung gestellt, um gemeinsam Modelle zur automatisierten Objekterkennung mittels Computer Vision zu entwickeln und zu verfeinern.

Leitfragestellungen:

- Was kennzeichnet diese Objekte ikonographisch? Wie variantenreich bzw. schematisch ist ihre künstlerische Umsetzung? Wie varianten- und facettenreich sind die (mythischen) Bilder, in denen sie auftreten? Mit welchen Haupt- & Nebenfiguren sind sie assoziiert? Wie werden diese Objekte eingesetzt, um die Protagonisten und ihre Interaktionen zu charakterisieren oder gar erst zu identifizieren? Treten sie situationsgebunden oder attributiv auf? Inwieweit sind sie in die Handlung integriert?

Zeitplan:

- 05.05.2020:** Abgabe der ersten 50 Bilder, Datensätze und der dazugehörigen Annotationen (Annotationen als json-Datei + json-Datei COCO-Format, Metadaten als CSV (Excel), Bilder als .jpg)
- 15.05.2020:** virtueller Workshop, erste Zwischenergebnisse, Plenumsbesprechung
- 06.06.2020:** Abgabe der Daten (.json, csv, Bilder)
- 01.07.2020:** Einreichung aller Abschlussberichte
- 10.07.2020:** Ende der Review-Phase / Abschlussmeeting

Fig. 1: A team card used in the simulation game (C. Reinhardt, T. Bendschus).

Evaluation of the simulation game

Besides the acquisition of specific knowledge about Attic vase paintings and iconography, we were especially interested in asking how the didactic model of the simulation game contributed to developing the skills mentioned in the beginning. Both in our estimation and according to the students, this simulation game supported their learning process in various ways. First, the course sustained the motivation of the students to

Planspiel: Digital Object Recognition and Iconographics



Rollenkarte:

TeamleiterIn

Ihr Profil: Sie sind verantwortungsvoll, strategisch, organisiert, systematisch, können Ziele definieren und vorgeben, können Aufgaben delegieren, können motivieren, können Feedback geben, können Diskussionen und Besprechungen leiten, sind problembewusst und lösungsorientiert.

Ihre weiteren Kompetenzen: Sie verfügen über gutes Englisch sowie ein fundiertes Wissen im Bereich der Klassischen Archäologie und sind interessiert an neuen digitalen Methoden.

Ihre Aufgaben:

- Lektüre von: E. J. Crowley – A. Zisserman, *Of Gods and Goats: Weakly Supervised Learning of Figurative Art*, *British Machine Vision Conference*, 2013; E. J. Crowley – A. Zisserman *The State of the Art: Object Retrieval in Paintings using Discriminative Regions*, *British Machine Vision Conference*, 2014; J. Mylonopoulos, *Odysseus with a Trident? The Use of Attributes in Ancient Greek Imagery*, in: J. Mylonopoulos (Hrsg.), *Divine Images and Human Imaginations in Ancient Greece and Rome* (Leiden 2010) 171–203
- Schriftliche Zusammenfassung von: N. Dietrich, *Das Attribut als Problem. Eine bildwissenschaftliche Untersuchung zur griechischen Kunst*, *Image and Context 17* (Berlin 2018) 1–27 (Teil 1: Was ist ein Attribut?) von TeamleiterIn Team 1 bzw. 28–48 (Teil 1: Was ist ein Attribut?) von TeamleiterIn Team 2
- Sie sind mitverantwortlich für das Erreichen der Projektziele und entwerfen ein Konzept für Arbeitsabläufe und Kommunikation (in Zusammenarbeit mit dem Wissenschaftsmanagement).
- Sie tauschen sich mit dem/der TeamleiterIn des anderen Projektes über die fachspezifischen Aspekte des Themas aus.
- Sie dokumentieren das Teamprojekt auf SluDoN.
- Sie verfassen [zusammen mit dem Bericht des anderen Teams (andere/r TeamleiterIn)] einen 6-8-seitigen *Abschlussbericht* auf Basis der Berichte der WissenschaftlerInnen und der Kommunikation mit den Kollegen der Computer Vision; dieser beinhaltet: die Ausgangslage, Fragestellung, den Verlauf der Arbeiten, die Durchführung, sowie Probleme und Problemlösungen und wissenschaftliche Einbettung und Perspektiven. Hierbei stellen beide Gruppen ihre unterschiedlichen Ansätze gegenüber.

Fig. 2: A role card used in the simulation game (C. Reinhardt, T. Bendschus).

learn continuously during the semester, especially under the difficult circumstances of the COVID-19 crisis, for which students have had to organise their learning system anew. A key factor for this was the teamwork involved, with different areas of responsibility. This experience of effective teamwork is very important for planning a future application of such a didactic model, because within a simulation game the lecturers should not interfere in the working process, even when the team might not proceed with their working system (trial and error).

Some of the students also took on roles which seemed not to fit closely with their personal competences and characters. This encouragement to shift their own perspective by taking on a specific role was evaluated as a benefit for both individual and professional self-management and for various communication skills. Emphasis was additionally placed on the students' reflections on the personal development of becoming part of a research team, especially regarding their own contribution to the working progress, the work of others, and the results.

Furthermore, it was our impression that most students became much more motivated to learn and work in this type of course because they saw that their own work contributed to the team's project goals and that their ideas were respected, discussed, and carried forward. Within their groups and when assigned a specific role, we saw

students become much more communicative than we thought from our experience in other courses. In the ‘workshop’ of the second virtual meeting, we especially observed their great creative potential.

Perspective: the implementation of digital classics in traditional curricula?

Despite the benefits of this didactic model, we also encountered different problems regarding the possible future implementation of such courses into traditional curricula.¹² One problem is to find space in the curricula for such experimental approaches. Especially regarding the combination or dual-subject bachelor programs that are typical of our *Kleine Fächer*, the space for such courses is limited alongside the important ‘regular’ ones, which train other important competences and deep knowledge of the discipline. A second problem regarding implementation is the proposed close relationship to an ongoing research project at a university institute or department. Because such projects are normally funded externally and are often linked to staff with temporary posts, it is difficult to make reliable long-term plans.

To solve these problems for actual curricula, one might consider including such a course chosen from a range of compulsory subjects in the curricula designed for practical experience, where normally the requirement is filled by excavation or museum work. The comparison with these work experiences is appropriate not only in terms of content but also with regard to the high workload required within the simulation game. Students and lecturers had to work more than for a customary course, which contradicts in some ways the normal workload for the *European Credit Transfer System* and the teaching load. For lecturers, various possible steps for teamwork need to be prepared with texts and materials at the beginning, since, once the course has begun, the lecturers should not be involved as ‘guiding’ figures, according to the didactic model.

Conclusion

The simulation game represents an exciting possibility for encouraging undergraduates and postgraduates in digital classics or classical archaeology at a very early stage of their future careers. In our opinion, research projects should support not only the promotion of young scientists following their PhD onward, but also regular students during their bachelor’s or master’s degrees.¹³ In connection with an ongoing project,

¹² See for various problems and possible solutions: Huber 2009, 22–28.

¹³ On the topic of linking teaching and research for undergraduates, see again: Huber 2009, 20–22.

one can also ensure that the required complex infrastructure for a simulation game already exists. Furthermore, everyone benefits from such a sustained discussion on the research project at different levels.


A simulation game, planned alongside an ongoing research project, forms an appropriate didactic model for training the multiple skills needed from graduates in the future field of digital classics. It implements actual research into everyday academic teaching and helps to create an environment of teamwork between students and professors at universities, one that forges a close link between teaching and research.

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A New Way of Teaching Ancient History: The Case of the Bachelor's of Education at the University of Seville*

Introduction

Over the last decade, the University of Seville has funded five successive research projects on teaching innovation in history. Members of the Department of Ancient History at the University of Seville designed and carried out these projects. This is, therefore, a cumulative, collective effort to improve history teaching in the university classroom. The projects are as follows:

- *Fundamentos de Historia. Historia de España* (2011). Main goal: Research on the previous knowledge of history of undergraduates in the Bachelor's of Education
- *Innovación y mejora docente en Historia Antigua: elaboración de nuevos materiales* (2016). Main goal: The design and writing of new class material.
- *Nuevas formas de docencia en Historia antigua: el uso de nuevos software lúdico-educativos* (2017). Main goal: The use of apps and software to improve the teaching and learning processes.
- *De la teoría a la práctica: gamificación y juego de rol en las clases de historia* (2018). Main goal: The use of role-playing and gamification in class.
- *La práctica mejorada y aumentada: manual 3.0, gamificación y juego de rol en las clases de historia* (2019). Main goal: The promotion of autonomous learning using mainly role-play activities.

Even though each project had its own main goals, the primary purpose of all of them was to promote learning and improve the performance and intellectual possibilities of undergraduates in education who took history, and Ancient History in particular, as part of their curriculum. The cornerstone was boosting a largely autonomous, although directed, type of learning to maximise the efficiency of the efforts of both the students

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51991>.

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and the teachers themselves.¹ The underlying goal was to promote critical thinking and to help to foster better schoolteachers, since the main participants were students of the Bachelor's of Education in Seville.

Ancient History professors contributed the raw data, the bibliography, the sources, and the theoretical constructions. They strove to present history in all its complexity, without simple explanations, so that they might arouse interest in the students for an ever-changing discipline while also improving the students' general knowledge of the subject.

Our paper briefly explains all five projects, which are really, as stated before, part of a single teaching effort. For the sake of clarity, the article is organised following the steps and chronological order that we took during the last decade. Therefore, the text is divided into three parts:

- The presentation of *Fundamentos de Historia Antigua y Medieval de España*, a new type of handbook for the study of history. This handbook was soon partnered with specific teaching tools that used it as a starting point and learning reference. In particular we developed several exercises using the programs *Kahoot* and *Jumble*.²
- Autonomous learning through historical role-play.
- The use of timeline in the university classroom for learning history.

Fundamentos de Historia Antigua y Medieval de España: a new type of handbook for the study of history

When we began teaching in the Bachelor's of Education program, we realised that most of our students lacked a good history background. So we decided to do research on the previous knowledge of these undergraduates. We devoted an entire year to doing so. The results were interesting. First, we came to understand that the shortcomings of their education in history were significant. Additionally, the students generally found history to be a boring subject, and they especially complained about the lack of good, new, affordable material from which to learn.³ And there was another issue: since the main goal of these students was to teach at schools, and to teach children from 6 to 12 years of age, they also stressed the gap between the information, materials, and general education that they were receiving in the university and the type of material, information, and activities that they were supposed to teach to their students in the near future.

1 Prieto 2008; Benito, Cruz 2010; Sánchez Domínguez, Álvarez-Ossorio, Lozano 2019.

2 Sánchez Domínguez et al. 2018; Álvarez Melero et al. 2018.

3 Sánchez Domínguez et al. 2018; Sánchez Domínguez et al. 2019.

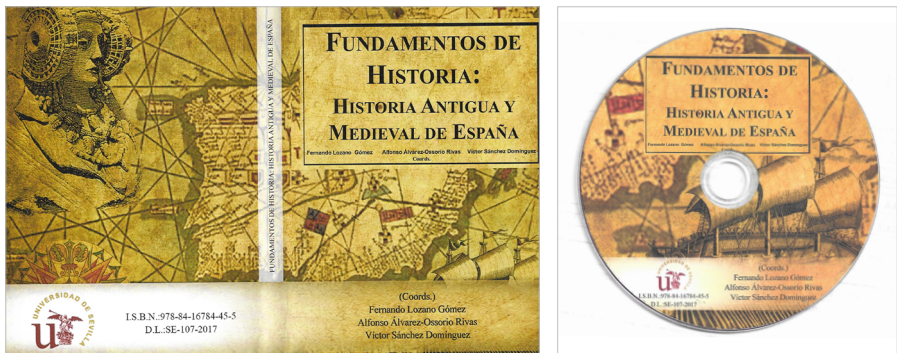


Fig. 1: Cover and DVD label of the book.

As a result of this analysis, we decided to create a new type of manual and class materials that fit better with the needs of the students of education and their mission after graduating. This is why we devoted a couple of years to devising and writing a book that is open access (Fig. 1) – it can be downloaded from the library of the University of Seville and it can also be checked online in a blog.⁴ In this book we adapted the contents and the materials to the needs of the students.⁵ To date, the blog has been visited some 5,500 times (last checked 19/8/2020).

The book is divided into six chapters. Each has the same structure. They start with two double-paged presentations. These presentations combine key images, with a brief summary, a timeline, and a number of maps (Figs. 2a and 2b). This is intended to give the students the essential information at a glance. The text of each chapter is crowded with images and explanatory material, as well as sections aimed at providing undergraduates with ideas for their future classes as teachers. These sections are separated from the rest of the text and they are shaded in green (Fig. 3). The book closes with 12 examples of practical classes. These practical classes were actually taught by the students in class, acting as teachers for the rest of their classmates. We also wanted these examples to serve as models for their own practical classes (Fig. 4). Lastly, the book includes an updated bibliography.

The use of the book in class has proven to be a great success. It is clear to us, after these initial years, that it has shortcomings and that there is room for improvement – something that we intend to do shortly with a revised version – but it served its purpose, since the number of successful students in this class increased dramatically, as did the overall perception of this subject and of history in general for students of the Bachelor’s of Education at the University of Seville.

⁴ <https://fthantiguaymedieval.blogspot.com> (last accessed March 30, 2021).

⁵ Lozano Gómez, Álvarez-Ossorio, Sánchez Domínguez 2017.

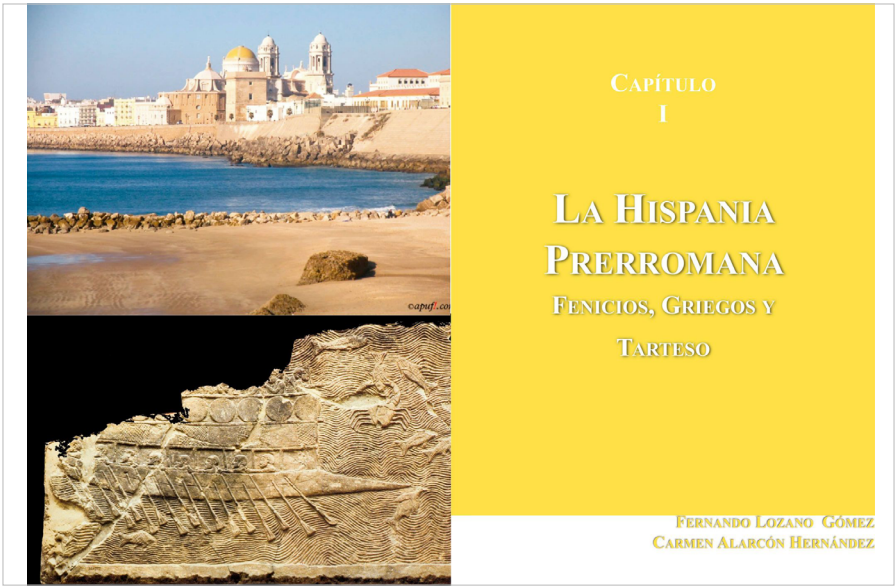


Fig. 2a: Introductory presentation to chapter one.

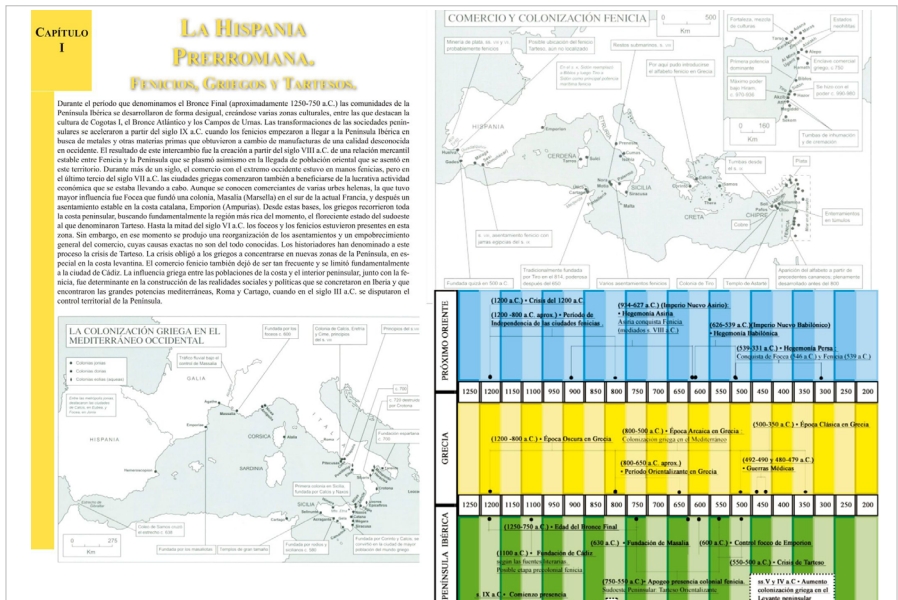


Fig. 2b: Introductory presentation to chapter one.

el Mediterráneo occidental, en especial con Tartessos, fue Focea. Este comercio buscaba especialmente la riqueza mineral del surcoeste peninsular y tuvo su máximo apogeo en la primera mitad del siglo VI a.C., como pone de manifiesto tanto el registro arqueológico como la noticia que recoge también Heródoto sobre el rey Argonómico de Tartessos (véase el cuadro Argonómico, rey de Tartessos). A pesar de la abundancia de los contactos entre griegos y tartessos testimoniada por las fuentes y de la riqueza recogida por el geógrafo griego Estrabón que afirma que hubo un emporion griego en esta región, no existe, sin embargo, acuerdo entre los investigadores en relación con la existencia de un asentamiento estable de helenos en Tartessos. La falta de testimonios arqueológicos concluyentes ha llevado a algunos historiadores a negar esta posibilidad, aunque otros autores opinan que los vestigios que se han encontrado en las excavaciones realizadas en las últimas décadas en la ciudad de Huelva se pueden interpretar como el emporion tartésico mencionado por Estrabón.

Según la narración de Heródoto, los focesos obtuvieron magníficos beneficios del comercio con Tartessos. Una riqueza que les permitió construir una potente muralla en

su ciudad de origen, que se había convertido en este período. No obstante, el pingüe intercambio comenzó a decaer en la segunda mitad del siglo VI a.C., quizás como consecuencia de la incapacidad de Tartessos para mantener la explotación de metales, hasta tal punto que la actividad comercial griega en esta zona de la Península Ibérica se fue haciendo cada vez más escasa hasta concluir por completo a finales del siglo V a.C., con la excepción de Cádiz, que se mantuvo como principal enclave de la zona, aunque siguió en la órbita fenicia. El final del comercio griego coincide con el proceso histórico que se ha denominado el declive de Tartessos, cuya causa y consecuencias se explicarán en la siguiente sección.

En un primer momento, el itinerario de Hércules hasta el mediodía peninsular llevó a los griegos por la ruta de las Islas del Mediterráneo, siguiendo sucesivamente a los fenicios (véase Ilustración 27). Sin embargo, a finales del siglo VII a.C. los focesos fundaron una colonia (eporika) en el sur de Francia. Masalia, la actual Marsella, en la desembocadura del Ródano, en una zona que había estado tradicionalmente vinculada al comercio



Ilustración 27. Rutas fenicias en el Mediterráneo.

ARGANTONIO, REY DE TARTESOS:

El escritor griego Heródoto narró las hazañas del poderoso rey Argonómico de Tartessos:

Estos, los focesos, fueron los primeros de los griegos que se valieron de grandes navegaciones y fueron ellos los que dieron a conocer, no solo la mar Adriática y Tarentina sino Iberia y Tartessos. Hacían sus viajes sin casi nunca reclamados sino con los de cincuenta remos [aves de guerra]. Cuando llegaron a Tartessos trabajaron gran cantidad con el rey de los tartessos, cuyo nombre era Argonómico y había mandado en Tartessos ochenta años y vivió en total ciento veinte. Así que sus amigos se hicieron los focesos de este hombre, que los animaba en un principio a que dejara ellos. Antes se establecieron en su país donde quisieron, y después, como no convenía de ello a los focesos, habiéndolos atraído por ellos como medaba el porra, los dio honras para realizar la ciudad con una muralla. Los dos gobernaron, pues el primero de la muralla no de no pocos estados y toda ella es de piedras grandes y bien ajustadas. (Hist. 1.163-164)

Aunque la descripción que hace Heródoto de Argonómico sigue teniendo tintes míticos, estos no son tantos como en el caso de los otros reyes tartessos que son, sin duda, personajes netamente legendarios. La longevidad que atribuye el escritor griego al soberano ha llevado a muchos autores a pensar que antes que un solo rey, Argonómico fue una designación genérica bajo la que los helenos incluyeron a una sucesión de individuos que les fueron favorables y que rigieron en el mediodía peninsular durante la primera mitad del siglo VI a.C. Sin embargo, más allá de la identificación del gobernante, la información más interesante que aporta el relato es que los griegos a comienzos del siglo VI a.C. frecuentaban el sur peninsular y que, por otra parte, los oligarquías griegas que caracterizaron la organización política del Estado al principio de su existencia, se habían visto superadas por la aparición de una figura, un rey, que podía hablar en nombre de Tartessos. Según el escritor griego, este soberano estableció contacto con los griegos y los ofreció terrenos para que se asentaran, siguiendo un procedimiento igual al que parece que estuvo en el origen de la fundación de Marsella, la gran colonia focesa de Occidente. Ante la negativa de los griegos, a decir de Heródoto, Argonómico les ofreció presentes para que construyeran una muralla en su ciudad que se encontraba en peligro por la invasión persa. Durante mucho tiempo se creyó que estas noticias eran también legendarias, pero excavaciones recientes en Focea han encontrado restos de una gran muralla, fechada como al año 590 a.C. La aparición de este muro sugiere que la información de Heródoto es correcta y que los focesos pudieron llevar a cabo su construcción gracias a las riquezas que aportaba el comercio con Tartessos, con independencia de si se trató de un regalo del monarca Argonómico.

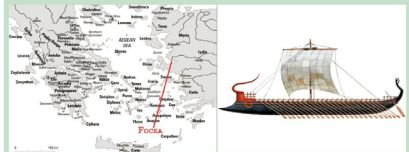


Ilustración 28. Mapa de Grecia con la situación de Focea. Derecha: Reconstrucción de una pared con cincuenta remos.

Fig. 3: Example of the content of the new manual.

Carmen Alarcón Hernández



LA MUJER ROMANA EN HISPANIA

INTRODUCCIÓN

Desde que S. Pomero y G. Lerner abrieron el potente camino de la investigación sobre la historia de las mujeres, este ámbito de estudio ha ido ganando adeptos, principalmente entre mujeres con un claro compromiso feminista. Con el objetivo de conocer y visibilizar su protagonismo histórico en la Antigüedad, en general, y en el mundo romano, en particular, se han revisado los viejos relatos para reinterpretar los discursos hegemónicos, comprender la construcción socio-cultural del significado de la femineidad y los mecanismos a través de los cuales se configuran los roles sociales. Como muestran los hechos históricos, la situación en la que vivieron las mujeres de la Hispania romana varió, principalmente, en función de su posición económica y social; asimismo, se produjo un claro cambio de su condición desde finales de la República. No obstante, su situación jurídica de inferioridad frente al hombre, legitimada a través de supuestos biológicos, determinó su constante subordinación al varón.

OBJETIVOS

- 1.- Analizar las distintas etapas que caracterizaron la vida de una mujer romana. Examinar cómo transcurrió su infancia y su educación hasta su matrimonio y maternidad, y observar las diferencias con respecto al sexo masculino.
- 2.- Mujeres reales en su diversidad: Matrones, sacerdotisas, prostitutas y esclavas. Conocer las diferencias sociales, económicas y culturales que existieron entre el conjunto de las mujeres romanas de Hispania que rompa con una categoría monolítica sobre su concepción para mostrar la diversidad de la condición femenina en la Antigüedad.
- 3.- Examinar las situaciones jurídicas de las mujeres en la civilización romana, observar su evolución con respecto a la posición de la mujer griega y analizar el modo adecuado entre la época romana republicana e imperial.
- 4.- Analizar la figura de la mujer romana en Hispania desde una perspectiva social, cultural, religiosa y económica.
- 5.- Iconografía: Reconocer las principales características externas de las mujeres romanas en función de su situación jurídica, social, económica y religiosa.
- 6.- Comprender y valorar la potencialidad e importancia del estudio de las historias de las mujeres desde una perspectiva feminista y del género, de acuerdo a la situación de desigualdad sexual que actualmente sigue determinando la sociedad, con un objetivo transformador al respecto.

RECURRENCIAS

Museo Arqueológico Nacional: Las mujeres en la sociedad imperial romana: http://www.museoarnacional.com/temas_arqueologicos/temas/temas_mujeres.html
 Meni Romanes with Mary Rose's Capita: <http://www.pompeii.com/web/?c=11-04-04-DV3A>
 La mujer en la sociedad romana. EdArca: http://www.edarca.com/temas/temas_mujeres.html
 Una social la Cuba Romana Viva: http://www.cubaronaviva.com/temas/temas_mujeres.html
<http://www.romanosonline.com/?p=561&lang=es>

PROYECTOS DE REPRESENTACIONES PRACTICAS

Comenzar la explicación prestando atención a los ideas previas de los alumnos. Con respecto al estudio de las mujeres del pasado es especialmente importante observar los apriorismos de los estudiantes.


Utilizar un blog en el que el docente proporcione enlaces web de interés para que la clase se inicie con una búsqueda de información de los alumnos sobre el tema, siguiendo las indicaciones del profesor.

Explicar la vestimenta de la mujer romana disfrazando a un voluntario con cada una de las prendas que caracterizan a las mismas.

Analizar la vida cotidiana de la mujer romana mediante la representación de un teatro que muestre sus deberes y obligaciones en el seno de la familia.

EJEMPLO DE PRÁCTICA REALIZADA:

Dibujar sobre un papel continuo, por un lado, la silueta de una representación de las características y los roles que definen a la mujer romana y a la actual, mediante frases, dibujos, con el objetivo de observar la evolución de su situación.



Representación de mujeres romanas en un fresco de Pompeya.

Fig. 4: Example of the material for a practical class.

After completing the new teaching material, we also wanted to improve the manner in which we were evaluating our students. This is why we began to learn about new ways to evaluate and study history in higher education. We ended up developing new materials using *Kahoot* and *Jumble*. We have used both programs as a ludic support during class as well as learning material for students at home with the use of the ‘challenge’ mode, especially with *Kahoot*. In order to help students improve their knowledge of Ancient History, we created a number of questions for each chapter of the book that could be used as study support and as a tool for us to give extra credit and to encourage students to prepare better.⁶ We also created a YouTube channel onto which we uploaded 20 questions for each of the first four chapters, as well as several exercises created with *Jumble*.⁷ The students were given the correct answer as well as the pages of the book in which they could read about the question.

It took some time for the students to adapt to the system, but once the use of the book, together with the learning materials provided via *Kahoot* and *Jumble*, became routine, we were able to see improvement in the general education of the students and therefore in the number of successful students in our subject. As a result of the use of the new material, the number of students who took the final exam rose from 60% to 85% of the total number of enrolled students. The average qualifications of those that passed the exam rose from 6 to 7.5 (out of 10). The number of visits to the YouTube channel is also a testament to the widespread use of this tool by our students. (our YouTube channel was created in 2017, and to date it has been visited 23,603 times– last checked 19/8/2020).

Autonomous learning and live action role-play (Larp)

The next methodological element that was incorporated during the teaching-innovation projects was the use of live action role-play (hereafter: LARP). This strategy would be encompassed within a game-based-learning teaching methodology and within the context of Serious Games, understanding that LARP is not common role-play, but is associated with a set of rules that allows interaction in real life with fictional characters based on the interpretation of the participants of this activity.

Within the dynamics of improving motivation and learning how best to teach our subject, we understood that the incorporation of this teaching methodology in different areas such as psychology and political science would be especially useful. It must not be forgotten that, from this perspective, role-play, one of the previous variants of LARP, has been useful as an element of personal, psychological, and pedagogical development.

6 Álvarez Melero et al. 2018.

7 <https://www.youtube.com/channel/UC1c4kHIKTb-PMbvQYezellw> (last accessed March 30, 2021).

Thus, the conception of this strategy as being of a ludic nature, along with its connection with the concept of play being so fundamental in education for authors such as Vigotsky (1982), Dewey (1963, 1997), or Huizinga (2000), is connected to action and active participation that promote concepts such as meaningful learning and set the groundwork for a clear social constructivism, one in which the participants acquire some previous ideas of the interpreted reality that are deepened through interaction and stimulation created by other individuals.

This globalizing approach to LARP derives from its own origin as an evolution from board games or role-playing games on paper, as different authors have already attested.⁸ Thus, it could be said that LARP has sought to invigorate and amplify the experiences obtained in these games, which had limitations in terms of the number of participants, to create a new game system in which the dependence on narrative elements personalised by the game director was reduced to its minimum expression by strengthening the system of rules and giving participants more interpretive autonomy.

The use of traditional role-playing games (hereafter: RPGs) as learning strategies had already been implemented by colleagues such as Juan Carbó at the Murcia Catholic University,⁹ and our team is studying the link between these games and gamification and game-based learning methodologies.¹⁰ However, the limitations of traditional RPG board games and even digital RPGs clearly pushed us to address the possibility of implementing LARP for the didactics of our history course.

The students, as has already been explained, are unmotivated in the study of a subject that, first, is distant from their training due to the curricular separation of the different educational stages in which our contents are addressed; second, due to the little application that they find in the subject, since they still do not know the depth of professional knowledge that the teaching of history may require in the primary stage; and third, because the ratio of students per class is high, small groups having a constant of around 25–30 students.

Therefore, we wanted an immersion methodology that fostered meaningful learning in different areas and that could be used with large groups, for which we understood that an LARP adapted to our content with a dynamic system of rules that promoted participation was the most suitable.

The main challenge posed by the design of an LARP derives from the rules system itself, which must be simple enough for it to be memorized by the participants, but at the same time must cover the different possibilities that arise from their interaction. In addition, participants inLARPs usually have previous experience with similar RPG systems; they are accustomed to the interpretation and imagination of fictitious contexts, fundamental elements of this type of experience.

8 On LARP, see Tychsen et al. 2006; Kot 2012; Mochocki 2013; Bowman 2014; Sánchez Domínguez et al. 2019.

9 Carbó, Pérez 2010, and Carbó 2019.

10 Sánchez Domínguez 2019.

We contacted a professional LARP-type activity design company (Alter Ego) that designs LARPified dinners in which they mix the concept of LARP, games, and gastronomy for variable groups of between 10 to 50 people. Specifically, at the beginning of the project, participants were in the process of testing company dinners for a large number of diners.

The participation of its director and main designer, Marcos López, opened up a new range of possibilities. Understanding the particularities of the students as well as our didactic objectives, we implemented a system in which, in addition to regulating the interpretative interactions of the participants a game of resource management and interpersonal actions was incorporated, one that enhanced the gameplay while introducing economic, social, and political concepts that were difficult to interpret without previous concepts, but that could be learned with the new system in a simple and dynamic way.

Working groups were created among the teachers to design the materials with historical content, as well as characters of a historical or pseudo-historical nature, with a high degree of credibility and a historical background that was linked to the agenda that we proposed to gamify – for this project, specifically the arrival of Rome to the peninsula. We proposed the creation of three great scenes or acts that would address both the indigenous reality, the Punic and Hellenistic element, and the Roman one. In this way, three massive events were created, linked to three class sessions: a meeting between ambassadors from different towns to discuss the Ebro treaty of 226 BC, an assembly of Iberian peoples to debate whether or not to help Sagunto besieged by Haníbal Barca in 219 BC, and an indigenous assembly prior to the 197 BC revolt.

Different factions were created for the players – Romans, Carthaginians, Greeks, Iberians, Turdetans, Celtiberians, and Celts – with their own characteristics and objectives. Within them we designed a total of 10 characters per faction, with their stories and personal relationships between members of the same faction as well as with those of others, in order to address groups of between 21 and 70 players in which everyone could relate.

Playing and learning with chronologies: the use of *Timeline* in the university classroom

We are now going to assess our final innovation devoted to gamification and game-based learning. As is clear from the previous text, the use of games is very important in our innovation projects. In fact, we use the game-based learning (GBL) described as “an environment where game content and game play enhance knowledge and skills acquisition, and where game activities involve problem solving spaces and challenges that provide players/learners with a sense of achievement”.¹¹ We have also implemented

¹¹ Qian, Clark 2016, 51.

gamification within our lessons, defined as “the use of game design elements in non-game contexts”.¹² Thanks to this educational strategy, we have solved several problems linked with motivation and participation. Now we are working in order to improve the academic results of our students, helping them to deal with some of the more problematic subjects of Ancient History. We are sure that almost all our colleagues who teach Ancient History, especially within the first terms of the different degrees, have had problems in getting their pupils to use chronologies correctly. We can find a good example of this in the paper of Eugenio and Pietro Garibaldi, devoted to discovering whether Italian students are able to make a chronological axis and to locate where and how they make mistakes.¹³

Unfortunately, timeline failures of decades or even centuries used to be common. In fact, the further we go back in time, the more significant the chronological mistakes become. And the mistakes of the students of the Bachelor’s of Education tend to be even worse¹⁴ than those of our Ancient History or classics students. The former are supposed to become schoolteachers, and they are only studying an introduction to ancient and medieval history of Spain with us¹⁵. In this situation, mistakes increase and can be even worse. This is because it is difficult for these students to understand the diachronic historical process, as well as to place historical events in the right chronological order.

As we were aware of these issues, we decided to include a timeline in the first page of each chapter of our handbook (Fig. 2). All these efforts were useful, but were not enough, as we still had about 30% of students who could not use chronology properly. Therefore, four years ago, we started trying to find solutions that could resolve this problem. Then, at the beginning of 2017, we learned about the game *Timeline* and how to play it. It involves playing with cards to make timelines (Fig. 5).¹⁶

Right away we understood that we could use *Timeline* in our classes, but we soon realised we could go even further than that. We decided to use the game with our students in both departments, Education and History, but we wanted more than simply to play with dates; we thought that the game could be used to review the main historical facts and events, including a short explanation, as well as dates. So we introduced short summaries for each event, with an obvious increase in the size of the cards (Fig. 6).

We realized it was possible to use the game to make an ordered chronological summary, one that could give our students a brief explanation of the entire content of the subject and its most important aspects.

12 Deterding et al. 2011, 10. For more information about GBL see Pivec 2007; Garris et al. 2002. For gamification, see Kapp 2012; Marczewski 2015; Werbach, Hunter 2015, and the review of literature of Kasurinen, Knutas 2018; Ardila-Muñoz 2019; Silva et al. 2019.

13 Garibaldi, Garibaldi 2017.

14 About the problems that teachers have among education students about time conception and how to teach it and the use of chronologies see Santiesteban 2007 and Pages, Santiesteban 2010.

15 We have already discussed the study level of our students in a more specific way in other works: Sánchez Domínguez et al. 2019. See as well Pages 2019; Pages, Santiesteban 2010; Santiesteban 2007.

16 You can find a detailed explanation of how to play *Timeline* here: <https://www.youtube.com/watch?v=02Gzxq2cQhQ> (last accessed March 30, 2021).



Fig. 5: *Timeline game.*

We began a three-phase project. In the first phase, last year, we selected the shortest theme of our handbook, though in fact one of the more complicated, number four, devoted to Late Antiquity in the Iberian Peninsula. It has two well-differentiated parts: the Late Roman Empire and the Visigothic Kingdom. Indeed, we often used to about the latter on our exams, but we had never done so with the former, because we thought that it was too complicated.

We designed 36 cards for our chapter four timeline. Each card had its title and a representative picture on the front, while on the back we included the title, the date, the explanation, and another illustration (Fig. 6). We played the game with our students, getting very positive results.

As we finished our semester and before the final exam, we gave our students a digital copy of the game, allowing them to use the cards as study materials. Of course, on the exam, for the very first time, we asked about the Late Roman Empire in Hispania. All the students that answered this question correctly got at least a B on the exam.

As we saw that the system worked, we decide to go to phase 2, which has been developed during this course. We have created cards for all six themes of the handbook, with 160 in total. The game can be played theme by theme or by overall subject. This last version has two difficulty levels: pro, with all the cards, and easy, with a selected 60-cards game.



Fig. 6: Some examples of the timeline cards created for phases 1 and 2 of the project.



Fig. 7: The Beta version of the cards created in phase 3 of the project.

Unfortunately, the COVID-19 pandemic has prevented us from playing the game with all groups in the subject (we have played with about 200 students out of 700), but in those groups who have been able to participate, the results have been as encouraging as those of the previous year. Of course, we have provided a digital copy of all the cards to our students, who have used them to prepare for the final exam.

We are already working on phase 3 of our project. Once we have tested the idea, and have checked its accuracy, we are going to try to expand it, creating a new tool meant to be commercialized. To do this, we have reduced the size of the cards, simplified the explanations somewhat, created a corporate image, and designed a new game regulation that goes far beyond what *Timeline* does (Fig. 7).

The new game can be played in an easy manner, as we have done in our lessons until this year, including, of course, the historical explanations on each card. It can also be played in groups, with levels of difficulty linked to different themes or cultures, or even more (we are developing the game system right now, in order to have it ready for 2021).

We believe that the advantages of this blended learning system based on the insertion of gamification and learning by games in the classroom are evident. Last year's results leave no room for doubt: in addition to the evident success of the game in class, the academic achievements of the students were noticeable in a very short time.

Finally, we want to highlight that, although we have created a game to learn chronologies and the historical process of ancient and medieval Spain, the system is adaptable to any historical period and geographic or cultural context. We are already considering English and French versions.

Conclusion

The group of scholars working on these research projects is devoted to – we could even say ‘mad’ about – teaching, and is keen on improving the manner of teaching Ancient History. Right now the data shows that there is improvement in the results at a quantitative level. Also, through direct observation during classes, an increase in motivation and participation can be verified. We could therefore conclude that the project is meeting its objectives. However, we hope to continue to consolidate the results obtained and expand our resources. The lines of improvement that we want to explore in the future include, first of all, a revision of the materials created to correct errors. We will also try to improve the content to overcome limitations (as we have improved our timeline). We have proposed, secondly, to extend the use of LARP to other subjects. In particular, we will analyse the degree of acceptance and the impact that these new methods have on the Bachelor’s of History. Along the lines of gamification, the doctoral research of one of our members is oriented toward two aspects: the analysis of students’ perceptions regarding these methodologies focused on ludic strategies, and the design and use of gamification in historical subjects (specifically Ancient History) to assess the potential of this teaching methodology. The conclusions of his work will surely help us to continue to learn about and improve the way we teach Ancient History in the university classroom.

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Section IV:

Visualization and Teaching

Mapping Ancient Rome and Teaching 3D Technologies: Paul Bigot's Bronze Model at the Institut d'Art et d'Archéologie in Paris*

Rome in wooden crates in the Institut d'Art et d'Archéologie in Paris

Teaching classics in the digital age is at the very centre of current challenges; indeed digital teaching has become a major shift in pedagogical paradigms and the flow of knowledge in general. The issue is of the utmost importance. Its significance stems from the fact that such a system, as a series of processes and means (i.e. digital, immaterial), is nothing less than a new kind of language, one that structures power relations, cognition, and volition, that has yet fully to be understood in all its aspects.¹ Aware of this caveat, I always try to temper my assumptions, endeavouring to “possess the other’s eyes” and their universe, as Proust would put it. Such is the case for an extraordinary object, still half-forgotten in wooden crates piled randomly in the basement of the Institut d’art et d’archéologie in Paris – the bronze model of ancient Rome, at a scale of 1:400, created by Paul Bigot.²

Now, the opening of abandoned and forgotten crates in some basement is never a harmless act. A thousand rivulets are left by the interstices of the decayed wood, rivulets that have stories to tell. In the end, they are the only thing left, often with unpredictable implications. Eventually, following perhaps some awe and uncertainty, they always give birth to other stories. This is what happened in the dusty and rather gloomy basement of the Institut d’art et d’archéologie, itself designed by Paul Bigot. In 1986, François Hinard, then professor of Roman History and Archaeology at the University of Caen (Fig. 1) and one of the protagonists in the promotion of Bigot’s plaster model of Rome conserved there, rescued the Parisian bronze model from oblivion. He recalls having found in Paris, in the basement of the institute, “[...] a few cases containing fragments in gilded bronze.

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51992>.

1 The critical debate on the societal impact of 'big data' and information technology is of course huge: see Han 2017 for a rather pessimistic view.

2 Bigot 1942; Fleury 2014.

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These are parts of the North of the City (i.e. Imperial Rome). All the cases had been opened, some sets are quite damaged by oxidation and we obviously do not know if the cases found correspond to all that had been completed or if there have been disappearances”.³



Fig. 1: Bigot's plaster model of Rome at the University of Caen (detail). © Université de Caen Basse-Normandie.



Fig. 2: The Institut d'art et d'archéologie in Paris, built from 1925 to 1928, by architect Paul Bigot. © Pascal Lévy, Université Paris 1 Panthéon-Sorbonne.

Paul Bigot and the models of the imperial city of Rome

Paul Bigot, architect of the Institut d'art et d'archéologie, built between 1925 and 1932, was a recipient of the Grand Prix de Rome in 1900 (Fig. 2). During his residency in Rome, he conceived the project of a model of the city as it was at the end of antiquity, whose realisation and successive improvements occupied him until his death in 1942. The inspi-

³ See Hinard et al. 1992; Deniaux 2000.

rational salience of the Roman urbanscape and its ancient ruins had an enormous impact on Bigot. Through a detailed study of the archaeological data known at the time, crossed with an examination of written sources and with the *Forma Urbis Romae* (a general plan of the city, engraved into marble at the time of Septimius Severus, in the late 2nd to the early 3rd centuries AD, published by Rodolfo Lanciani between 1893 and 1901), Bigot produced a true work of art whose scientific value and educational significance cannot be overstated. This model reproduces three-fifths of the city of Rome in the 4th century AD at a scale of 1:400. It is not limited to the time of Constantine – the Arch of Constantine and the Basilica of Maxentius are modelled – but also presents much earlier monuments, such as the Capitoline Temple of Jupiter, built at the end of the 6th century BC.⁴

A first version of Bigot’s work was presented at the archaeological exhibition in Rome in 1911, in a room of the Baths of Diocletian, and then at the Salon of French artists in 1913. The model met with considerable success and was praised by both scholars and the press. Composed of plaster modules with wooden or metal frames, this version was intended for the Sorbonne. However, it was not delivered immediately, with the war interrupting Bigot’s work. It was completed in the late 1920s, and installed on October 3, 1933 on the 4th floor of the Institut d’art et d’archéologie. It is from this original state that the Parisian scholar Elly Niki offers a precise description of the installation, as she saw it in 1933:

“It is 11 meters long, which is more than four kilometres on the ground and 6 meters wide, which corresponds to two and a half kilometres. The total surface is 49 square meters. The ninety pieces of which the wafer is made up have been worked on separately, then brought together methodically to form the whole. [...] Each monument is a small miniature masterpiece that reveals extreme care and delicacy. Nothing has been overlooked, up to the reconstructed sculptures of the tiny pediments of the temples and their columns, however small. [...] One can imagine the effect of the sun, as the glare of the marbles and gold stood out from the yellow and red houses and the dark greenery of the holm-oaks, pines, cypresses, laurels; Mr. Bigot, who did everything he could to bring his model as close as possible to the aspect of the city of the 4th century, tried to give us this illusion by projectors, placed on either side of the relief and fitted with coloured glasses accordingly. So, thanks to this lighting system, we can see ancient Rome at different times of the day or night.”⁵

Ms. Niki’s elegant description pinpoints, presumably unawares, two aspects of the proliferation of urban models to scale, typical of the first half of the 20th century, two examples of what Henry Lefebvre would call “representations of space”: the conceptualised space

4 Royo 1992 and 2006.

5 Royo 2006; Niki 1933.

of planners, scientists, urbanists, etc., that tends toward a system of verbal signs; and representations of space that take place in a physical form, such as maps, plans, models, and designs.⁶ European countries, both democratic and totalitarian, in a post-romantic retro-futuristic perspective, produced a series of models for future urban planning, some of them eventually fulfilled. From Speer's monumental model of Nazi Nuremberg or 'Germany–new Berlin' to the massive demolitions in fascist Rome together with the project of the EUR district, we see nostalgia for ancient Rome, the return to nature or garden-cities and light as common denominators of conservative, imperial, state urban planning.⁷

The revaluation of the bronze model of Rome in the teaching context

We discern here an opportunity in the educational possibilities such a model might offer. A digital copy of Bigot's model is congruent with the context of its conception in the cultural, sociological, and political frame of the first half of the 20th century and the contemporary architectural and urban trends of that time. It also works with the history of the modern expansion of the city of Rome, and the unfolding of the city's layers in time, including archaeological discoveries and the methodologies of that process. Strangely enough, the abstract visualisation of the model (for example as a point cloud or polygons) could enhance some of our understanding of the mystic aspects of architecture and persona so efficiently put in place by Speer, in the wonders of his Cathedral of Light in Nuremberg (using anti-aircraft searchlights).

Unfortunately, the plaster model of the city of Rome, jewel of the University of Paris, no longer exists. Damaged at the end of the war, it disappeared definitively during the events of May 1968: the parts that were not been carried away by the occupiers – as we see in photographs from that time – seem to have paid the price of protesting students. But several other plaster versions were produced in the interwar period by Bigot. Thanks to the support of the Rockefeller Foundation, one was made for the city of Philadelphia and was exhibited until 1953 at the Pennsylvania Museum of Philadelphia (Penn Museum), before being given to St. Charles Borromeo Seminary (Wynnewood, Pennsylvania) and disappearing thereafter. After Bigot's death in 1942, two other plaster versions were donated, one to the University of Caen (Normandy), the other to the Royal Museums of Art and History in Brussels, where they are still kept.

It is the fifth version that concerns us here, the one seen by Hinard and recently 'rediscovered', which the University of Paris 1 Panthéon-Sorbonne and Sorbonne University, both issued from the splitting of the University of Paris in the aftermath of May 1968, inherited through their departments of History of Art and Archaeology, located within the

⁶ Lefebvre 1991.

⁷ Fest 1999.

Institut d'art et d'archéologie. Immediately after the completion of his first model, Bigot envisioned transforming the plaster model into a bronze version. As early as 1913, he had obtained state funding (80,000 FF)⁸ to make a bronze copy intended for the Sorbonne. But World War I blocked everything until 1923, though some elements had been made by the "ateliers Bertrand". In 1923, thanks to special funds guaranteed by the government, the famous Parisian jeweller Christofle received a specific order from the University of Paris, which left Bigot in charge of the project: under the supervision of the artist, Christofle was to produce, in gilded bronze, through a negative electroplating process of which the jeweller was the inventor and the only master, a partial version of Bigot's model of ancient Rome. According to the contract signed on June 12, 1923, the model was to include "all the flat parts of the city located to the west of a line passing at the foot of the Quirinal, Capitol, Aventine hills. The part of Rome which is the subject of this contract therefore includes the entire Champ de Mars, the course of the Tiber and the districts beyond towards the West and the South". The realisation dragged on, however, because Bigot, being extremely picky, required continuous modifications. The year 1927 was punctuated by disputes between the architect and the jeweller, which can be followed in Christofle's historical archives. A first delivery of the work was aborted in 1929, due in part to lack of space in the Sorbonne but above all because of new requests from the architect. Exasperated by three additional years during which nothing happened, Christofle raised the stakes throughout the year 1932. Eventually, on November 18, 1932, 40 crates were delivered to the Institut d'art et d'archéologie.⁹

Strangely, the bronze model was never intended to be exhibited.¹⁰ Delivered in wooden boxes directly to the basement of the building, the bronze plaques will likely never leave it. Rediscovering their heritage, archaeologists and art historians of the two universities that have shared the Institut d'art et d'archéologie since 1970, the University of Paris 1 Panthéon-Sorbonne and Sorbonne University, today are uniting their efforts to build a pedagogical project based on the study of this forgotten masterpiece. A provisional room is being fitted at the Institut d'art et d'archéologie in order to carry out the study under good conditions. Each plaque is currently dusted, identified, measured, weighed, observed, and properly repackaged in consolidated or replaced crates. A restoration, conservation, and presentation strategy are in place, in the hope that a general rehabilitation of the building itself will make room for this great work. What we are trying to do now is to digitize in 3D Bigot's model (Fig. 3/4/5) and study it in the light of other projects on ancient Rome, primarily the digital map of Rome in the 4th century recently delivered

8 Fleury 2014, 114: "Le 11 juillet 1913, l'assemblée nationale française [...] vote à l'unanimité une loi l'autorisant à faire appel à l'épargne publique pour financer une copie en métal du relief. Il est également alloué pour cette opération une subvention de 80.000 francs sur les crédits du Ministère de l'Instruction Publique et des Beaux-Arts."

9 Royo 2006.

10 Ciancio Rossetto 1992; Liberati 2003; Lecocq 2008.

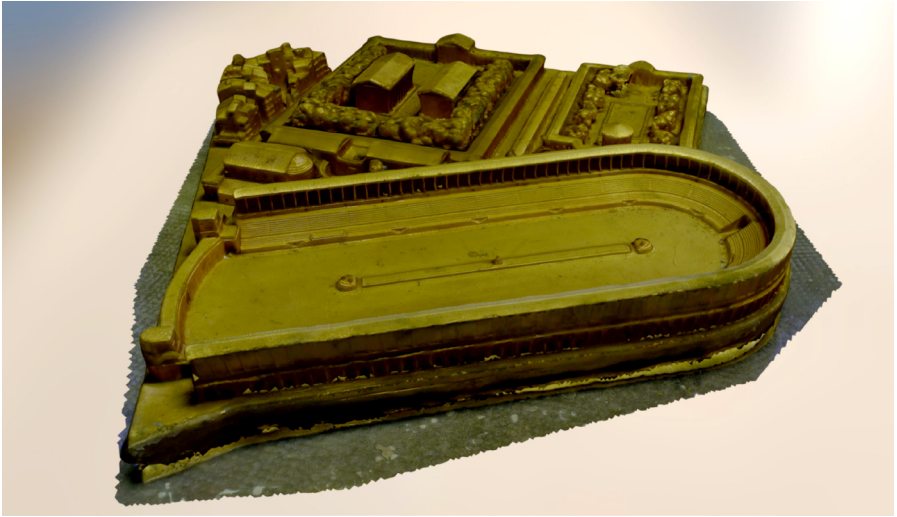


Fig. 3: Module 28 of Bigot's bronze model: 3D output of the Circus Flaminius, © Université Paris 1 Panthéon-SorbonnePascal Lévy, Université Paris 1 Panthéon-Sorbonne.

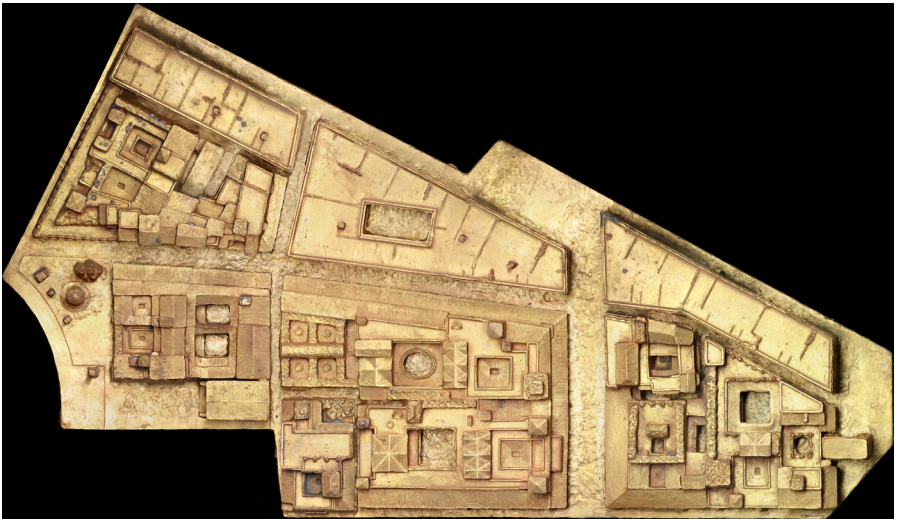


Fig. 4: Module 29bis of Bigot's bronze model: orthophoto extrapolated from the 3D output, © Université Paris 1 Panthéon-Sorbonne.



Fig 5: Module 35 of Bigot's bronze model: 3D output of the Temple of Hadrian (Campus Martius, Rome), © Université Paris 1 Panthéon-Sorbonne.

by the Sapienza University of Rome in the frame of its *Atlas of Ancient Rome* project.¹¹ All this work depends on the active involvement of students at every step of the process.

The educational strategy is based on a multifaceted perspective:

- The model(s) can be used as teaching material for both students and scholars through an in-depth analysis of its construction and its methodological procedures. The model represents a stage of the knowledge available to Bigot, most importantly Rodolfo Lanciani's *Forma Urbis Romae*.¹² This means tracing the history of the topography of Rome from a diachronic perspective, along with the refinement of our knowledge on the subject. Considering that the model is in part made of buildings and arrangements completely invented by Bigot in the absence of data, it also entails a reasoning on the construction of the archaeologist's discourse from epistemological, scientific, and cognitive points of view, including the processes of insight, wishful thinking, and the famous ubiquitous problem in archaeological thinking – the 'interpretative dilation'. Studies on the history and ideological premises of its conception along with similar artefacts of ancient Rome and other ancient or modern cities will reveal much on the epistemological framework or state of mind underlying the attempts of 'representation of space', its biases and possibilities.

¹¹ Carandini 2017; I would like to thank Prof. P. Carafa of the Sapienza University of Rome, who kindly gave us a copy of the auto-cad drawing of Rome in the 4th century AD.

¹² Lanciani 1893-1901; on the methodology and operational approach of Bigot see Royo 2006; Lecocq 2008.

- The model can also be used as a foundation for comparisons with and controls for other projects, both modern (i.e. digital reconstructions of Rome) and previous (for example, the famous Gismondi model of the ancient city),¹³ while its transformation into a 3D digital model will enhance the skills and competence of students. They can practice on the model following a trial-and error experimentation process using photogrammetry, laser scanners, etc. Single parts of the model could be used as thematic targets of in-depth research on the topography of the city. For example, graduate theses and dissertations could explore this possibility. Most importantly, the model, and especially a 3D GIS project based upon it, could provide interesting insights on the movement and perceptions of the ancient personae circulating within the city.
- A decent place of exposition for the general public is mandatory, perhaps involving innovative digital potentials that include experimentation with virtual and augmented reality. The model could then be exploited for the purposes of scientific disclosure to the greater public. The artefact could be visited by students, scholars, and schools in a virtual hall where they could interact with the model using state-of-the-art digital immersions.¹⁴
- 3D impressions in various scale of parts or monuments of the model will be used for further familiarisation with the ancient city, especially for younger children, who could approach the ancient realities with a playful spirit.
- A 3D model visualised on a simple interactive web-GIS will be elaborated for the disclosure of the ancient city monuments on a global level, used by schools and teaching specialists through the net.

We are still in the first steps of this process. We hope and think that the digital instruments now available can enhance and update the history of this artefact, allowing Bigot to continue to share his very personal story of Rome.

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¹³ Rocha 2018.

¹⁴ The University of Caen, where one of the plaster models is preserved, offers us a guiding thread on the subject: https://www.unicaen.fr/cireve/rome/pdr_maquette.php?fichier=histoire (last accessed December 13, 2020).

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Ancient Languages and the Modern Learner: The Effective Use of Digital Resources in the Latin Classroom*

An introduction to the *Cambridge School Classics Project*

The *Cambridge School Classics Project* (hereafter: CSCP) was conceived in 1966 in response to a growing crisis in classics teaching. The project was set up under a joint initiative by the University of Cambridge Faculty of Classics and the Department of Education, funded by the Schools Council and the Nuffield Foundation. Several crises had caused the number of pupils studying Latin in UK schools to dwindle, primarily the removal of the Latin requirement for entry to the most competitive universities in the UK and the increasing conversion of academically segregated schools to a comprehensive system. There was also recognition that the subject had to engage with modern research and pedagogy in order to move forward.¹

Starting from first principles and taking full account of teaching methodology in modern languages, the newly formed project developed a Latin course radically different from previous courses. The new *Cambridge Latin Course* (hereafter: CLC) integrated the study of language and the ancient world by developing pupils' reading skills through a series of stories set firmly in the culture of the 1st century AD. The work of the project would underpin a great many advances in the teaching of classics in the UK, and the CLC is used by more than 80% of schools teaching Latin in the UK today.²

Influenced by the work of Noam Chomsky and Michael Halliday, the course employed a generative grammar approach, with the primary goal of learning to read Latin by reading Latin.³ The current course still follows the basic linguistic scheme, with subsequent revisions to the content and layout of the textbooks and supporting materials made in light of teacher feedback and developments in pedagogy.⁴ It was clear from

* The video of the talk, presented at the online conference *Teaching Classics in the Digital Age* on June 15-16, 2020, is available at <https://doi.org/10.5446/51993>.

1 Forrest 1996, 23-44.

2 *Cambridge School Classics Project* 2008, 82.

3 Wilkins 1969 and 1970.

4 Story 2003, 86-87.

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early on that reading by itself, especially in the amount of time available to the average learner, was not sufficient to generate a useful “passenger grammar”, as described by John Wilkins, which pupils could develop individually and employ to comprehend and ultimately translate Latin text. Standard terminology, such as case names, was inserted. Structured opportunities to explore and retrieve language were created in exercises and supplementary language information, although care was taken to retain the principle of the comprehensible sentence as the core unit of Latin.

The development of digital resources

In preparation for the 4th edition of the textbook in the 1990s, Tony Smith (the project’s digital collaborator and software developer) and the CSCP team developed digital lexicography tools to analyse the stories in the textbook and to track the impact of the changes being made upon the language scheme. The interactive morphological analyser would form the backbone of subsequent resources.⁵

In 1999, in response once more to an ongoing decline in Latin numbers, then Project Director Bob Lister led the development of the *Cambridge Online Latin Project* (hereafter: COLP) to enable students without a specialist Latin teacher to access Latin lessons.⁶ Schools were given support in training supervising staff and promoting lessons to students, who then completed a programme of study online with a class tutor, sending work to be marked via email. A website was created to host materials to develop their learning, share links, and “encourage a sense of community”.⁷ The use of digital materials came with its own challenges, including lack of reliable access both in school and at home, and the limitations of email as a method of communication between students and tutors. Not only was creativity constrained by the format, the lack of educational dialogue was frustrating and demotivating for learner and teacher alike. It was concluded that computers were able to stimulate classroom discussion, they can enable collaborative learning at a distance, but at least at the moment they are most effective when used by an individual. In this role they offer the students the benefits of self-pacing, reinforcement, and an unthreatening environment for learning. Learning a language is a communicative process, and it will almost always be better achieved with the help of, and in the presence of, a skilled teacher.⁸

The distance-learning programme continued to grow, with adult learners requesting access to the materials. An online distance-learning programme for all was rolled out,

5 Lister 2007, 108–109.

6 Lister, Smith 2001.

7 Lister, Smith 2001.

8 Lister, Smith 2001.

designed as an email correspondence course. Funding was swiftly acquired to develop further digital materials, including video dramatisations of the stories. Much of this material is currently available as part of an e-learning DVD, which is being repurposed for online use.

Initial digital content was developed with the individual learner in mind, and as individualised preparation for classroom interaction with a teacher, or for consolidation of language. The first programmes developed were vocabulary testers, and a Latin-endings programme to drill inflectional endings. Also developed was a parsing dictionary to support the development of fluency in reading. The next phase of digital resources saw the development of materials focused on learning activities rather than around testing, and on assisting student reading, with more flexibility over whether tools were to be used individually or within a whole-class setting.⁹

Use of *Cambridge Latin Course* suite of resources in the classroom

The current suite of digital resources is used in a much wider variety of ways than the original materials. While the resources are still frequently used under teacher direction with the whole class, with the near ubiquity of personal digital devices many students are able to access digital resources in school without the need of a dedicated computer lab. Students are becoming used to learning online, and teachers are becoming more confident in managing this modality.

The CLC website is now just one part of a much larger site, incorporating a huge range of resources, including schemes of work for civilisation topics, documentaries on aspects of ancient life, and support for reading authentic literature.¹⁰ There is a bespoke site with separate digital offerings for the North American editions of the course.

Each book has its own set of materials, with an accompanying Teacher's Guide that includes notes on pedagogy and suggested activities (Fig. 1). Each stage, or chapter, is supported by a range of interactive materials designed to help the reading method of learning Latin. This includes external links to cultural information to promote contextual understanding. These resources are free to use, and are arranged under the following headings: The Stories, Practising the Language, and Cultural Background (Fig. 2). This enables free navigation by students and teachers within the stage. For learners and educators looking for a predefined structure to the resources, the textbooks have been issued in a digital format, retaining the same sequencing of activities as found in the print books. This is a combination of a full-colour version of the textbook with an easy-navigation drop-down menu to other stages and links to resources relevant to the pages (Fig. 3).

⁹ Discussed in detail from the learner's perspective by Laserson 2005.

¹⁰ *Cambridge School Classics Project*: Main website. <https://www.cambridgescp.com/> (last accessed March 30, 2021).

Fig. 1: Cambridge Latin Course, Online Activities: Book 1 page.

Each story in the textbook has an Explore the Story interactive explorer (Fig. 4). This is a version of the text that is fully parsed and linked to dictionary definitions for every word. For meaning-based learning to take place, students need knowledge of a minimum of 95% of the vocabulary items.¹¹ Despite there being a feeling among some teachers and students that consulting dictionaries is in itself a worthwhile use of time,¹² the actual learning benefits of this practice are minimal when seen as part of a process in understanding the meaning of a text.¹³ Looking up words in a glossary is time-consuming and can be demoralising. Students lose track of the flow of a narrative, and each word can easily become a disjointed unit rather than part of a meaningful sentence or paragraph. Frequently having to consult the dictionary can also prevent vocabulary-poor students from completing enough reading to understand how the language or cultural material

11 Nation 2001, 147.

12 Laserson 2005, 60–61.

13 Hunt 2016, 109.

Book I, Stage 9 ~ thermae

Book I

- Stage 1 ~ Caesilius
- Stage 2 ~ in ville
- Stage 3 ~ negotium
- Stage 4 ~ in foro
- Stage 5 ~ in theatre
- Stage 6 ~ Felix
- Stage 7 ~ cena
- Stage 8 ~ gladiatores
- Stage 9 ~ thermae
- Stage 10 ~ rhetor
- Stage 11 ~ candidati
- Stage 12 ~

Verbovis

Book II

Book III

Book IV

Book V

The Stories

in palaestra Page 116
Quintus goes to the baths and celebrates his birthday with a bang...and a smash!

Explore the story

in taberna Page 120
When it comes to shopping, Metella and Melissa are Pompeii's best! Watch them in action as they descend on the toga store.

Explore the story

in apodyterio Page 122
Watch out, watch out, there's a toga-thief about!

Explore the story

Practising the Language

Activities for vocabulary revision and language practice:

Test your Vocabulary is against the clock and can be set to all words in this stage, up to this stage, etc.

Test your vocabulary

Sorting Words asks you to sort words by meaning, case, etc.

- Cases 1
- Cases 2
- Cases 3
- Cases 4
- I and you
- Which person? 1
- Which person? 2
- Meanings

Practising the Language exercises are digital versions of exercises in the Cambridge Latin Course textbooks.

- Exercise 1
- Exercise 2
- Exercise 3

Cultural Background

Can you help? If you've found a link we could add please email us.

NOTE: These links will appear in a new window. CSCP is not responsible for the content of external sites.

Stage 9 title-page
Atrium of the Suburban Baths in Herculaneum.

- Roman Baths: General
- Baths of Pompeii
- Baths of Herculaneum
- Baths of Rome
- Baths in the UK
- More Water, Bathing & Exercise

Book I Dictionary

Vocabulary Tester

Book I Teacher's Guide

Fig. 2: Cambridge Latin Course, Online Activities: Stage 9 page with links to activities and resources.

Fig. 3: Cambridge Latin Course, 'Online Textbook: Stage 9' story page with links to related activities and resources.

is working. The interactive explorers can be used to supplement the student's own personal vocabulary knowledge when needed, and every vocabulary item accessed is collated into a personalised vocabulary session which can then be reviewed after the reading is complete. This supports repeated recall, within a narrative context as well as without, which aids vocabulary retention. This is in contrast to the traditional method of issuing vocabulary lists for testing. Administering formal vocabulary tests encourages students to use strategies to 'perform' on the test, e.g. cramming words into their short-term memory in the minutes before class. Using low-stakes, instant-feedback activities encourages learning during the task. The combination of Explore the Story with a brief vocabulary revision and test ensures that the assessment is rooted in the intended outcome – increased fluency of Latin reading.

By removing some of the performance elements of a traditional classroom, including the need to impress the teacher, interactive resources can also support positive learning habits, risk taking, and creativity. If students are not constantly looking up words in the dictionary, they can concentrate not only on comprehension of the text, but also on the nuances of selecting appropriate words to express the meaning of the text.

The next evolution of these interactive explorers (currently available in North America only) includes additional assistance and learning opportunities: integrated audio of the stories that highlights text as it is played, practise in identifying and using derivations from a range of modern languages, and comprehension activities (Fig. 5).

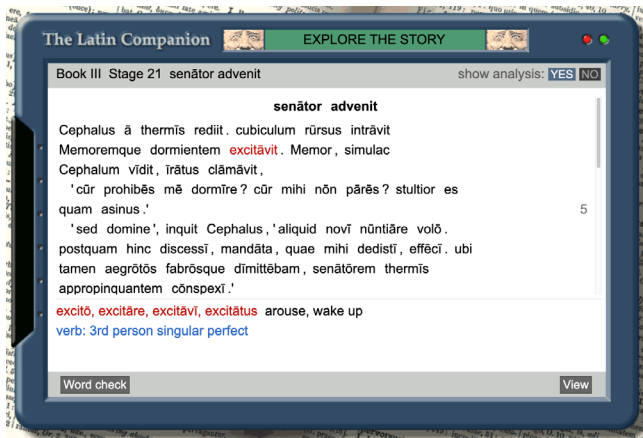


Fig. 4: Cambridge Latin Course, Online Activities: Explore the story (Stage 21) with vocabulary tool in use.

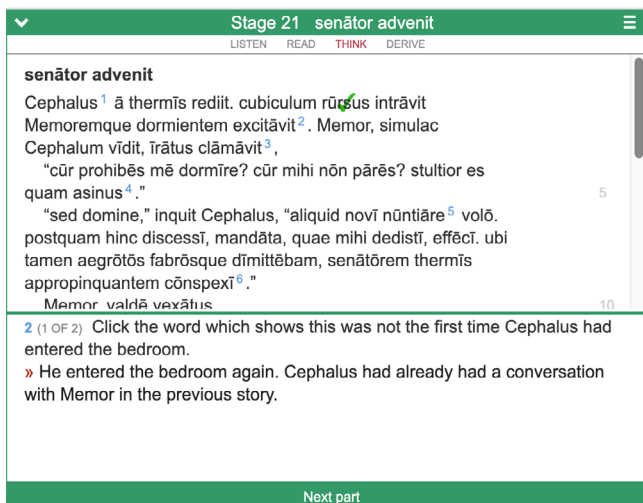


Fig. 5: Cambridge Latin Course, Online Activities: Explore the story (Stage 21) with auto marking comprehension activities in use.

Specific language activities can help students retrieve and rehearse grammar. In the Online Textbooks, these activities are linked to language pages that fulfil a similar function (Fig. 6). The activities support the inductive methods of the course and enable the students to rehearse pattern-forming. The Sorting Words activities (Fig. 7) can be

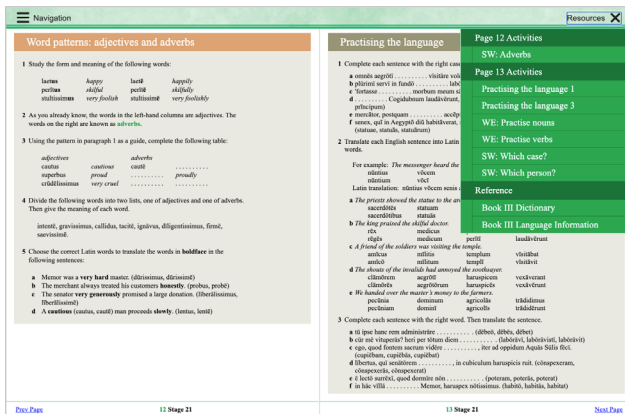


Fig. 6: Cambridge Latin Course, Online Textbook (Stage 21): language page with links to related activities and resources.

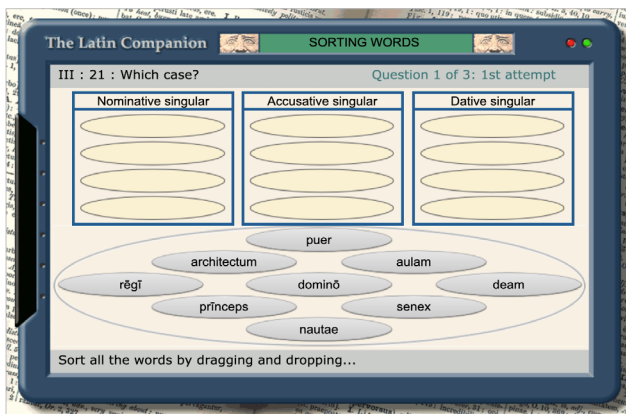


Fig. 7: Cambridge Latin Course, Online Activities: Sorting words (Stage 21) interactive activity.

particularly well-deployed to bridge the gap between contextual translation of a new grammatical form and a subsequent formal exploration. This is low-risk, low-stakes learning: activities that can be repeated with instant feedback. Students are motivated to attempt tasks more than once and are observed as wanting to improve rather than simply to finish.¹⁴ The design of the materials encourages touchscreen use, and physical engagement with the Latin. This physical interaction is one way in which teachers can observe how their students are learning, especially in younger students who may not

¹⁴ Hay 2018, 232.

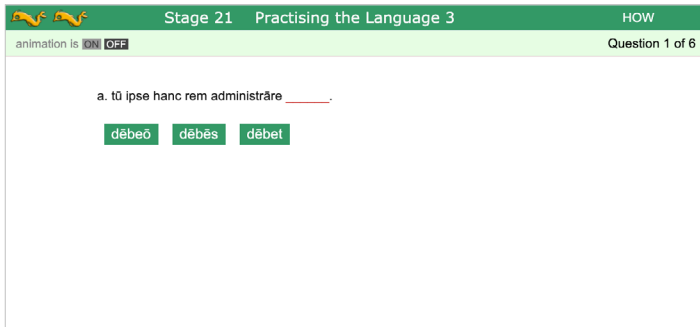


Fig. 8: Cambridge Latin Course, Online Activities: Practising the Language (Stage 21) interactive activity.

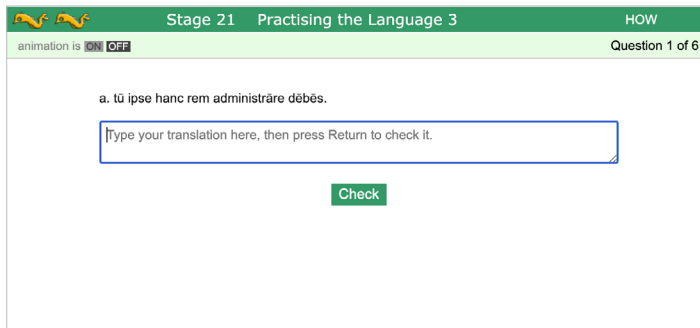


Fig. 9: Cambridge Latin Course, Online Activities: Practising the Language (Stage 21) translation activity.

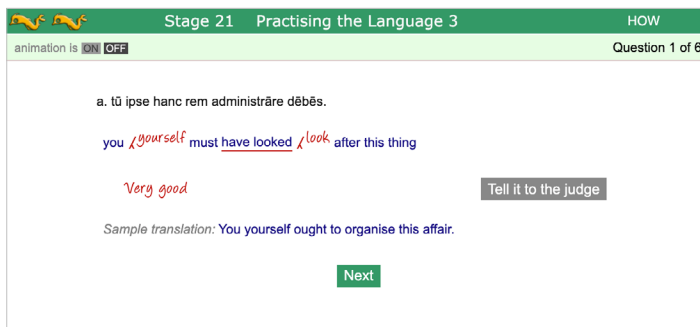


Fig. 10: Cambridge Latin Course, Online Activities: Practising the Language (Stage 21) auto-marking and feedback.

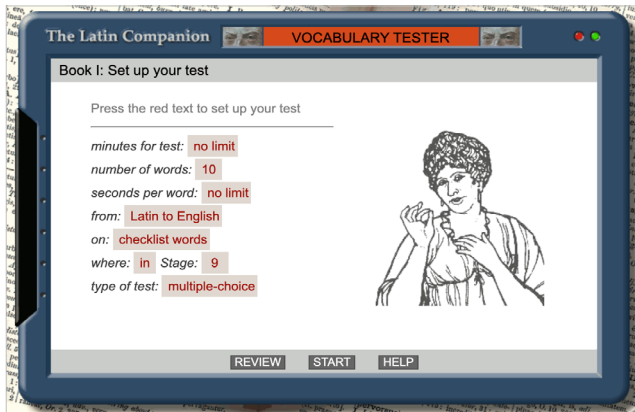


Fig. 11: *Cambridge Latin Course*, Online Activities: Vocabulary tester (Stage 9) with customisation options.

be able to explain their reasoning verbally. Auto-marking has also been used to create short, focused translation practice (Figs. 8–10). As can be seen in the examples, the aim of auto-marking is not only to assess attainment. It should enable student progress, showing clearly where errors have occurred and how to improve. These activities have been arranged across the stages in such a way as to structure consolidation and retrieval of features and forms, and yet again to encourage students toward valuing their individual progress and away from classroom ‘performance’.

The materials are also frequently used in a whole-class situation, most commonly through playing the videos or projecting an online textbook onto a whiteboard or interactive whiteboard. This dynamic often demonstrates some of the best ways in which technology can support dialogic teaching and learning, with materials being explored together, and the teacher guiding discussion and focus.¹⁵ This dialogue can be transformed into independent and collaborative learning, in which digital tools are used to enable students to research around the lesson content and feed into one another’s understanding.

The future of digital resourcing in schools

Constraints on teaching hours, grammar-focussed assessment methods, and numerous accountability measures threaten to shift classroom focus in the UK from intrinsic to extrinsic motivators, from genuine language acquisition toward exam coaching. Written translation dominates UK exams, with the re-emergence of prose composition into Latin – a grammar exercise far removed from communicative writing – and the reproduction of translations of

¹⁵ Hunt 2018, 95–201.

set texts in literature examinations.¹⁶ In our high-stakes system, these examination priorities can end up determining classroom activity. The CSCP receives requests from teachers on tight timetables for more grammar-translation style drill activities and for the materials we produce to be more clearly aligned to exam-board assessment criteria. They have been forced to train their students for an exam rather than teach them Latin using successful methods underpinned by sound pedagogy. Our aim is to develop resources that support teachers in preparing their students for these assessments but crucially enable them to teach effectively even in reduced timetables.

Our new online platform is in the initial stages of development. This platform will differ from previous versions in that it will be the first created in tandem with a new edition of the print textbook. This gives us the opportunity to move our thinking from digital resources that support a course to digital resources as one component in an integrated course. Teachers will be able to log in to an increasingly sophisticated suite of resources and to create a digital classroom for their students, assigning log-ins to pupils in their classes.

All our digital resources, currently spread over different media and accessed in different ways, are being moved to a browser-based delivery. Worksheets, teacher guides, and other print-based resources are being digitised. Teachers will be able to organise their own materials and develop lesson plans within their CLC accounts, which we hope will aid the integration of multi-modal teaching. Digital resources are seen not in isolation but working in conjunction with other resources and activities: the Latin text will be used alongside the archaeology, video, and other resources, and in conjunction with teacher-student dialogue and creative classroom work. Initially this will be a simple curation of materials, but we are considering methods of enabling collaborative work within the CLC materials themselves.

We are implementing progress tracking, with vocabulary and activity feedback linked to individual students to encourage a focus on personal progress over a longer time period than a single session. We are also considering carefully the potential impact of this strategy. As mentioned above, a low-risk environment encourages risk-taking and student ownership, increasing students' focus on their own progress rather than comparison with their peers. When the teacher is also able to access information about their learning, there is a danger of losing this dynamic and instead creating an atmosphere of perpetual assessment. We are investigating ways of turning on and off feedback and tracking, and creating clear teacher guidance.

The overall design of the new platform and how it will be used is only part of our plan for the future. As we create the new edition of the textbook, we are simultaneously planning the next generation of digital resources to provide support and extension, and opportunities for wider learning. This includes additional consolidation exercises, addi-

¹⁶ OCR GCSE Specification: <https://ocr.org.uk/qualifications/gcse/latin-j282-from-2016/> (last accessed March 30, 2021).

tional reading involving the characters from the books, and cultural investigations. We aim to exploit the potential for agile development, rolling out resources in response to changing needs, evolving pedagogy, and research into the ancient world.

Conclusion

After more than fifty years, the core aim of the project still remains “to help make the classical world accessible to as many students as possible” by forging strong links with teachers and learners; advancing the pedagogy of classics teaching through research and development; creating high-quality, innovative teaching materials based on research and development; and exploiting new technologies to reach out to new audiences and create cutting-edge materials.¹⁷ This paper has presented the ways in which the CSCP developed digital resources to fulfil this goal in the past, and some of our plans to continue this work well into the future.

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¹⁷ CSCP 2020.

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