# Open, Equitable, and Minimal: teaching digital scholarly editing North and South.

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## Open, Equitable, and Minimal: Teaching Digital Scholarly Editing North and South

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### Abstract

In this paper, we present our preliminary reflections on whether minimal computing as a practice can extend beyond "computing done under some technological constraints" to served as a common ground between different digital humanities research dynamics in the Global North and South. We explore this question by commenting on our experience in developing and teaching an undergraduate course to students enrolled from both the University of Maryland, College Park in the United States and Universidad del Salvador in Buenos Aires, Argentina. The class was delivered for its first iteration in September–November 2020 and introduced students to digital publishing and textual scholarship of bilingual Spanish and English texts, presenting minimal computing as a shared set of values including: use of open technologies, ownership of data and code, and reduction in computing infrastructure.

## Introduction

What if minimal computing principles extended "beyond computing done under some technological constraints" [Minimal Computing Working Group], but also were at the core of a global digital humanities commons? Could this commons model a set of shared principles and technologies to empower students and scholars to work autonomously on their own projects? With these questions in mind, researchers from the University of Maryland, College Park in the United States and the National Scientific and Technical Research Council (Consejo Nacional de Investigaciones Científicas y Técnicas, CONICET) in Argentina designed a joint course, delivered for the first time from September–November 2020, to teach minimal computing approaches to North and South American students. The class introduced students to digital publishing and textual scholarship with minimal computing presented as a shared set of values: use of open technologies, ownership of data and code, reduction in computing infrastructure and, consequently, environmental impact.

[1]

Minimal computing can be a solution for the development of projects in the Global South, where access to infrastructure such as web hosting or even reliable and affordable Internet access is limited for humanities students and faculty. Our course, which will continue through 2022 at minimum, positions minimal computing as an approach that can bring together students from the North and the South in the same class — through video conference and other means — to discuss and address the barriers and opportunities for a more open and equitable global digital humanities.

[2]

In this essay we will discuss: 1) the open and minimal technologies we use for teaching students to create digital scholarly editions and why we have chosen them; 2) the bilingual teaching materials adopted and why we chose them; and 3) how students collaborate online in Spanish and English in small cross-institutional groups using Spanish and English texts from early colonial times in the Americas.

[3]

Through our work on this course, we are not only offering training on specific minimal computing skills but are also contributing to much-needed analysis of the different technological and academic contexts around the world: issues

[4]

related to infrastructure, language, digital literacy, and Open Science practices. We seek to raise awareness about the different kinds of digital humanities around the world, which will both benefit our students and make a case to the global digital humanities community that technology cannot be owned by anyone, but must be used and contributed to by all.

## From Global to Open Digital Humanities

While Anglophone digital humanities has established itself as part of many graduate and postgraduate programs, summer schools, centers, labs, books, and journals, the Latin American and Spanish *humanidades digitales* is still defining itself and pondering how to devise a curriculum of its own [del Rio Riande 2015]. However, both share a defining feature: their continuous growth as part of our contemporary digital and digitized world. This shared feature has led many scholars to redefine their work under the impact of the digital and to consider the consequences of a "global turn" that has put into question many aspects of their academic, linguistic, and technical practices [Earhart 2018].

5

The debate over a "global digital humanities" resulted in a considerable shift in 2013 when the Global Outlook Digital Humanities (GO::DH) Special Interest Group of the Alliance for the Digital Humanities Organizations (ADHO) was founded. GO::DH pointed out the importance of problematizing digital humanities as a field built and understood from multiple perspectives [Gil and Ortega 2016], something that the Alliance for Digital Humanities Organizations (ADHO) addressed both in DH2015 in Australia — named *Global Digital Humanities* — and in the panel on diversity in the field of digital humanities at DH2016 in Kraków [O'Donnell et al. 2016]. This trend is also confirmed by the annual Global Digital Humanities Symposium that has been taking place at Michigan State University since 2016 and in initiatives such as the IFLA Special Interest Group[1] and the Asociación Argentina de Humanidades Digitales (AAHD) 2016 conference, *Local Constructions in Global Contexts* [del Rio Riande et al. 2018].[2] Another relevant event that proves how the global dimension of digital humanities has had an impact on its organizational core is the process initiated in 2016 with the goal of changing the governance and the financial model of ADHO, expanding its boundaries to regions of the Global South [Fiormonte and del Rio Riande 2017].

6

Nonetheless, despite the benefits that we could expect from a global digital humanities, it is crucial to remember that the concept of the "global" is complex and even contradictory, especially when related to technology in all its facets. In the context of global digital humanities, "technology" includes: *software architecture*, or the availability and cost of software solutions and the expertise to develop and adopt them; *infrastructure as hardware*, or the availability and cost of computers, peripherals, and other instruments capable of supporting the research software and approaches a digital humanities project may need; and *infrastructure as long-term preservation*, or the strategies, data management plans, and institutional support needed for guaranteeing the availability of digital humanities research outputs in the future. This technology, as Anne Cong-Huyen argues, is never "neutral" or truly "global":

7

> [D]igital and electronic technologies are of particular importance because they are often perceived as being neutral, without any intrinsic ethics of their own, when they are the result of material inequalities that play out along racial, gendered, national, and hemispheric lines. Not only are these technologies the result of such inequity, but they also reproduce and reinscribe that inequity through their very proliferation and use, which is dependent upon the perpetuation of global networks of economic and social disparity and exploitation. [Cong-Huyen 2013]

The term "global" moreover, is itself a paradox: global impacts are perceived differently at local and regional levels, and there is no single and unique process of globalization, but rather a set of different processes with global dimensions. For example, while Global North digital humanities scholars have focused on understanding diversity and awareness of linguistic privilege, interrogating the degree to which global technological practices can exclude participation in the field [Fiormonte 2017] [Fiormonte and Priego 2016] [Risam 2018] [Gil 2015] [Earhart 2018], the Spanish-speaking *humanidades digitales* situation is multifaceted. Undoubtedly, even though Spain and many countries in Latin America and the Caribbean share a language, their social, cultural, epistemic, and economic contexts are completely different. Spain is a country in the European Union, while Latin America is the most unequal region in the world that groups more than twenty countries that have been experiencing the impact of labor-saving technologies since the beginning of the century [Krull 2016]. Also, it is important to note that in Latin America the free, public dissemination of research has long been understood primarily as a public good managed by the academic community. Scielo, the largest open access harvesting platform in the region, was founded in 1997, five years before the 2002 meetings in Budapest, Bethesda, and Berlin that produced the first open access declarations [Budapest 2002] [Bethesda 2003] [Berlin 2003]. Non-commercial, open access publication — without article

8

processing charges (APC)[3] — is the standard method of dissemination in Latin America and is widely understood as a key engine of knowledge democratization.

Reflections on how digital humanities could benefit from open approaches such as these have been part of manifestos and debates in the last ten years but have rarely been systemized. Todd Presner made the first emphatic assertion: "The digital is the realm of the open: open source, open resources [...]. Anything that attempts to close this space should be recognized for what it is: the enemy" [Presner 2009]. One year later, the Paris Manifesto focused on the technical aspects of what "open" means in digital humanities: "[W]e call for open access to data and metadata, which must be documented and interoperable, both technically and conceptually" [Dacos 2010]. However, many other scholars use the term "open" to represent values of collaboration [Spiro 2012] [del Rio Riande and Tóth-Czifra 2019] or authority [Fitzpatrick 2010].[4] In the past few years, in part due to the influence of scholars from the Global South, the concept of open digital humanities scholarship has been given greater consideration. In a workshop at the 2018 ADHO conference, the debate was framed in this way:

> What would it take to bring DH [digital humanities] into a more global openness, not only in terms of access but also in terms of methods, best practices and opportunities for collaboration? And what could this openness look like set against the backdrop of the long-standing and highly developed open access movement in Latin America and the Caribbean? [Schallier et al. 2018]

Any reflection on a global digital humanities should think and teach our students about the many important questions related to power and inequality, like the extreme asymmetry in research outputs between scholars from well-resourced and not-so-well-resourced countries, sometimes understood in terms of Global North and South [Chan et al 2019]. And by outputs we do not only mean articles or books, but also the core of digital humanities scholarship: online web-based projects and the ways in which we teach them.

## Open and Global Digital Scholarly Editing through Minimal Computing

In recent years, Open Science has emerged as:

> [...] the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods. [FOSTER 2021]

Digital technologies and infrastructures play a significant role in the open dissemination of knowledge. Surprisingly, even though "Digital Humanities is a technologically embedded field" and "epistemic technologies are bound to play a significant role" [Svensson 2016], digital humanities critical literature hasn't focused on the benefits of Open Science for enabling collaborative, scalable, and long lasting global research.[5] For example, digital scholarly editing and digital scholarly editions (DSEs) are not always perceived as "open."

If editing is "without doubt one of the oldest scholarly activities within the Humanities" [Pierazzo 2016], DSEs are at the core of digital humanities [Earhart 2012]. While not all textual scholars might rely on the same definition of DSEs, they recognize their features and uses [Sahle 2016]. Free, open standards such as the ones developed by the Text Encoding Initiative (TEI), along with eXtensible Markup Language (XML) technologies, such as eXtensible Stylesheet Language Transformations (XSLT) and XQuery, and dedicated software[6] have characterized the digital editing field. The scholarly editions themselves, however, haven't always been successful as open products of research. Bodard and Garcés posed this issue when they claimed that, analogous to the Open Source Software movement, DSEs — which they call "Open Source Critical Editions" or "OSCE" — should be licensed for reuse, including all sources, data, methods, and software [Bodard and Garcés 2009]. While it is common practice to make TEI data publicly available, the debate over how DSEs need to be structured to be truly "open" is still ongoing and best practices have yet to be established. Vanessa Hannesschläger, for example, has recently surveyed licenses appropriate for DSEs powered by TEI and singled out Creative Commons ones as appropriate for an international context and for enabling an open culture of reuse with a global impact; however, there has yet to be widespread agreement with this proposal [Hannesschläger 2020].

From a Global South perspective, the DSE field is perceived as being dominated by standards and technologies that are still unfamiliar to scholars; not surprisingly, these methods are typically described in the context of Anglophone projects [Allés-Torrent and del Rio Riande 2020]. Indeed, beyond some very specific projects and initiatives, multilingual resources related to DSEs, such as tutorials, software, books, and articles, are generally difficult to find in languages other than English. Moreover, the use of proprietary software for most editorial work has become a

barrier for extending the DSE practice beyond Northern academies.[7] Indeed, "[d]igital scholarly editions are expensive to make and to maintain" [Pierazzo 2019]. As such, long-term web hosting, preservation, and access to servers pose a significant obstacle for not-so-well-funded scholars who lack access to grant funding or other institutional resources. Overall, DSEs require substantial infrastructure and advanced technical skills, while diverse needs, capacities, priorities, languages, and academic traditions may require different features from DSEs at a global scale.

With that in mind, how can DSEs, one of the crown jewels of digital humanities [Pierazzo 2016], become global? From our perspective, this can be achieved by establishing a "digital commons."[8] When the GO::DH Minimal Computing Working Group started a debate on power and inequality in digital humanities from a technological perspective, its intention was not to simply criticize or mourn a lack of diversity, but to establish an alternative discourse and create a new set of commons, namely technology of disobedience, architecture of necessity, and the moral modulor [Gil 2016]. The principles of minimal computing turned into new ways of undertaking digital humanities work and collaborating to building an alternative digital epistemology that has found a practical outlet in minimal DSEs with Ed.,[9] a tool for building minimal DSEs without elaborate text encoding.

16

For these reasons, minimal computing informed the design of our joint course that teaches digital publishing and textual scholarship with minimal computing and text encoding. Specifically, we highlighted minimal computing as a shared set of values such as the use of open technologies, ownership of data and code, and reduction in computing infrastructure. The following question drove our course development: "Could minimal computing provide a set of shared principles and technologies to empower students and scholars to work autonomously on and have more control over the future of their own projects?"[10] We further considered: "What if minimal computing extended beyond 'computing done under some technological constraints' by standing at the core of a global Digital Humanities commons, overcoming notions such as center and periphery, North and South?" and "Could minimal computing serve as a common ground for Northern and Southern digital humanists?"

17

In Latin America, conversations on open and free technologies have been part of the Open Science agenda since the early 2000s, when the term "technological sovereignty" [Padilla 2017] began to be used by Latin American activists who wanted to have more control over the software that they and their governments used. The Latin American Free and Open Source Software (FOSS) movement is aligned with the Latin American Open Science movement. Both share a strong sense of common ownership for the common good. Based on this, many networks like reGOSH have highlighted how the region could benefit from the development of open scientific tools, as a way of overcoming dependence on equipment suppliers in the Global North and increasing its digital autonomy.[11] However, as we discussed above, Latin American countries have the most unequal income distribution in the world which results in research inequalities across the region [Amarante et al. 2016]. As a result, the allocation of resources for research in Latin America is in great disproportion to those in developed countries. This is the case of HD CAICYT Lab, the digital humanities laboratory at Argentinian CONICET, which has been doing digital humanities research with very limited funding and technological support from the institution since 2016.[12] The lab, nonetheless, carries on work in an open research context aligned with the Argentinian national law on open access and the Open Science environment in Latin America. HD CAICYT Lab has been creating minimal editions via a workflow built around Recogito, an open source semantic annotation software developed by Pelagios Network [Recogito 2021], incorporating TEI markup and rendering the edited texts in static sites built with Jekyll and GitHub pages. In 2016, Susanna Allés-Torrent led a minimal computing workshop at the Second International Conference of the Asociación Argentina de Humanidades Digitales (AAHD) in Buenos Aires, Argentina [Allés-Torrent 2016]. Scholars who attended the event felt empowered by the possibility of working autonomously on their own editions, and minimal computing was understood as a solution for the development of projects where access to infrastructure such as web hosting or even reliable and affordable Internet access is limited for humanities students and faculty. For our lab, HD CAICYT, minimal computing turned into the solution for computing done under technological limitations, as well as for "producing our own scholarship ourselves" [Gil 2015].

18

Minimal computing has become part of HD CAICYT Lab's digital humanities standards and commons, integrating with our principles of openness: open corpora, documentation, collaboration, software, and publishing [del Rio Riande et al. 2018].[13] Since the Lab is unable to buy software or pay for servers and hosting, adopting minimal computing strategies created the conditions necessary for our work to be part of the global digital humanities landscape. As such, we practice minimal computing beyond its definition of simply "computing done under some technological constraints" as it becomes our primary instrument for any form of digital humanities.[14]

19

The Maryland Institute for Technology in the Humanities (MITH) at the University of Maryland has adopted minimal computing strategies primarily for digital preservation. MITH migrated a number of websites and web applications to static sites in order to reduce infrastructure demands and increase their longevity [Summers 2016] and posed the minimal computing archetypal question: "What do we need?" [Gil 2015] as one of the guiding principles for future and current projects. In working with communities in and around the University of Maryland campus, MITH staff works with and trains collaborators around minimal technologies that allow them to curate, maintain, and, most importantly, own community archives independently of MITH's and the university's infrastructure.[15] More specifically to DSEs, the prominent Shelley-Godwin Archive (S-GA) [Shelley-Godwin Archive 2021] has adopted technologies atypical for a TEI-based project from the start, with an eye towards Linked Open Data integration[16] and towards the reduction of the infrastructural footprint of the project. This led to a case-study experiment aimed at enabling offline use of the archive inspired by minimal computing principles to "increase its availability to a larger number of communities with variable access to the Internet" [Viglianti 2018]. TEI publishing in S-GA is handled directly in the browser, avoiding server-side transformations typical of many TEI projects that require substantial server infrastructure to be maintained and kept online long term. Partly informed by this experience, Raffaele Viglianti worked with Hugh Cayless on CETEIcean,[17] a JavaScript library for publishing TEI (and other XML) documents within an HTML page [Cayless and Viglianti 2018].

The different approaches to minimal computing and DSEs, context-dependent for HD CAICYT Lab and strategic for MITH, formed the basis of our collaboration on the course that we teach to undergraduate students in Buenos Aires and Maryland: Digital Publishing with Minimal Computing. Our combined experiences present our students with a perspective on minimal computing that is not entirely dependent on digital humanities practices in the Global North, but rather one that is based on a shared digital commons. Focusing on minimal computing allows us to teach the fundamentals of scholarly editing and digital publishing through free and open tools while engaging with issues of content ownership on the web that extend beyond textual scholarship. Our course challenges students to publish without relying on institutional infrastructure while keeping a critical eye towards commercial infrastructure, particularly in relation to data ownership and preservation. While this comes with an initially steep learning curve for discovering and adopting new digital tools, it also teaches students how to manage the fate of the resources they create.

## Digital Publishing with Minimal Computing: Humanities at a Global Scale

In December 2019, we proposed a course titled Digital Publishing with Minimal Computing: Humanities at a Global Scale[18] to the Global Classroom Initiative (GCI) program at the University of Maryland. This program offers support for the development of courses to be taught in collaboration with a higher education institution outside of the United States, with the goal of establishing courses that expose students to work that is cross-cultural, project-based, and virtual; the GCI argues that these courses mirror the work students will encounter throughout their lives. While this outcome is somewhat dependent on the students' career choices and opportunities, it is evident that "globalization shrinks the world, bringing a wider range of cultures into closer contact than ever before " [UNESCO et al. 2013]. Thus, preparing students to participate in a globalized world is a worthwhile goal, particularly if this can be done in a way that fosters intercultural competences.[19] The COVID-19 pandemic also exacerbated the virtual nature of this contact, as we adapted to rely even more heavily on technological links to collaborate both locally and globally.

The course, which involves students from the Universidad del Salvador (USAL) in Argentina and from the University of Maryland (UMD) in the United States,[20] has received funding for at least three iterations between 2020 and 2022, with a blend of online and in-person learning.[21] It is centered around a group project in which students collaborate virtually to create a bilingual (Spanish and English) digital edition of a multilingual colonial era text,[22] while learning about digital humanities approaches to literary studies, digital publishing, and history. The group project involving students from both institutions facilitates the cross-cultural collaboration that is central to GCI courses. Project-based learning is also an effective learning paradigm in which "students actively construct their knowledge by participating in real-world activities similar to those that experts engage in, to solve problems and develop artifacts" [Krajcik and Blumenfeld 2005].

This approach is not unfamiliar to digital humanities pedagogy [Clement 2012], given that digital humanities research itself tends to be scaffolded through project work that results in the development of artifacts such as tools or digital publications [Burdick et al. 2012, 124]. It is also connected to a multiliteracies approach, which brings together linguistic diversity and multimodal forms of expression and representation in response to changes in globalized technological environments such as the Internet, and the growing linguistic and cultural diversity due to

increased transnational migration [New London Group 1996] [Cope and Kalantzis 2009] [Clement 2012]. Teaching through a minimal computing lens, moreover, greatly benefits from projects that exhort students to think both globally and locally by recognizing the technological affordances they have access to (as well as why and how) and by confronting the limitations and constraints that work against them, whether in hardware, software, education, network capacity, power, or indeed self-imposed limitations for pedagogical purposes. In other words, we train our students to recognize the privileges of having access to state-of-the-art computational resources as well as to devise strategies to circumvent limitations they may encounter by adopting minimal computing techniques. Students (and experts) from both cultural contexts are likely to encounter such limitations to varying degrees. Even those who have access to infrastructure through their institutions or future employers will encounter issues with preservation and portability of the digital publication projects that they have created. Learning to deploy minimal approaches can contribute to the viability of a digital humanities project and give students greater control over the future of their own work. This mimics and models to our students the role, as we have discussed above, that minimal computing can play in establishing open and global approaches for digital humanities research and pedagogy that willfully reduce the gap between Global South and Global North contributions.

The nature of the cross-border collaboration between students is online and virtual, given their geographical separation. They attend virtual lectures and collaborate online via messaging and code sharing platforms, with the support of the instructors. This kind of engagement is often referred to as "Virtual Exchange" [Bassani and Buchem 2019] [O'Down 2018] or "Collaborative Online International Learning" (COIL) [Guth 2013]. The COIL Institute for Globally Networked Learning in the Humanities at the State University of New York was among the first to explore the applicability of this approach to humanities disciplines through an National Endowment for the Humanities grant. The final white paper reports on the twenty-four courses taught as part of the project and summarizes the surveys completed by instructors and students [Guth 2013]. The results highlighted how COIL courses offer a form of internationalization at home and a "low-cost" alternative to study abroad exchange programs, which are typically accessible to a very limited number of students, at least in the United States [Li 2013]. More importantly, the study identified clear merits of a project-based, cross-cultural approach to education in the humanities:

25

> To no surprise, most [survey respondents] cited the access to different cultural points of view as adding that "something extra" to the course. They found that this element increased student motivation, led to more in-depth learning and helped students be more willing to see ideas, texts, works of art, etc. from different perspectives. In some ways it was as if the students felt they had to perform better because they saw their partner class as a new audience particularly during synchronous audio/video sessions and in asynchronous discussion forums.  [Guth 2013]

Our course applies the COIL approach to teaching digital scholarly editing through the lens of minimal computing, which, in itself, is an instrument for fostering international competencies in both student and expert work towards a more open and global digital humanities practice. Creating a course of this kind is necessarily a collaborative process that takes time and requires exchange of ideas among instructors. Over the seven months between first developing our GCI project and the first iteration of the course in September 2020, we discussed our pedagogical priorities, developed the syllabus, and created multilingual student resources such as slides, tutorials, and guidelines.[23] English is typically assumed to be the language of global communication, playing an important role in both disseminating and seeking out information. As Ana Balula and Delfim Leão argue, "In terms of information availability, which underpins the co-construction of knowledge, the use of English as lingua franca promotes the dissemination of research outputs and breakthroughs" [Balula and Leão 2019, 4]. Nonetheless, Ángela Giglia highlights the more localized nature of humanities discourse: "SSH [Social Sciences and Humanities] research is often grounded in specific cultural or geographical areas, hence the persistence of native languages opposed to English as lingua franca in STEM [science, technology, engineering, and mathematics]" [Giglia 2019, 143]. Multilingualism and bibliodiversity, or the diversity of academic content, are essential both at the national and international levels to preserve research in a wide range of global and local topics, studied from different epistemic and methodological approaches and inspired by various schools of thought and expressed in a variety of languages [Balula and Leão 2019].

26

We conduct shared lectures and communication between students in each group in English but facilitate learning and project work by providing bilingual course material. Because language is a primary medium in the transmission of culture and ideas, we also assign readings in both languages, trying to find papers that deal with similar topics and allowing students to choose between them [Allés-Torrent and del Rio Riande 2020].[24] This is meant to both facilitate content acquisition and expose students to contributions that are not exclusively Anglo-centric when

27

learning about digital humanities and DSEs in particular.[25] Moreover, we have seen that exposure to both languages enhances the virtual exchange experience;[26] in addition to learning from bilingual resources, the groups create bilingual websites and work with source material in both languages. In adopting this strategy, we are following UNESCO's report on intercultural competences:

> Multilingualism (communicative competence in multiple languages) and translation (conveying the same idea through different languages) are [...] requirements for intercultural dialogue, and indications of intercultural competences, enriching each group's understanding of the other(s) as well of themselves. [UNESCO et al. 2013]

28

In preparing bilingual materials for the course, we kept these principles in mind and invested time in creating resources that would be useful outside of the immediate course context. To date, our primary contribution has been translating Amanda Visconti's Jekyll tutorial on the *Programming Historian* into Spanish.[27] This translation not only involved lexical and grammatical choices but also extralinguistic adaptations such as changing the screenshots. This decision was motivated not only by the presence of text in English in the images but also by the layout differences between the macOS and Microsoft Windows. The original tutorial is based on macOS and is infrequently used by Latin American students because of the elevated price of Apple computers. In order to make the tutorial accessible to our public, we provided priority to installation instructions for Windows and reproduced all the visual aids for a Windows environment.[28] We also created an extension to the free code editor Visual Studio Code, called Scholarly XML,[29] that provides functionalities essential to learning and encoding TEI, such as XML validation and code completion suggestions. Despite their function in TEI pedagogy, these features typically require complex installation or are otherwise only available through commercial software.[30]

29

Since the majority of minimal computing aspects of the course are centered around project-based learning (PBL), we conclude this section by describing how we scaffolded the course activities through Joseph Krajcik and Phyllis Blumenfeld's five key features of project-based learning [Krajcik and Blumenfeld 2005]. The first feature is identifying a driving question that relates to authentic activities undertaken by researchers in digital humanities (more specifically in digital textual scholarship), such as, "How do websites help us give new life to historical texts?" Second, we explore the driving question via "situated learning" [Lave and Wenger 1991] — that is, by working in a real-world context. Minimal technologies for building websites allow our students to learn by doing with tools that make it feasible to engage with the driving question, but that are also used by professionals to develop open digital humanities artifacts. The third feature is engaging in collaborative activities to solve problems; students tackle the question and learn skills in groups made of individuals from both institutions, which, as explained above, is essential to the development of intercultural competences. The fourth feature recommends that PBL be "scaffolded with learning technologies that help [students] participate in activities normally beyond their ability" [Krajcik and Blumenfeld 2005, 318]. In our case these technologies include bilingual learning materials and online collaboration channels that we establish together with the students' input. While minimal computing technologies should, by definition, be within the students' ability, our goal is to have the students leverage these technologies to answer the driving question and engage with textual scholarship work that will likely be unfamiliar to them. Finally, the fifth feature is that students create artifacts that address the driving question and that are "publicly accessible representations of the class's learning" [Krajcik and Blumenfeld 2005, 318]. Through structured assignments, each group creates a bilingual public website containing the encoded and edited text, together with paratextual content documenting their collaborative process and their engagement with the driving question.

30

## Conclusions

In designing this course, we have had the unique opportunity to bring together digital humanities and humanidades digitales practices from the Global North and South. This joint effort has prompted us to reflect on what is common and shareable in our approach to digital scholarly editing: how, and in what ways, is knowledge exchanged in different cultural, linguistic, and technological literacies?

31

Minimal computing, understood not just as a response to technological constraints, but rather as an intentional methodological stance, strikes us as fundamental for building a shared commons that is both open and global. Moreover, we are building a bilingual syllabus (readings, tools, and project-based learning activities) centered on minimal computing as a way of countering epistemic and knowledge inequity [Chan et al 2019]. Our work purposely moves beyond a North-to-South approach to curriculum and knowledge exchange to a synergetic North-and-South one, aimed at empowering knowledge creation in the language(s) in which an individual is most comfortable.

32

We are aware that minimal computing, and to some extent project-based learning, are approaches developed in the North, and adopting them under the guise of an internationalization agenda brings risks, such as overlooking local practices when building and sharing knowledge in the classroom. We are also conscious that while technology can increase access to knowledge, it may entrench cultural imperialism. Nonetheless, we envision a middle ground by adapting tutorials and educational materials, as well as balancing Spanish and Anglophone authors in the bibliographies students should be reading. In this sense, our course emphasizes a pedagogy of multiliteracies and a polycentric digital humanities perspective.

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The first iteration of the course in 2020 concluded successfully, with an enrollment of 23 students (11 at UMD and 12 at USAL). After the course, USAL students continued to collaborate through presentations on their experiences with minimal computing at different events, including a presentation [Calarco et al. 2021a] at *#NoviembreHD*, a one-month congress organized by the Argentine Association of Digital Humanities (AAHD) [Noviembre HD 2020], and a poster at the Global Digital Humanities Symposium, organized by the University of Michigan [Calarco et al. 2021b]. Several students also started their own digital publishing projects with the technologies they learned.[31] This is evidence that the course is not only creating a favorable environment for collaboration and exchange, but also is providing participants with the tools for independent work in the field of digital scholarly editing.

<div style="text-align:right">34</div>

By preparing for this course, we not only developed training on specific minimal computing and text encoding skills, but we also engaged with different technological and academic contexts around the world by addressing issues and perspectives related to infrastructure, language, digital literacy, and Open Science. Our continued challenge is uncovering how our work teaching minimal computing can effectively advance a more open and global digital humanities. We aim at moving beyond the limits of the course itself, by upholding approaches to pedagogy and digital humanities research that work towards what we claim should be a core tenet for the global digital humanities community: that technology should be owned by no one and used and contributed to by all.

<div style="text-align:right">35</div>

## Notes

[1] More information about the Digital Humanities/Digital Scholarship Special Interest Group of the International Federation of Library Associations and Institutions (IFLA) can be found at https://www.ifla.org/ES/node/25695.

[2] Programme and Proceedings of the AAHD Conference *Local Constructions in Global Contexts* is available at https://www.aacademica.org/aahd.congreso.

[3] An APC is a fee paid to the publisher to make an article free at point of access. Whilst Open Access principles promote free availability of research and scholarly output, research papers are not cost-free to produce. The cost of publication is moved from the reader (via subscriptions and pay-walls) to the author (via the APC) [Tennant and Mounce 2015].

[4] According to Kathleen Fitzpatrick, "The key problems that we face again and again are social rather than technological in nature: problems of encouraging participation in collaborative and collective projects, of developing sound preservation and sustainability practices, of inciting institutional change, of promoting new ways of thinking about how academic work might be done in the coming years" [Fitzpatrick 2010].

[5] Marcel Knöchelmann argues that there is not an open discourse in the humanities comparable to those in the sciences [Knöchelmann 2019].

[6] Some examples are TEI Boilerplate, Juxta, Versioning Machine, TextGrid, Ediarium, eLaborate, Edition Visualization Technology, and CETEIcean.

[7] Most DSEs rely on TEI documents encoded and processed with the help of the popular software Oxygen XML Editor, which requires the purchase of a license. Most training and teaching is also done using Oxygen, which has established a *de facto* monopoly on DSEs production in the Global North.

[8] The commons can be defined as "resource[s] shared by a group of people that is subject to social dilemmas" [Hess and Ostrom 2006].

[9] Ed is a Jekyll theme for digital editions, developed by Alex Gil and available at https://github.com/minicomp/ed.

[10] Canagarajah writes in *A Geopolitics of Academic Writing,* "Periphery students are taught to be consumers of center knowledge rather than producers of knowledge" [Canagarajah 2002, 283].

[11] reGOSH is the network for free-libre technologies for science and education in Latin America: https://regosh.libres.cc/en/home-en/.

[12] The lab is part of CAICYT's institutional project, where challenges for its growth include the scarcity of human resources and specific funding. Digital humanities project funding is not common in the region, so sustainability depends mostly on external funding and collaboration.

[13] See Jekyll's perspective on openness, collaboration, and code of conduct: https://jekyllrb.com/news/2017/10/19/diversity-open-source/.

[14] See for example the digital scholarly edition of an Argentinian chronicle called *Historia de la Conquista del Río de la Plata*, better known as "La Argentina Manuscrita," written by Ruy Diaz de Guzman in the early seventeenth century, available at https://arounddh.org/en/la-argentina-manuscrita.

[15] One example is the Lakeland Community Archive Project, which documents a historic African American community before and after segregation and contributes to an understanding of urban renewal's impact on communities of color in College Park, Maryland, USA, available at https://mith.umd.edu/research/lakeland/.

[16] Particularly in relation with the then nascent International Image Interoperability Framework: https://iiif.io.

[17] CETEIcean is available at https://github.com/teic/ceteicean.

[18] The bilingual public website for the course is available at https://mith.umd.edu/minimaldigipub/.

[19] According to UNESCO, "Intercultural competences refer to having adequate relevant knowledge about particular cultures, as well as general knowledge about the sorts of issues arising when members of different cultures interact, holding receptive attitudes that encourage establishing and maintaining contact with diverse others, as well as having the skills required to draw upon both knowledge and attitudes when interacting with others from different cultures" [UNESCO et al. 2013].

[20] The instructors in Argentina teach at Universidad del Salvador but are affiliated with the Argentinian Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET).

[21] Our plan was to have in-person lectures with a shared audio/video link joining the two classrooms together. Given the global pandemic, however, the first iteration of the course was fully online for all students in 2020 and online for Universidad del Salvador and hybrid for University of Maryland students in 2021.

[22] This text is a travelogue written by a Basque trader called Acarette Du Biscay and its publishing history is truly multilingual. Acarete's travels were published in his native language, French, in the *Relation des voyages du Sr… dans la rivière de la Plata, et de-là par terre au Pérou* in 1672, as part of volume IV of the famous Thevenot *Collection of Relations De Divers Voyages Curieux*, and in 1696, independently, in the *Relation des voyages dans la rivière de la Plate*. Two years later the 1698 London edition came to light in a collection entitled *Voyages and Discoveries in South America*, and later as an individual book by Samuel Buckley's printing press as *An Account of a Voyage up the River de la Plata, and Thence over Land to Peru: With Observations on the Inhabitants, as Well as Indians and Spaniards, the Cities, Commerce, Fertility, and Riches of That Part of America*. It was later translated from English to Spanish by Daniel Maxwell, and published in *La Revista de Buenos Aires*, in May and June 1867, as *Relación de los viajes de Monsieur Ascarate du Biscay al Rio de la Plata, y desde aquí por tierra hasta el Perú, con observaciones sobre estos paises*.

[23] This includes resources and materials we have previously developed, like the TTHub, https://tthub.io/, a hub of tutorials, presentations and materials in Spanish related to TEI training, or the bilingual Taxonomy of Digital Research Activities in the Humanities/Taxonomía sobre Actividades de investigación digital en humanidades (TaDiRAH): https://vocabularyserver.com/tadirah/es/index.php.

[24] In fact, Argentinian students learn differently from the U.S.-based students in the course, as they go through a two-fold process: they learn new digital humanities concepts and practices related to minimal computing and DSEs while they improve or practice their English language skills.

[25] We use recommendations from the GO::DH Translation Toolkit: the "whispering" approach [Gil and Ortega 2016], translating and writing down (on a whiteboard or in a chat) the keywords, titles, and words we may identify as obscure. The Translation Toolkit is available at https://go-dh.github.io/translation-toolkit/about/.

[26] Multilingualism and cross-institutional experience was informally identified by University of Maryland students as a major reason for enrolling in the course. Moreover, a survey conducted by Universidad del Salvador students about their own experience also mentioned positive assessments of the multilingual approach to the course [Calarco et al. 2021a].

[27] The original Programming Historian tutorial in English is available at https://programminghistorian.org/en/lessons/building-static-sites-with-jekyll-github-pages. The Spanish translation is available at https://programminghistorian.org/es/lecciones/sitios-estaticos-con-jekyll-y-github-pages.

[28] The translation labor related to digital humanities tutorials or educational resources always involves a situated approach. As Allés-Torrent and de Rio Rande note of TEI materials, "It is not enough for the Spanish-speaking community to translate [these texts], since it is necessary to re-create the problems and adapt existing materials to their own needs and examples" [Allés-Torrent and del Rio Riande 2020, 13].

[29] Scholarly XML is available at https://marketplace.visualstudio.com/items?itemName=raffazizzi.sxml.

[30] Other extensions for Visual Studio Code or for other free code editors typically require Java tools to be installed to access XML validation and code completion. We found this to be an obstacle when teaching TEI with a minimal computing approach and thus developed an

alternative that works within Visual Studio Code without needing additional tools.

[31] Cristian Suárez Giraldo started a digital edition of a 19th century Colombian text, available at https://suarezg106.gitlab.io/conversacion-eafit/. Gabriel Calarco developed a digital edition of a Hispanic medieval text, available at https://github.com/gabrielcalarco/-Ecfrasis-en-el-Libro-de-Alexandre.

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