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Centring Multilingual Users: Thinking through UX Personas in the DH Community

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Multilingual expression is not exclusive to scholars in the (digital) humanities, but it is a lived reality of a great number of people around the world. The authors of this article argue that there is a specific role to be played by the digital humanist in describing and modelling the design of workflows that assume multilinguality (and multiscriptual and multidirectional practices). This work cannot be left only to the tech industry and commercial interests. On the other hand, the larger community of digital humanists is not fully aware of the issues that multilingual users and communities face. In this paper we argue that one way this can be done most effectively in these early stages is by user persona creation.

Our method is to perceive the problem from a UX (user experience) persona design point of view. The present paper synthesizes our efforts to date in creating data-driven UX profiles (based upon our insights drawn from a survey, multiple interactive workshops, an open forum series organized by the authors, and a workshop at the DH Unbound conference 2022), which aim to capture shared experiences of multilingual DH textual research, recognizing how such multilinguality might appear as a marginal phenomenon. Also drawing on research in persona studies, our paper attempts to theorize the UX profile of each specific persona, not in isolation, but in interaction with other users, bringing those personas into dialogue. The purpose of this dialogue is to centre multilingual voices with shared concerns in the scholarly community of DH. We argue that so-called "marginal" multilingual cases constitute a much larger proportion of the scholarly community than is commonly believed, and as such, we must distinguish such cases from the concept of "edge cases" in UX product development research.

At the same time, in such interaction between personas, conflicts emerge. Both shared and conflicting concerns are the most interesting results of our inquiry. This is why we have chosen to present our results in the form of a fictional plenary discussion to explore what new spaces of possibility can be created in the global DH community. On the other hand, for once, a diversity of these global, multilingual voices is actually recorded for the larger community, and we hope they provide it with a starting point for inclusive discussions about infrastructure and multilinguality.



In sum, we argue that user persona creation can be an effective tool for familiarizing the larger community of digital humanists with the issues that multilingual users and communities face.

L'expression multilingue n'est pas l'apanage des chercheurs en sciences humaines (numériques), mais constitue une réalité vécue par un grand nombre de personnes dans le monde. Les auteurs de cet article soutiennent que l'humaniste numérique a un rôle spécifique à jouer dans la description et la modélisation de la conception de flux de travail qui supposent la multilingualité (et des pratiques multiscriptuelles et multidirectionnelles). Ce travail ne peut pas être laissé uniquement à l'industrie technologique et aux intérêts commerciaux. D'autre part, la communauté plus large des humanistes numériques n'est pas pleinement consciente des problèmes auxquels sont confrontés les utilisateurs et les communautés multilingues. Dans cet article, nous soutenons que l'un des moyens les plus efficaces pour y parvenir dès les premières étapes consiste à créer des personas utilisateurs.

Notre méthode consiste à percevoir le problème du point de vue de la conception de UX (expérience utilisateur). Le présent article synthétise les efforts que nous avons déployés à ce jour pour créer des profils UX fondés sur des données (sur la base de nos observations tirées d'une enquête, de multiples ateliers interactifs, d'une série de forums ouverts organisés par les auteurs et d'un atelier organisé lors de la conférence DH Unbound 2022), qui visent à capturer les expériences partagées de la recherche textuelle multilingue en humanités numériques en reconnaissant la façon dont cette multilingualité peut apparaître comme un phénomène marginal. S'inspirant également de la recherche sur les personas, notre article tente de théoriser le profil UX de chaque persona spécifique, non pas de manière isolée, mais en interaction avec d'autres utilisateurs, en faisant dialoguer ces personas. L'objectif de ce dialogue est de faire entendre des voix multilingues partageant les mêmes préoccupations au sein de la communauté scientifique des humanités numériques. Nous soutenons que les cas multilingues dits « marginaux » constituent une proportion beaucoup plus importante de la communauté scientifique qu'on ne le croit généralement, et qu'à ce titre, nous devons distinguer ces cas du concept de « cas marginaux » dans la recherche sur le développement de produits UX.

Dans le même temps, l'interaction entre les personas fait émerger des conflits. Les préoccupations partagées et conflictuelles sont les résultats les plus intéressants de notre enquête. C'est pourquoi nous avons choisi de présenter nos résultats sous la forme d'une discussion plénière fictive afin d'explorer les nouveaux espaces de possibilités qui peuvent être créés dans la communauté mondiale des humanités numériques. D'autre part, pour une fois, une diversité de ces voix mondiales et multilingues est enregistrée pour la communauté dans son ensemble, et nous espérons qu'elles lui fourniront un point de départ pour des discussions inclusives sur l'infrastructure et la « multilingualité » des chercheurs. En résumé, nous soutenons que la création de persona utilisateur peut être un outil efficace pour familiariser la grande communauté des humanistes numériques avec les problèmes auxquels sont confrontés les utilisateurs et les communautés multilingues.

Introduction

In a world in which digitally engaged researchers have come to rely on platforms, content management systems, software, even different combinations of tools to do their work, problems arise when their multilingual practices conflict with the constraining function of infrastructure. We have found this is particularly true among researchers who work with a combination of languages, some of which have been relatively well served by digital infrastructure, and others such as right-to-left (RTL) scripts or non-Latin alphabets (NLA) have been neglected (Fiormonte 2021; Ghorbaninejad, Gibson, and Wrisley 2023; Golumbia 2013; Grallert 2022; Horvath 2021; Horvath 2022; Kirmizialtin and Wrisley 2022; Wrisley 2019). These disparities have a rate determining effect on the ability to do research, and they are further amplified by institutional biases. It may just be that the smaller the group of users, the more challenging it is to find infrastructural solutions. Even though groups of users sharing common linguistic challenges in computing may be quite small, when we look at the overall picture of RTL or NLA users, their problems are far from norm-divergent. Put another way, the sheer number of people concerned would seem to make up a norm on its own, and yet within anglophone- (or global English-) dominated technological ecosystems, their concerns go largely unheard. Since it affects our research capabilities and daily work in academic institutions, as well as working with knowledge infrastructures, we wish to speak up.

Our article emerges from a series of events focusing on multilingual digital humanities (DH). As we progressed, we were aware that while academic practices are highly specific, our inquiry also addresses a much larger, societal issue. Multilingual expression is not exclusive to scholars in the humanities, but it is a lived reality of a great number of people around the world. While we stay within the bounds of our own academic concerns in this article, the method for conveying our analysis was chosen to connect on a practical level with this larger problem. Our method is to perceive the problem from a UX design point of view.

What emerged from our survey carried out in 2020 was a set of groups of respondents working in more languages than we can chronicle here, but who each face some of the complex structural problems of global academia, which are not specific to DH or even to multilingual DH, but which compound, and intersect with, the complexity of being involved in digital research. We began to analyze the input of our respondents as “edge cases” as they are often referred to by UX designers. The “edge case” usually means users with needs which diverge from the norm, or extreme cases that run the risk of disturbing product development. UX designers create user profiles, which help the larger community understand their needs, likes, and challenges, thereby making the digital product ready for “localization” (Adlin and Pruitt 2010). The present paper synthesizes

our efforts to date in creating data-driven UX profiles that capture shared experiences of multilingual DH textual research, recognizing their potential limitations to appear as isolated cases of multilinguality. We elaborate on the distinction of multilingualism and multilinguality and its importance for infrastructure elsewhere (Horvath et al. 2024). In presenting our UX profiles in open, public fora, however, we confirmed that the problems which could be seen as isolated edge cases are actually widely shared, both among like users with the same language sets and across user groups using different languages. Presented in this way, we are convinced that their preferences can no longer be dismissed by the custodians of digital infrastructure as singular opinions.

Also drawing on research in persona studies, our paper attempts to theorize the UX profile not in isolation, but in interaction with other users, bringing those personas into dialogue (Isager and Moestrup 2021; Coorevits et al. 2016; Van Lit 2020; Koopman 2019). The purpose of this dialogue is to centre multilingual voices with shared concerns. It is our belief that “marginal” multilingual cases constitute a much larger proportion of the scholarly community than is commonly believed, and as such, they serve a different function than the concept of edge cases in UX product development research. At the same time, in such interaction between personas, conflicts emerge. Both shared and conflicting concerns are the most interesting results of our inquiry. This is why we have chosen to present our results in the form of a *fictional plenary discussion*. Unconventional as it may be, we were encouraged by the possibility of alternative submissions to the call for papers to use the genre of the plenary—even though it has been composed in English—to explore what new spaces of possibility can be created in the global DH community. On the other hand, for once, a diversity of these global, multilingual voices is actually recorded for the larger community, and we hope they provide it with a starting point for inclusive discussions about infrastructure and multilinguality.

There is a specific role to be played by the digital humanist in describing and modelling the design of workflows that assume multilinguality (and multiscriptural and multidirectional practices). This work cannot be left only to the tech industry and commercial interests. On the other hand, the larger community of digital humanists is not fully aware of the issues that multilingual users and communities face. In this paper we argue that one way this can be done most effectively in these early stages is by user persona creation.

UX persona creation for the multilingual DH community

As described in detail in their work on building and using personas, Adlin and Pruitt define personas as “fictitious, specific, concrete representations of target users” (Adlin

and Pruitt 2010, 1), which can have many benefits for user-centred design processes. While we are aware of the criticism of the creation and utilization of user personas (Salminen, Jung, and Jansen 2021, 49–51), when the process of UX persona creation is done creatively and in dialogue with the larger community (cf. Coorevits et al. 2016, 98), it can “make assumptions and knowledge about users explicit, creating a common language with which to talk about users meaningfully.” Finally, personas “engender interest and empathy toward users, [...] in a way that other representations of user data cannot” (Adlin and Pruitt 2010, 1).

To form our first dataset, our work of UX persona building originally began in 2020 as part of the Disrupting Digital Monolingualism conference (King’s College London 2020). Using our own professional networks and social media, we distributed a survey for multilingual DH practitioners regarding issues they have in their work when it comes to languages other than English. We engaged with original participants of the survey, and added notes from discussions with additional colleagues and an open community consultation in 2021. We detail the process by which we processed the data of the survey and the consultation elsewhere (Horvath et al. 2024).

Focused on critical literature in persona design, we chose the method of “data-based personas” (Hixson and Parrott 2021; Nielsen 2019; Quesenbery and Szuc 2011; Marcus 2006) as a first, basic step. We excerpted portions of the data, anonymizing them for language or any recognizable personal information and identified themes and categories. Afterwards we combined them with the “ad hoc persona” method, using information drawing on our own experiences (Babich 2017b), and then finally we narrativized them by storyboarding job descriptions, educational and community experiences which correspond to the persona. The co-authors of this article discussed the draft personas, refining them multiple times to reflect the real-life needs of DH practitioners. We included these personas as part of a pre-circulated draft paper in an alternative conference session entitled “Towards Multilingually Enabled Digital Knowledge Infrastructures: Discussing the Role of the Digital Humanist” (Horvath et al. 2022) at DH Unbound 2022. These user personas constitute our second dataset (Horvath et al. 2023).

From our experience in our institutions of higher education, there is an urgency in creating this common language with regard to the structural needs for doing DH across the complex set of stakeholders, ranging from scholars in different stages of their academic career to librarians and GLAM practitioners. It is this urgency that initially encouraged us to turn to personas to understand the various stakeholders in DH practice, and we are aware that our contribution has only begun to describe that larger

community. We have addressed here neither data services and IT staff nor research software engineers, for example. And yet, the work of persona creation constantly led us back to the interconnectedness and collaborative nature of their work, to the specificities of multilingual academic life, and to the power dynamics of university knowledge production. We realized that while individual personas can help shed light on issues about the incompatibility of certain language sets held by multilingual researchers with basic digital workflows, the profiles do not adequately demonstrate the social dimension of DH research. By “social” here we mean how available resources are allocated for DH projects, as well as how appropriate skills are found, the extent of belonging and inclusion of different multilingual practitioners within global communities, the status of employment of these multilingual stakeholders in academia, as well as the extent of equal participation they are afforded.

In order to put our multilingual DH personas into dialogue, we drew on alternative techniques of creating personas known as the Living Lab methodology (Piller and West 2014; Schuurman 2015), since, as Coorevits et al. argue,

personas can no longer be seen as a standalone technique to understand users and their needs. Interactive coupled open innovation such as the Living Lab methodology can provide structure to this process by performing user research and bringing personas to life as real users or participants in the development process . . . refining and validating persona and scenario assumptions based on quantitative and qualitative user data [and driving] product requirement specification based on personas and scenarios. (Coorevits et al. 2016, 99)

We use personas because they allow us to typify large groups of multilingual users, and we have turned to Living Lab methods because the personas and their overlapping, and sometimes contradictory, needs come into focus. The question remains, however, what mode of dissemination in the larger DH world will “disrupt digital monolingualism” (Spence 2021), shedding light on multilingual community needs.

UX researchers create a wide variety of “deliverables” beyond user personas to disseminate their findings. Commonly found are visual outputs, such as user flows, experience maps, storyboards, use cases, moodboards, or wireframes (Babich 2017b). The commonly stated purpose for UX genres is to build empathy for the different kinds of users, and yet the specific form of the deliverable can accomplish this in different ways. Of the various outputs mentioned above, it would seem that storyboarding comes closest to capturing the hands-on nature of DH work (Babich 2017a). It is a

narrative-driven, visually organized, and human-centred technique. In their execution, however, storyboards still focus on the individual or on limited interactions between different users or stakeholders. We felt that at this point a deliverable more familiar to academic audiences was desirable so that we can feature our multilingual DH personas. It is the familiar event of the plenary that we chose to develop here.

The idea of the following fictional plenary between DH practitioners working in many different languages other than English came to the co-authors of this paper, following the DH Unbound 2022 alternative session. As described above, the session was the result of an extended process of both data-driven and theoretical discussions. We began our session at DH Unbound by “performing” these personas, reading aloud interviews between three of the co-authors of the draft paper and each one of the personas (Auslander 2015; Isager and Moestrup 2021). This performance was followed by a discussion with the attendees of the session. With participant feedback we enhanced standard user persona creation practice, following the example of the Living Lab, by putting them into dialogue with each other, rather than having them speak in isolation. Crafting a fictional plenary from data-based personas not only allowed us to sharpen the personas, but also helped highlight the socio-cultural challenges of multilingual DH.

Introducing the plenary panel

Although the notion of a keynote and a plenary session in the academic world may be used somewhat interchangeably to refer to an invited speaker who provides a kind of motivating speech or a talk opening up new lines of thought, for our purposes we use the idea of a plenary in a somewhat conservative sense of the term, as representing an opportunity for a number of voices to come into play. In the strict sense of plenary (*plēnārius*), we wanted to make sure we enacted, albeit fictionally, a whole audience of a conference coming together. A plenary is not meant to be the last word on the topic.

In our opinion, the majority of researchers on the globe work and live multilingually, and their digital cultural practices are no doubt shifting and evolving. In authoring the plenary discussion, we asked ourselves repeatedly who we are representing, how we can steer a conversation about so many languages and scripts in such a diverse community, and how we can push this conversation forward when so often questions of multilinguality do not sit at the centre, especially when they are related to computing.

Below we present the “transcript” of this fictional plenary panel by first inviting the six personas to introduce themselves, followed by a moderated discussion. As

will become clear, the six personas represent individuals of diverse linguistic and professional backgrounds, revealing some of the key concerns that characterize their experience with what might be called multilingual DH. The discussion features a doctoral student, an assistant professor, a senior professor, a subject liaison librarian, an independent scholar, and an academic technology specialist and is moderated by a lecturer in Southeast Asian studies and DH, who is familiar with challenges of doing DH in a non-Anglophone context.

Transcript of the plenary panel

Moderator: Dr. Narin Ong, Lecturer in Southeast Asian studies and DH

Narin Ong (moderator): *My name is Narin Ong, and I am a lecturer of Southeast Asian studies and digital humanities. Today we are honoured to have a number of guests at our hybrid plenary session for the Digital Multilingual Infinite Conference (Finland, 2022). Participants in today's plenary include Olivia Reyes, Dr. Nisreen Serdar, Lisa Müller, Dr. Jim Ouradnik, Benoit Morton, and Marzuq Chafik. Thank you all for coming! Today's panel will revolve around the possibilities and realities of handling digital research infrastructures in multilingual contexts. We aimed to invite scholars of diverse backgrounds to address the multifaceted challenges and insights of those involved in working with texts in various languages.*

First of all, let me ask all of our panelists to briefly introduce themselves and their involvement in DH.

- **Olivia Reyes:** *My name is Olivia Reyes, and I am a PhD candidate in East Asian studies. More specifically, I mainly work on premodern Chinese literature written in classical Chinese. My first encounter with digital humanities occurred when I found out that some texts I needed, but were not locally available, existed in a digitized and open access format. I have since used such services often, particularly when I was short of funding or could not travel internationally. I have gradually become interested in digital tools and methods to incorporate distant reading into my work, but my relevant skills and abilities, particularly regarding coding, are quite limited.*
- **Nisreen Serdar:** *I am Nisreen Serdar, and I recently began a position as assistant professor of Middle East history. Besides using digital platforms for knowledge sharing, such as my own blog and content management systems, I have tried to transcribe manuscripts in order to analyze texts with ambivalent results. I am a*

native speaker of Arabic and Kurdish, but I also work with materials in Ottoman Turkish, Turkish, Azeri, Persian, French, and German as well.

- **Lisa Müller:** My name is Lisa Müller, and I work as a subject liaison librarian for East Asian studies with a special focus on Japanese studies. My daily tasks include the acquisition, cataloguing, classifying of printed and electronic media as well as offering training information and digital literacy. I have experience in metadata handling, such as authority databases, but also cataloguing rules, transcription rules, subject indexing and information and digital literacy training. I would like to further develop my DH-related skills to be able to work with metadata for DH tasks, such as corpora construction, text analysis, OCR, project management, archiving, and rights management. This, however, would certainly require significant time, and it is not an immediate priority for my institution.
- **Jim Ouradnik:** Jim Ouradnik here. I am professor of Slavic languages and literatures at what we call a liberal arts institution in the United States. I am mostly interested in twentieth-century Russian literature and its reception in Slavic countries. My institution was gifted some 500 rare books written in a number of different Slavic languages and scripts, and I have been asked by the development office to help design a proposal for a digital library project to showcase these books. Besides some experiments with OCR earlier in my career, this is essentially how I came to DH. I am trying to publish digitized versions of the books along with metadata and plain text transcriptions in downloadable PDF form. I am currently figuring out the most effective way to work with computer science professionals and my students to facilitate the accomplishment of this goal.
- **Marzuq Chafik:** I am Marzuq Chafik, and I currently work as what one might call an “independent scholar,” outside the formal academic system. I am a native speaker of Amazigh but also work with sources in other African languages. I am interested and involved in heritage studies and am developing a private database mixing textual and visual sources without the need to code.
- **Benoit Morton:** My name is Benoit Morton. I have a background in computer science and Japanese studies, and in my position as an academic technology specialist I get to combine and make use of my diverse interests. I use Python, JavaScript, and Ruby on a daily basis and am currently also exploring R. I frequently solve technical problems and develop scripts for project-specific text analysis processes and for bespoke visualizations. I also contribute to the creation of interactive and effective websites to showcase DH projects carried out at my institution. I regularly

collaborate with scholars on projects based on various languages, quite a few of which I personally do not speak or read.

Narin Ong: *Thank you very much. First of all, to get us started, it would be useful to discuss what you think constitutes a multilingually specific problem in your case and what concrete digital steps you have tried, even if they seem small to you.*

- **Olivia Smith (PhD candidate):** *I would say that one problem for me is the digitization of classical Chinese texts due to the high level of variety in the characters used in many texts. The process becomes even more difficult when working with handwritten texts. A number of characters are not part of the standard text input systems, making manual correction also challenging and time-consuming.*
- **Marzuq Chafik (independent scholar):** *I routinely work with various African languages and would like to publish in the native scripts that I encounter. This may sound simple, but based on my experience, the African language texts I often work with are not supported by Unicode. Being able to type properly in these languages would make the digitization of written sources easier. The limited scope of scripts that are currently digitally supported really does a disservice to communities who would probably need these services the most to preserve their heritage. Particularly important here are communities of endangered languages.*

Narin Ong (moderator): *Do you feel you have to invent your own system to solve these issues?*

- **Nisreen Serdar (assistant professor):** *I have some basic coding skills, but I would particularly benefit from effective existing tools for digital transcription of manuscripts copied in right-to-left scripts. I am sure we will talk more about concrete problems related to digital research infrastructures, so at this point I will simply answer your question affirmatively: I certainly feel I need to invent my own system if I want it to work for my purposes.*

Narin Ong (moderator): *What kind of specific training or staff experience could improve the situation of multilingual research in your university? Can I address this question to each of you, Benoit and Lisa?*

- **Benoit Morton (academic technology specialist):** *My main concerns here are the diversity of multilingual DH needs found at a single institution on the one hand and the small staffing of academic technology specialists with expert knowledge in non-Latin scripts on the other. Because I can also read, write, and speak modern*

Japanese, the faculty often expects that I will be able to find solutions for other non-Latin scripts as well or for historical states of language I am not familiar with. This is sometimes frustrating for me, as I have to look for workarounds or other suitable experts, and I do not know that some solutions might already exist. So, in my opinion, we have to lobby for more staff with non-Latin script expertise in hiring processes.

- **Lisa Müller (librarian):** *I set high hopes on networking and connecting the marginalization of non-Latin scripts in knowledge infrastructures in the emergence of the topic of “decolonization”: I have joined a transregional working group exploring how we might work to “decolonize the library,” addressing systemic digital monolingualism in library infrastructures and the revision of discriminating language use in subject headings, classifications, and authority file databases. We need more voices present in these discussions; there is power in numbers!*

Narin Ong (moderator): *If I understand it correctly, what I am hearing is that you are expected to deliver much more than you are able to do right now. Even though you are willing to create your own tooling or workarounds, you are yourself waiting for big tech companies to improve foundational technologies. Thank you for that insight. I believe we have a question from the audience.*

Rima Keblaite (audience member): *I am an undergraduate student and am a double major in computer science and Hellenic studies and have also taken classes in media studies. So, I have coding experience and can also speak several languages. I would like to pursue a career by combining these skills and I am wondering if you had any suggestions about how to continue my education along these lines?*

- **Benoit Morton (academic technology specialist):** *Speaking for my own line of work, I can tell you that you would need to invest fully in the CS side of things. The unfortunate thing is that formal academic education (and, for that matter, online course materials) have an almost perfect disregard for the kinds of intersectional work you are thinking of. You will be fully trained and expected to work with Latin script, the common era calendar, plain text editors, the supposedly seamless standards for localization and internationalization of the W3C, and every other type of computing philosophy that emerged from contemporary, Anglophone culture. There is absolutely a need for people with your skills and ambitions, but unfortunately for you it means you will need to put in twice the amount of work to become fully skilled and valued as a computer scientist and to seriously understand and be understood by the discourse of your humanities field of choice.*

Narin Ong (moderator): *I can see how that perspective can be very real when you straddle disciplines. From there, perhaps we can move to the second topic of today's plenary: digital multilingualism and resources. How might digital research infrastructures help your work?*

- **Benoit Morton (academic technology specialist):** *The humanities rely on language and text to express their thoughts, research questions, results, etc., and as we all know there are more languages than English out there in the world. Moreover, our universities are hankering for more international collaborations, and joint research projects with foreign universities. But from my collaboration with a diverse community of humanities researchers and students, I see firsthand major difficulties in accommodating other languages than Latin-script-based ones in digital environments. A number of researchers approach me with issues related to directionality or Unicode encodings, many of which are still problematic in all research infrastructures on offer at our university. What is more, it would be of great help if there was more compatibility between platforms, or at least at one institution like my university. This would help create more systemized and normalized solutions and even facilitate reproducibility. This would also help to increase my capacity for instance to develop more tutorials and help more people with issues in multilingual DH.*
- **Jim Ouradnik (professor):** *Basically, the project I spoke about when introducing myself—the digital library of rare books in Slavic languages—completely depends on the existence of digital research infrastructures, although I don't think we use that term in the US. For one, my college does not have a digital scholarship centre, nor does the library have a digitization studio, so I have to figure out on my own how to make digital photos at home and to get ABBYY FineReader to transcribe the texts. All this would be facilitated by in-house expertise, but our college does not belong to the kinds of consortia which have been mentioned today. Dealing with all early modern fonts is really quite challenging. There are some user-friendly tools out there that do not require extensive coding skills, but the scholar who developed it isn't updating it. I ended up enlisting my son, a software engineer, to update the code and to help me come up with a workable solution. Of course, this is rather an individual option, a personal digital research infrastructure you might say, so having some sort of a best practice available to all would be helpful and more sustainable for future purposes.*

Narin Ong (moderator): *Building on these insights, could one of our other panelists give us some examples of resources you might want to have access to in order to carry out your work in historical and contemporary non-English languages?*

- **Olivia Reyes (PhD candidate):** *I can. There are accessible digitized materials for classical and modern Chinese, and some software, such as MARKUS for textual markup and visualization in Chinese and Korean. Ctext.org, a rich open access platform for classical Chinese texts provides machine-readable corpora for textual analysis too, but its focus is predominantly on philosophical and historical texts, whereas I am mostly interested in women's literature. Organizations and institutions with state-of-the-art infrastructure and financial support can create substantial corpora for digital studies, but for a graduate student like me, this is not really feasible, particularly because manually correcting all the errors of the OCR would be exceedingly time-consuming. For beginners and graduate students, using already available digitized texts can be a more efficient way of including corpora in their projects.*
- **Marzuq Chafik (independent scholar):** *Honestly, from my side, I feel like I am entirely reinventing the wheel for my own literary heritage. This is frustrating. At the most basic level, I think I would benefit already so much from having a platform to discuss practical issues I run into with others who do similar work. While I sometimes benefit from large-scale digitization projects such as those carried out by Google and Microsoft, and hosted at the Internet Archive, I typically have a hard time discovering these items as the metadata is almost nonexistent. If I am lucky enough to find an item, it often turns out that the wrong edition was scanned. In my culture some classic texts have been edited and published multiple times, but you find only one edition digitized. Often it is the wrong one, for my needs. And I better not start on the dearth of OCR technology for my scripts.*

Narin Ong (moderator): *These are all very realistic perspectives. Thank you. Would someone else like to discuss research infrastructures you would like to adopt, something that would make your work smoother? What kinds of engagement in DH do you suspect would work best for you?*

- **Nisreen Serdar (assistant professor):** *I have a significant amount of research data relating to the premodern Middle East, mainly on Ottoman-Safavid relations. Identifying texts is thus not really a problem for me, but building a suitable, clean, and machine-readable corpus for DH purposes has been very stressful and time-consuming. Transcribing texts, in particular, has been a hassle, and (based on my experience) finding existing digital tools that could handle manuscripts in my research languages (and right-to-left scripts in general) has been very difficult. I have colleagues who are engaged in DH, but they are mostly at a stage in their career when they have more flexibility and can also hire student assistants to*

contribute to their projects. The DH group at my institution has shown interest in my projects and mentioned to me that I could have a serious chance of securing grant funding for a digitally enhanced project from them. This might sound wonderful, but as an early career scholar, I need to focus on building up my publication repertoire, teaching as an instructor of record for the first time and completing my habilitation within a set time frame. Therefore, organizing a collaborative project, which would be necessary given the workload that DH initiatives entail, is simply beyond my capacity. Not to mention, due to the relative lack of well-established and ubiquitously used criteria to evaluate DH projects, I am not convinced that my efforts would be properly rewarded.

Narin Ong (moderator): So, some of the things you are speaking of would be tools and platforms that can be used across many disciplines, while some are subject-specific, and would actually hurt from being multi-purpose developed. I believe we have another question from the audience.

Dominic Kim (audience member): Thank you. I am a computational linguist and I have been keenly listening to the discussion as it seems very relevant to my field as well. This is partly a question and partly a comment: Do you think normalization or the creation of some sort of standard practice for different languages should be a goal in DH? I can relate to what Olivia said about the need for concrete platforms to share best practices. I often find myself having to create ad-hoc workaround solutions for my projects. Since coding constitutes a part of my daily work, I would take what Olivia mentioned a step further and would suggest that beside basic programming tutorials, maybe having a platform that scholars could use if they want to conduct certain workflows would be helpful. Since I work with a variety of different languages, some resources about what specific challenges for working with texts in particular languages could help experienced programmers get a better sense of what to expect and what to pay attention to. We might call this document a kind of requirement profile for specific languages. Such materials could probably support the work of research technology professionals like Benoit as well. Listening to the roundtable, I realized that we, whether our background is in the humanities or in computational linguistics, share numerous challenges regarding handling under-resourced languages in a digital context. More concerted efforts in knowledge exchange could help us identify points of collaboration. For example, I'd be interested in creating standardized packages to facilitate the production of clean datasets in under-represented languages; this is something that I think humanists would also benefit from.

Narin Ong (moderator): Thank you for your comment. Perhaps we can move on to the third part of the plenary concerning digital multilingualism and needs and support of the

community. Do you have support from your PhD supervisor and/or department? Do you think it is harder to garner the support of a PhD supervisor or a department to do digital research with non-English materials than it is, say, with English?

- **Olivia Reyes (PhD candidate):** *Active involvement in or at least openness to DH methods from the supervisor's side can help identify potentially available resources or could even provide opportunities to get involved in collaborations where students could develop programming skills and the usage of existing software. But maybe the more senior faculty participants on this panel can address this question more effectively.*
- **Jim Ouradnik (professor):** *I have been teaching in an undergraduate institution for many years now, so my supervision of doctoral students has been somewhat marginal in my career. For students in their bachelor's degree, involvement in digital work for a senior thesis or capstone or demonstrating connections between their research and existing research projects have proven to be very beneficial for their acceptance into MA/PhD programs. It is a definite plus. On the other hand, as an external examiner for doctoral students, I have noticed the opposite to be true for Slavic studies. We see some qualified candidates who have computational skills and who essentially use them in private. The methodological side of their work is almost never given a prominent focus in the thesis itself; it is as if the advisors find it interesting, but irrelevant, and possibly off putting for the candidacy of the young scholar on the highly conservative academic job market. It is a shame since if digital methods were considered part of the scholarly contribution, we would probably move forward in that domain. Instead, the graduate students I have seen have been encouraged to write about interpretation and results.*

Narin Ong (moderator): *What is something in your workflows you have tried to do that does not work with your research languages?*

- **Olivia Reyes (PhD candidate):** *My encounter with DH hit a snag because I was not able to properly digitize all the (mostly handwritten) archival materials in classical Chinese that I would need to begin experimenting with textual analysis. The OCR software at my disposal failed to digitize premodern Chinese materials accurately, and manually correcting all the errors of the output seemed too time-consuming. On the other hand, I did complete an introductory DH course at my institution, offered through the English department. It helped me explore the state of the field, but many of the tools and the examples mentioned in class were not applicable to Chinese. I was not even able to segment my Chinese text imitating the exercise in*

class using English language texts. So essentially, the unavailability of machine-readable sources makes me doubt the usefulness of learning to code, since I would likely not be able to actually put my skills into practice without a corpus reflecting my interests.

- **Nisreen Serdar (assistant professor):** Like Olivia, I also think that transcribing or OCRing premodern Ottoman manuscripts would be a prerequisite to any text analysis project, but it constitutes a challenge. Others have tried to come up with workable solutions, but they haven't really caught on. I have also tried to blog about my work but was always frustrated by how content management systems could not handle my research languages. This forced me to resort in the end to images or PUA webfonts.

Narin Ong (moderator): When you work at a large research university with many different languages being studied, how do you prioritize the needs of different multilingual users?

- **Lisa Müller (librarian):** This is a good, but difficult, question. At the library, our mission is to cater to the needs of all our faculty, students, and staff. My patrons in Area Studies belong to a flagship department for the internationalization strategy of our university, as they not only read literature from non-Anglophone areas in original scripts but also collaborate with research partners in the Middle East North Africa (MENA) region and East Asia. Before I can prioritize their individual needs, my daily, and often frustrating, tasks include making sure that the basic infrastructures for research and accessing sources such as our library catalogue discovery system or the institutional repository accommodate non-Latin scripts properly, or at all. This involves understanding how search algorithms handle non-Latin scripts and finding out whom to contact and lobbying for change. Just yesterday, I received a note that WorldCat has redesigned its interface, deprecating the romanized version of author names and titles in non-Latin scripts. This is a huge burden for the findability of sources for instance in Japanese, and frankly a huge data loss, as characters in use for names can have multiple readings, and without a transcription, it is not possible to clarify how any given name is pronounced. Also, meta-catalogues tend to neglect non-Latin script fields of databases, prioritizing romanized fields. Given the situation of WorldCat, you can see the growing disconnect, as literature in non-Latin scripts will now begin to disappear in the jungle of digital Anglophone knowledge infrastructures. One last overlooked example would be the keyboards in our library building. Catalogue thin-clients do not allow typing in Chinese, Arabic or other non-Latin-scripts. . . . What I want to

say is, in collaboration with other area studies information specialists, I try first to make sure that the most basic digital needs are met for my patrons. Then I try to prioritize the needs of early career researchers, as they have the least resources and time and are the most precariously employed.

Narin Ong (moderator): Certainly prioritization of tasks is difficult work, indeed. Thank you. My last question in this section involves digital multilingualism in publicly funded cultural institutions. Perhaps you would like to comment on how openness of such institutions intersects with the needs of a larger multilingual community, Marzuq?

- **Marzuq Chafik (independent scholar):** Thank you for the question. This is, indeed, an important issue. Imagine in societies like my own where the recognition of multilingualism has been a long struggle against the colonization of knowledge by European languages. We hear so much from the top, and from the political sphere, about the importance of historical languages in our community, but we cannot go into our national library or public institutions and carry out basic digital tasks in those languages. I spent a significant amount of time in academic institutions, and I appreciate the concerns raised by my colleagues, but there are also the daily concerns of literate people in society at large who may be involved in research, knowledge work, or simply participating in digital culture. Their lives are increasingly affected by pervasive technology, and they hear about the promise of access to information. Why is it that there are so many persistent borders to the larger community participating in the creation of that knowledge with public institutions in our own languages? I think you would be surprised by the numbers of people who are willing to contribute their own time and effort.

Narin Ong (moderator): Thank you for this important comment, Marzuq, that I am sure resonates with many of us. In our next section, I would like to move to the question of collaboration. What does collaboration mean to you? More specifically, what would the ideal cooperation with a faculty member look like? For this question I have in mind Lisa and Jim, but anyone else can contribute their opinion.

- **Lisa Müller (librarian):** From my point of view, an ideal collaboration is a participatory process with an early involvement of the subject specific liaison librarian (or “research/data librarian” or research software developer) into any project. Digital transformation requires me as a “supporting staff” to be a “lifelong learner,” constantly understanding, even anticipating, what multilingual DH

researchers and students want to do digitally and where I can support accessing interesting data or helping to build databases with data in non-Latin scripts. Therefore, I would wish to be involved early on in the project planning process already in order to be able to understand how I can contribute to the research questions and methodology and in order to find a “common language” between researchers and information specialists. The opposite of an “ideal collaboration” would be to be contacted later in the project when the researcher asks me whether our institutional repository could store their complex database or whether I could provide a good OCR text recognition tool for their digitized handwritten material. What I am suggesting is that an ideal collaboration includes co-design.

Narin Ong (moderator): Jim, how do you envision the collaboration of students in projects?

- **Jim Ouradnik (professor):** Due to the sheer size of my current project, the role of students is crucial for the success of the process. Our goal is to create a digital library project with the images of the 500 rare books in diverse Slavic languages. We have funds that allow us to hire student assistants to work on the digitization process. Of course, this will require adequate training as well, particularly regarding the input and meaning of metadata and the verification of accuracy for the transcribed texts, and this kind of training can be difficult when our students do not always have the requisite language skills for such work, and we do not have a specialized bibliographer at the library. Participating in such projects fosters collaboration in an institution, it provides meaningful remunerative work for students and can provide them a sense of success in contributing to a larger initiative with broad significance. There is a delicate balance between offering meaningful work to students in our context and assuring that project work gets done.

Narin Ong (moderator): Marzuq, what other projects or people in your community exist who might be able to contribute to multilingual scholarship?

- **Marzuq Chafik (independent scholar):** The emergence and increased popularity of public humanities certainly helps foster connections between scholars inside and outside of formal academic institutions. However, a lot of resources, grants, and some relevant training are often still only available to those with academic affiliations, and even if they are open to “outsiders,” taking advantage of them would require significant financial contribution from my side. On the other hand, for projects in area studies, launched on the other side of the world like the one Jim just mentioned, they are often lacking in knowledge workers with sufficient

language skills. I think there is great promise for collaboration between such research and publics of native speakers located in other places. Of course, questions of equity and inclusion in the creation of knowledge arise when we work across borders.

Narin Ong (moderator): *What are your or your institution's strategies for finding experts who might know something about the languages people approach you about? Perhaps this one is for you Benoit.*

- **Benoit Morton (academic technology specialist):** *Normally, area studies specialists with high-level language skills approach me themselves with a project idea, and I help them with the technical, mostly programming, part of the process. But the lack of adequate language skills from my side often makes it challenging for me to see the effectiveness and significance of my work. From an organizational point of view, I am afraid that I am not aware of a specific strategy to hire more permanent research software engineers with expertise in non-Anglophone languages and scripts who would support more diversity and multilinguality on campus. Jim mentioned finding students with language skills, but of course, this is really just a stop gap. Specific positions like subject librarians for area studies in the library or for specific faculty research projects will be filled—the latter mostly only as temporary positions. From an infrastructure management point of view, it is my impression that languages other than English (and maybe French or Spanish) are considered by many to be “edge cases” in terms of the majority of scholarly needs in the Global North. Therefore, I cannot see a “strategy” to think about that differently—unfortunately.*

Narin Ong (moderator): *In the last part of the roundtable, let us think about the assessment and future of multilingualism in the context of digital research infrastructures. How would you situate your DH scholarship in your career?*

- **Jim Ouradnik (professor):** *I can take this question. Speaking as a late career participant here, perhaps I can answer this most easily. I have spent decades in academia producing mostly single-authored scholarship based on what DH practitioners would refer to as “close reading.” I first started to use digital tools for sharing my projects online. Now I am in the position to build up a large-scale DH project in collaboration with computer science specialists, largely because my institution allows me to carry out the work I deem important. As I mentioned above, I see this as a way of involving undergraduates in an initiative with a*

broader significance. Thus, for me creating this digitization and annotation project for Slavic languages means doing something not only for my career, but also for the greater good, hopefully encouraging others in the field to experiment and build on it. Ideally, I envision this database becoming part of my institutional library's collection after my retirement.

Narin Ong (moderator): Do you think that DH can change the way multilingual humanists work?

- **Jim Ouradnik (professor):** Well, DH is very complex, and one can use such methods for different purposes. From my perspective, digitization of rare sources can help expand access to these materials, which can make their study more inclusive, so this is certainly an advantage. On the other hand, even though DH seems finally to be catching on, a gap is widening between those who work on well-resourced languages and those who work multilingually. I think that the faster tools can be developed or improved to meet the demands of humanists who may or may not have high-level coding skills to make DH work for their purposes, the more change we may see.
- **Marzuq Chafik (independent scholar):** DH can certainly contribute to the preservation, processing, and analysis of existing source materials and the cultural heritage of social communities. However, considering the rapid development of new technologies and DH methods, I am personally worried that technology may surpass me at some point, or worse yet, DH for some languages will grow increasingly sophisticated, but for others will proceed only slowly, or even subside. I am not yet certain about the consequences and realities of this issue though.
- **Nisreen Serdar (assistant professor):** DH certainly has significant potential, but I think this goes beyond the real or perceived boundaries of what we might call multilingual humanities or multilingual DH. Many of the questions and problems we have discussed today are really not multilingual-specific but are more related to where the humanities are going in general. In this sense, while I agree with my colleague from Slavic studies on the need for tools that perform better, I also think that DH can potentially change the way we think about scholarship and research processes in the humanities. It can encourage us to reconsider what questions we ask and what we consider an accomplishment—and whether that accomplishment needs to be achieved individually. This also means rethinking not only our existing methodological toolkit for research, but also that for performance evaluations and the reward system of the academy. Whether this happens at the

same speed in different language environments, or at all, is not necessarily just about multilingualism, but about existing institutional and power dynamics and our general understanding of what humanistic work means.

Narin Ong (moderator): *Thank you very much, Nesreen. That is a perfect place in which to end our rich conversation today. I would like to ask the audience to thank all of today's participants for their contributions.*

Carrying on the persona-building process

Our intention in this article has been to open up some space in which to see global language diversity through a wider lens, and to begin to grasp the basic challenges that users of those languages face when integrating digital practices. For it seems to us “multilingual DH” has so far been used too narrowly, in exclusive reference to the support of seamless exchange between European languages, in particular the Germanic and Romance languages. The discourse within DH, as well as GLAM and commercial stakeholders, can be quite naive when it comes to basic problems faced by so many millions of users of languages in the world, especially non-European, non-Latin-based ones. When scholarly practices are involved and historical versions of those languages enter the picture, the problems are exacerbated. The comfortable intra-European multilingualism we are most used to experiencing would find the lived reality as described in our plenary inconvenient. In a community which outwardly values interoperability, reproducibility, as well as collaboration and international partnerships, this disconnect passes in silence.

Two steps were crucial for us to undertake this endeavour: first, interviewing a wide range of people who work with different languages in digital environments, and second, shaping from those interactions a set of UX personas roughly based upon them. The personas that have been presented here are but a basic starting point in understanding this wider world.

We think there are four main takeaways to carry on the persona-building process.

Firstly, we have attempted to show the sheer breadth of the problems at hand. The people facing daily issues with multilingual digital practices make up a far larger proportion of the current (and future) DH community than commonly understood. We have made this point a number of times already in this paper.

Secondly, we have implicitly argued for turning away from official multilingualisms towards a more personal, research-based combination of languages. With official multilingualisms, we mean the recognized multi-language nature of a nation state,

especially in its institutionalized form. On account of their official capacity, there are governmental and political reasons to ensure all sorts of compatibility, including within the digital world. Such multilingual needs are easily perceived and understood, and fortunately developed to a highly polished level by companies. Because of the UX perspective that we chose, we can speak quite directly to commercial stakeholders who typically involve UX design to shape their products. In contrast to prevalent sentiment within UX design discourse, we think the user experience is only truly expressed at the lived, gritty reality of everyday persons, to be reached not by political agreement but by prolonged conversations, research, and dialogue. Personas emerging in response to multilingual problems can, therefore, not make up simply one persona per officially sanctioned language. No, it is the different research-based combination of languages, and the various professional positions, that ultimately can decide how many and which personas one needs.

This brings us to our third takeaway, namely that multilingual DH practices are not only linguistic problems, but rather infrastructural, socio-technical problems. Indeed, it is particularly true for the scholarly context about which we primarily speak that participants have got their multilingual needs, knowledge, and know-how fully covered. No one needs to tell Nisreen how Ottoman Turkish and Azeri can be found within one source, nor how these languages and their scripts behaved differently four centuries ago. And when it comes to modern fiction, Jim knows more about any Slavic language than the average native speaker. Nisreen and Jim and nearly any participant of the digital humanities are the experts in the linguistic, philological, paleographical, and codicological sense. But their skills are attuned to their source material as it emerged in real life, whereas they find themselves more and more engaging with the digital twin, whether it be a digital image or digital plain text. On one hand, this requires more training on their part to become proficient in handling digital source material (cf. Van Lit 2020), but on the other hand, as Marzuq and Benoit show in particular, even with all the digital skills in the world we are running up against profound issues. Problems that are, from a humanities-scholarly point of view, very basic are currently technologically unsolvable. In our estimation, to achieve high-level, stunning DH results for fields outside of European history and literature, it is not enough to train scholars on existing technology. Part of the responsibility falls on the infrastructure, which will have to move in order to facilitate its users' needs.

Fourthly, we have designed our fictional plenary as a snapshot of conversations in the early 2020s, designed as a benchmark for future conversations. In paleontology (at least in its popularized portrayal), there is a pernicious problem that with every find of a missing link between a younger and an older fossil, two new missing links emerge,

one between the younger and the new find, and the other between the new find and the older fossil. A similar problem arises when we consider representation and inclusivity for multilingual DH. The very fact that we try to disrupt digital monolingualism by writing in English can be rightly called odd. That we, the authors, are all from “name-brand” universities may also be considered whatever the opposite of diversity is. But in answering that challenge we point out that this kind of work is supposed to be done “on top” of our regular—and often precariously terminated—job positions. There are still next to no tenured positions for DH outside the English, German, or Comparative Literature departments. Librarians for non-European languages are still required to cover vast areas of the world with dozens of languages, by themselves. The actual practitioners, from PhD students to independent scholars, rarely get the financial or technical support they need. In this overworked culture, it has been all too convenient to keep silent about the nature of multilingual DH. What started out as curiosity of the four of us on this topic, has turned into a responsibility to ensure a statement about it is made on the record.

Conclusion

One obvious way that we can deepen our knowledge of multilingual digital practices is to include other parts of the world and other institutions in which DH looks very different, is differently named, or is found at different points of institutionalization. On the other hand, we do not have to go far to find multilingual researchers who are struggling; sometimes in the academic world they are located just down the hall or in another department. Our reader may hear in the persona we have built here echoes of colleagues, friends, or acquaintances. One plenary does not give the last word on the subject, but rather as we suggested at the beginning of this article, multiplies the number of different voices in dialogue.

We offer in this article the persona-building process as a methodology for documenting and discussing the diversity of the larger DH community. Through additional interviews and new locations, we will no doubt add new dimensions, move beyond the familiar (but also perhaps exclusionary venue) of the international conference plenary, and deepen our understanding of multilingual practitioners and their work. After creating this fictional plenary, we look forward to refining our approach to UX profiles and the DH community, and to expanding our persona creation into new environments, into parts of the academy and knowledge infrastructure world we did not yet reach, and working out a more systematic process for gathering such information and disseminating it openly. We also look forward to discussions together to think about ways this might be done with an eye for both inclusivity, coverage, and

advocacy. As much as we like (and enjoyed) putting the personas into dialogue, there are potentially other genres than the plenary that we can employ that will have an impact on various communities: university administrators, digital scholarly infrastructure designers, members of scholarly and professional organizations. We trust that this method will be useful and productive for other teams, projects, or communities as well, who are looking to understand the stakeholders in their projects. We believe that there should be more opportunities for co-designing multilingual approaches to knowledge infrastructures, thinking through the “test use cases” and forging new ways forward together.

An example is the funding scheme of the national German Research Fund (DFG) entitled “Coordinating Roles and Responsibilities in Information Infrastructures” (VIGO). The aim of the scheme is “to support researchers and information infrastructure operators in taking on independent responsibility for creating solutions to challenges in the development and expansion of research-related information infrastructure and in safeguarding its operation on a permanent basis” (DFG 2022). For this purpose, “processes of self-organisation required for the creation of information infrastructures” are getting funded (DFG 2022).

The authors of this paper hope that by recording these imaginary voices in 2022—crafted from hundreds of interactions with colleagues—our readers will find favour in the idea that not only is the current status quo insufficient, and that issues of multilinguality need to occupy the centre of our attention in multicultural, multilingual contemporary societies, but that starting with setting up multilingually enabled knowledge infrastructures at universities in the Global North is only the beginning of a just and ethical way of addressing the urgency needs of linguistically inclusive digital culture. The answers to the many problems raised in the survey and the focus groups are not ones that will be found locally, but rather in and between the people who work within specific subsets of languages. We hope that our paper will help in launching that discussion.

Epilogue

In our epilogue we turn one more time to our personas to suggest what might have happened to them after the conference.

Marzuq’s native tongue was selected to become Unicode supported. People from Microsoft reached out to him, asking if he would give his expert opinion. Excited at first, Marzuq eventually became disillusioned by the process and the politics involved

in decision making. As a full proposal emerged, and after Marzuq finished the first rounds of interviewing for a position in Seattle, he withdrew, dismayed by the—in his opinion—wrongheaded decisions made and the idea of moving abroad. He has begun to speak with the national library about how best to connect with the community of Amazigh speakers and he does his best to involve youth in the expansion of his private database.

Nisreen got distracted by the tenure requirements soon after the Digital Multilingual Infinite Conference and focussed on getting her second book out. During the tenure evaluation, Nisreen was successful, but her chair shared with her that several of the evaluation letters solicited from colleagues around the world had expressed their disappointment that her book did not involve innovative digital methods.

Olivia took additional courses and workshops on DH and learned to code a little bit. By shifting attention to poetry, she was able to more quickly come up with interesting results using computational analytics. She started writing about her experience in the magazine *Digital Orientations*. She was offered a postdoc to help integrate basic analytical tools in an existing classical texts corpus.

Lisa has advanced to a higher job grade at the library. The plenary was the beginning of some collaborations with Benoit, which proved to be an excellent way to do some creative thinking and to build on things she wouldn't get approved (or even be understood) by the library management. In her higher grade, Lisa is nonetheless able to delegate some of her multilingual support to some colleagues in the area studies subject librarian's team. Eventually her work was noted and Benoit was hired on a part-time basis to perform technical upgrades on the library's digital infrastructure. She has written more about the script gap in library systems.

Benoit moved internationally to pursue the multi-year opportunity offered by Lisa in a German university. To pay the bills, he does linguistic analytics on large data sets for a lawyer's office.

Jim's retirement came earlier than the project was finished. There was not an obvious successor to the project, and he is still diligently scanning books and editing transcripts at his home with a budget from the grant to employ some students. The library has notified him that they need to upgrade the software platform he is using for security reasons, and that the next version does not support Glagolitic.

Narin was approached by a publisher after the panel, interested to find out more. In an email exchange about a collection of historical sources, they went back and forth on

what could be done and by whom. “This collection is not uniquely accessible through you anymore,” she wrote the publisher, “but the means of engaging with that corpus can be. It’s not data that is important, it is meaningful access to that data.” With help from Narin, the publisher set up a platform adopting the Living Lab methodology which has made slow but steady progress.

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The authors have no competing interests to declare.

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