

TOWARDS A FUTURE OF COLLABORATIVE MEDIEVAL STUDIES

IN THE FIRST three chapters of this book, we have examined both the scholarly motivations and the practical challenges of investigating a corpus of medieval manuscripts. In our case, it meant the involvement of digital and computational methods at many steps of the research process: reusing manuscript metadata, tracking down digitized manuscripts or in some cases on the fly digitization, AI model training to transcribe old handwriting, and computational analysis of the transcriptions. Throughout, we have invited our readers to consider the collective thinking and expanded skill set that has made it possible to assemble and analyze such a variable and geographically dispersed corpus. Mature systems for HTR and open-source toolkits in R and Python have freed researchers from building computational systems entirely from scratch, making it possible to focus more directly on the complexities of humanities data.¹ The significance of such tools lies in the ways they have reshaped how scholarship is both conceived and practised. By rendering new kinds of textual evidence visible at scale, digital and computational methods encourage iterative, team-based research, inviting a myriad of new questions that engage with larger trends in contemporary digital culture and the evolving ways evidence is mobilized and interpreted in academic inquiry. Medieval studies do not require computation in order to be interdisciplinary, of course, but it is increasingly obvious that platform-based, data-driven methods are shaping the conditions of possibility for transnational and funded, cross-disciplinary collaboration. Platforms not only enable the sharing and analysis of data across projects, but also set the terms for access and participation, influencing what kinds of questions can be asked and what forms of knowledge are most visible in scholarship.

In Chapter 1 we discussed the variance and disparateness of the corpus, and in the second, the intricacies of implementing a custom transcription system that preserves medieval abbreviations and letterforms and allows us to model how, and to what extent, scribes left a mark on the texts they copied.

I Van Erp et al., “The Future of Digital Humanities Research.”

In Chapter 3 we demonstrated how straightforward statistical approaches can be brought to bear on computer-generated transcriptions, analyzing the resultant transcriptions on a subset of Paris bibles produced in a historically documented setting in order to detect more precise scribal participation in the creation of these book objects. In this last chapter, we shift perspective, broadening our focus to reflect more generally on the role of collaboration in already interdisciplinary fields like medieval studies, with a particular focus on the study of manuscript cultures and the possibilities such collaboration might enable. We consider both the past of medieval studies and contemporary trends, arguing that computational medieval studies can benefit from critical reflection on both co-authorship practices and the evolving frameworks of the academic commons. Such reflection is not only retrospective, but also foundational, as we look forward: it allows us to envision more sustainable, equitable, and impactful forms of research and pedagogy, while actively valorizing the labour, infrastructures, and collaborative cultures that make such work possible—particularly within an academic system still shaped by persistent logics of individualism and prestige. A collaborative and interdisciplinary model of research in medieval studies in dialogue with contemporary research data cultures can foster broader impact within and beyond the field, extending its reach and influence for scholars, especially those who are committed to building an innovative, but also more inclusive, scholarly community.² Such inclusivity and influence do not arise naturally from data cultures, however, and we must adopt ethical practices that sustain the scholarly commons.³

In the first part of the chapter, we take a look back at publication cultures of a century of medieval studies, approaching them through a critical approach to the framework known as the “science of science” (SciSci). Using bibliometric data from 38,000 papers in medieval studies (most of them produced in a pre-digital, pre-computational context), we demonstrate that although co-authored, article-length publications remain relatively rare, they have gradually increased across subfields. Moreover, we demonstrate that such co-authored work tends to attract higher citation rates, registering visibly as a scholarly presence, but also necessitates different forms of

2 A portion of this chapter was presented at the 2025 conference of the Association of the Computers and the Humanities (ACH): Guéville and Wrisley, “Co-Authorship, Collaboration, and Community.” We would like to acknowledge the thoughtful comments of our five anonymous reviewers that helped us to reshape our argument.

3 Bowker and Star, *Sorting Things Out*; Risam, *New Digital Worlds*; D’Ignazio and Klein, *Data Feminism*.

graduate training in the humanities. Building on this long scholarly view, we fast-forward to the 2020s, and consider how digital platforms have opened new possibilities—not for publication, but for collective data creation. The move from our bibliometric study of co-authorship to collective data creation highlights a broader shift visible in digital scholarship: from analyzing the products of scholarship to examining and enriching the processes that generate them. Scholarly collaboration, in this sense, is not confined to article-length co-authorship, but also extends into the design, execution, and afterlife of data creation. Since our own computational approaches to medieval manuscripts have mostly centred on the transcription of textual content, we focus in particular on the rise of community-based training, emphasizing that its value depends not only on careful design and theoretical grounding, but also on the pedagogical framing of computational reuse of data. After considering the emergence of crowd-transcription projects in the early 2020s, we close the chapter by turning to the ways digital and computational humanists have elaborated the notion of an academic commons for sharing data and building upon the work of others.

The idea of a commons has particular resonance for the computational humanities, serving to consolidate shared resources for new forms of comparative analysis, reducing duplication of effort, and opening scholarship to a wider range of contributors. Its allure, however, comes bound to significant challenges, not the least of which is its integration into the pedagogy of medieval studies. To speak of a commons is also to raise questions of governance, credit, preservation, and sustainability, as well as to acknowledge the unequal conditions in which different scholars and institutions can contribute. In the age of AI, when data circulates rapidly across disciplines, industries and borders, a critical approach to commons-building is required—one that both accounts for the diverse audiences of interdisciplinary research and remains vigilant to the ways the expanding economy of generative AI threatens to appropriate and monetize shared, open scholarly data.

The dynamics we discuss in this chapter should be considered within the broader economy of scholarship, and digital scholarship in particular, both of which run the risk of commodifying their outputs while concealing the collaborative processes and labour that make them run. Despite the reliance of computational projects on teams of contributors—annotators, coders, designers, student assistants, librarians, volunteers—academic systems still can overemphasize, and reward, individual achievement and authorship. This tension reveals a deeper contradiction in the digital humanities: while it often champions openness, collaboration, and innovation, it can still be embedded in institutional cultures and technological systems that

undervalue, or even conceal, collective knowledge-making. When it does acknowledge collective labour, it can do so by consolidating existing research paradigms rather than offering innovative directions for reshaping the field altogether. We conclude this chapter, asking whether the computational humanities—a wave of research that turns to algorithmic analysis as both a tool and an object of reflection in humanities disciplines—will continue to champion such values in particular in medieval studies, and if so, how.

Working Together in Diverse Teams: Insights from the Science of Science

Over the past decade, a notable shift has taken place in academic research: collaboration and interdisciplinarity have been recast not simply as methodological choices, but as strategic imperatives for producing high-impact scholarship and a requirement for funding in many fields including the humanities. Collaboration is framed in some fields as an essential ingredient for generating high-quality outputs, reinforcing the notion that scientific value is increasingly being tethered to collective, cross-disciplinary efforts. But has this been the case for medieval studies? Emerging from this context is the interdisciplinary field known as the science of science (SciSci), which uses large scale data to examine the structures and incentive systems that shape the larger research ecosystem in the contemporary university.⁴ SciSci investigates the idea of scientific impact, the interplay between productivity and creativity, the conditions that make collaborations effective, and the influence of both failure and success on a researcher's trajectory. By analyzing key metrics, the field theorizes fundamental mechanisms driving scientific progress, notably how current research structures may privilege accumulation over innovation and stability over disruption. A widely cited 2023 study analyzing forty-five million publications and almost four million patents across six decades argued that, contrary to the idealized narrative of science as a forward-moving engine of breakthroughs, contemporary scholarship is increasingly unlikely to produce disruptive work that reshapes a field's trajectory across all fields of knowledge.⁵ This thesis raised uncomfortable questions about the structural conditions—bureaucratic, evaluative, and institutional—that govern modern research and that might inadvertently suppress transformative scholarship.

4 Fortunato et al., "Science of Science"; Wang and Barabási, *The Science of Science*.

5 Park et al., "Papers and Patents," 138–44.

On the other hand, some studies in SciSci have suggested that, although team-based knowledge production has become a default, special conditions are required for teams to destabilize entrenched ideas and open up new problem spaces. In an analysis of nearly twenty million papers over five decades, Wuchty and colleagues revealed that teams are required for complex, interdisciplinary and data-intensive work, and that their collaborative publications receive higher citation counts, a trend consistent across sciences, engineering, social sciences, arts, and humanities, yet such large teams tend to be risk-adverse, focusing more on incremental expansion of established knowledge and less on resetting the research landscape.⁶ Another study argued that the most field-shifting research blends conventional knowledge with unexpected, atypical combinations of ideas: the highest-impact papers not having greatest novelty, but blending novelty and otherwise conventional combinations of prior work.⁷ While such combinations are rare, teams are 37.7 per cent more likely than solo authors to introduce them, highlighting the role of collaboration in shifting a field. Although collaboration poses considerable challenges, a recent study demonstrates that what is known as “long-distance interdisciplinarity”—not the geographic distance of the researchers, but rather the integration of conceptually distant subfields—is associated with higher scientific impact.⁸ These findings, based on bibliometric and network analysis, suggest that engaging with knowledge beyond one’s primary discipline not only enhances the visibility and influence of research outcomes, but also opens up new research directions. A 2019 study nuanced these results, revealing that each additional discipline added to a research team increases research impact by approximately 20 per cent.⁹

Moreover, studies have suggested that the size and composition of research teams play a crucial role in determining the nature and impact of their contributions. A 2014 study examined articles published between 1900 and 2011 using three indicators: number of authors, institutional addresses, and countries represented.¹⁰ In fact, as collaboration has steadily increased over the past century, increasingly large and diverse teams are required to achieve the same impact. In 2019, Wu, Wang, and Evans’ analysis of over

6 Wuchty et al., “The Increasing Dominance of Teams,” 1036–39.

7 Uzzi et al., “Atypical Combinations,” 468–72.

8 Larivière et al., “Long-Distance Interdisciplinarity.”

9 Okamura, “Interdisciplinarity Revisited,” 1–9.

10 Larivière et al., “Team Size Matters,” 1323–32.

sixty-five million papers, patents, and software products from 1954 to 2014, concurred that larger, more diverse teams are instrumental in advancing scientific and technological discoveries.¹¹ They noted, however, along with Uzzi and colleagues that smaller teams are more likely to introduce truly disruptive ideas and novel opportunities. This SciSci literature on team-based knowledge production points to the necessity of creating specific conditions for research, accommodating a wide range of disciplinary and technical expertise, not only for getting the research done, but also for fostering the methodological diversity that can challenge existing paradigms, and sustain collaboration over the long term.¹²

Bibliometrics, Collaboration, and Medieval Studies

One may reasonably ask why we have made this digression into the domain of the science of science (SciSci), and whether it bears any relevance to the field of medieval studies. Do interdisciplinary teams of two to four persons have the potential for disrupting the field? How might we go about finding out? In fact, the discipline of medieval studies has already been the subject of some bibliometric analysis in a few of its sub-fields. Nielsen looked at three decades of scholarship on the Crusades, using data from International Medieval Bibliography (IMB) and Bibliographie de Civilisation Médiévale (BCM), noting a general decline in the quantity of Crusades studies since 2001. Kaya used data from the Web of Science to investigate bibliometrics of Constantinople studies with the observation that keywords have a significant impact on how one does bibliometrics in transnational communities in the humanities and social sciences.¹³ A more wide-ranging analysis was carried out by Hérubel who conducted a study of the titles, keywords, and disciplinary affiliations of more than eleven thousand papers presented at a key conference in medieval studies, the International Medieval Congress (IMC), between 1997 and 2002.

Hérubel argues that medieval studies are not confined to a single academic domain, but instead are an inherently heterogeneous field. Not only are medievalists required to master multiple languages and methodologies, he claimed, but research in medieval studies is particularly well-placed to

11 Wu et al., “Large Teams Develop,” 378–82.

12 Siemens, “It’s a Team if you Use ‘Reply All.’”

13 Nielsen, “Research Output in Medieval and Crusade Studies”; and Kaya, “Bibliometric Analysis of Constantinople Studies.”

explore combinations of methodologies. Hérubel's study identified thematic bundles that recur in this corpus of conference presentations, underscoring the difficulty of using single discipline-based bibliometrics to assess the field.¹⁴ What is striking for our purposes, however, is that key metrics from the literature of SciSci discussed above—such as number of authors, academic rank, institutional and geographic affiliations, canonical versus innovative citation—are absent from Hérubel's analysis. His study has a different purpose in mind: conceptualizing interdisciplinarity and multidisciplinary primarily as a feature of the research content, rather than as markers of social practices of research through citation. Hérubel's essay appeared in 2005, only eleven years after the annual IMC conference began at the University of Leeds. The present moment offers far greater scope for such inquiry. The IMC, together with a wide range of professional conferences and bibliographies across the world, represents a rich landscape through which future bibliometric analyses might generate deeper insights into the intellectual organization, collaborative patterns, and shifting priorities of the field.

In the rest of this section of the chapter, we turn to our own exercise of bibliometric analysis, that of prominent journals in medieval studies available via Publish or Perish—the popular software developed by an academic from Middlesex University.¹⁵ Our analysis of over 38,000 articles published across thirty-seven journals in medieval studies (largely in English and French) offers insight into the historical role of collaboration within the field as well as indicators of recent trends.¹⁶ Publish or Perish is a software application that retrieves citation metrics, including the number of papers, total citations and the h-index, from the Google Scholar API. Importantly, the software allowed us to explore key features emphasized in our discussion of SciSci above that were missing from Hérubel, specifically the number of co-authors on papers as a general index of collaboration in the field and the number of citations of these papers. As we will explain below, compared to other fields of the contemporary academy, medieval studies have been late to adopt large-scale collaborative research models, but the situation seems to be changing, albeit slowly.

Before looking at the data, we would like to clarify two main points about our use of bibliometric software. First, we are not equating citations

14 Hérubel, "Disciplinary Affiliations and Subject Dispersion."

15 Harzing, "Publish or Perish."

16 Impact factors could not be incorporated into our analysis since many journals in the humanities are not indexed in the Web of Science's Journal Citation Reports (JCR), the standard source for official impact factors.

of an article with the quality of research contained therein, but rather we see them as one way of estimating the visibility and impact of a research article. Second, we do not adopt the use of bibliometrics to evaluate the productivity and citations of individual scholars as they might be used in the context of a performance or promotion review. It has been argued, in fact, that bibliometrics in the humanities are highly problematic since they “do not adequately cover the non-uniform nature of humanities,” leading some to adopt so-called altmetrics.¹⁷ Furthermore, humanities scholars tend to be critical of citation counts and bibliometrics and the fact that they are not as effectively used by funding bodies to evaluate research quality in the humanities as they are in STEM contexts.¹⁸ Nonetheless, we do believe that bibliometric data retrieved from Publish or Perish does offer interesting insights into general, longitudinal evolution with respect to co-authorship and the visibility and quantity of citation of co-authored research in English and French.

Among the twenty overall most cited papers from the sample of 38,000 articles in medieval studies, only one has been co-authored—a 2002 article from the *Journal of Medieval and Early Modern Studies*.¹⁹ This finding alone suggests that the most cited work in medieval studies has traditionally been produced by individual scholars rather than by collaborative research teams. However, when adjusting for the age of a publication using a citations-per-year metric, a modest increase in collaborative scholarship emerges. Among the twenty most cited papers by annual rate, four have been multi-authored.²⁰ While this detail suggests a gradual shift toward collaborative modes of research, single-authored scholarship still dominates. Notably, eleven papers appear on both citation lists, underscoring that high-impact contributions—whether judged by total citations or annual citation averages—remain primarily the product of individuals or small research teams. This dual presence suggests continuity in what constitutes scholarly influence within the field, despite emerging signs of collaborative engagement.

Nonetheless, when examining patterns more granularly through statistical regression, different trends and historical shifts emerge. In Figure 10,

17 Hammarfelt, “Four Claims.”

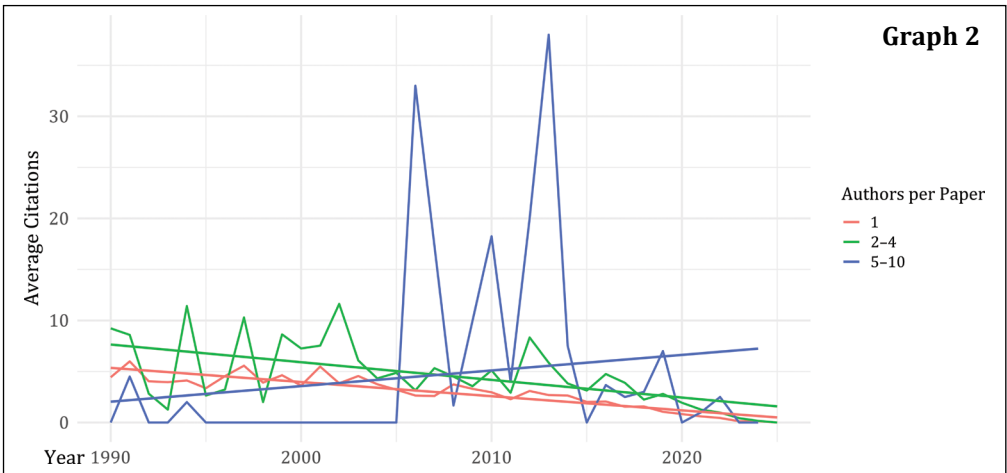
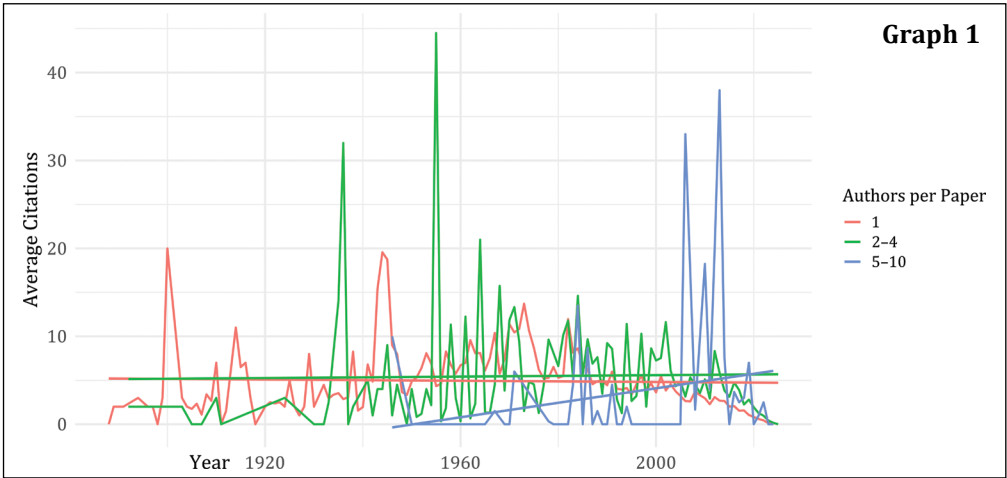
18 Hammarfelt and Haddow, “Conflicting Measures.”

19 Ashley and Plesch, “The Cultural Processes.”

20 Arnold and Goodson, “Resounding Community”; Price et al., “Polygyny, Concubinage, and the Social Lives of Women”; Ashley and Plesch, “The Cultural Processes”; Rambaran-Olm et al., “Medieval Studies.”

Table 9. Data from thirty-seven journals in medieval studies.
Data retrieved by authors using the software Publish or Perish.

Journal Title	Dates	Percentage of multi-authored papers	First appearance of multi-authored paper
<i>Bibliothèque de l'École des chartes</i>	2008–2024	0.31	2010
<i>Cahiers de civilisation médiévale</i>	1958–2024	0.18	1986
<i>Digital Medievalist</i>	2003–2024	13.27	2008
<i>Digital Philology</i>	2012–2024	4.17	2013
<i>Essays in Medieval Studies</i>	2001–2024	0.33	2018
<i>Gesta</i>	1963–2024	1.89	1978
<i>Hortus artium medievalium</i>	1995–2024	6.39	1996
<i>Journal of Early Books Society</i>	1997–2024	0.56	2008
<i>Journal of Australian Early Medieval Association</i>	2005–2024	0	–
<i>Journal of Medieval and Early Modern Studies</i>	1970–2024	0.27	2008
<i>Journal of Medieval Iberian Studies</i>	2009–2024	3.66	2015
<i>Journal of Medieval Monastic Studies</i>	2012–2024	0	–
<i>Journal of Medieval Military History</i>	2004–2024	0.73	2011
<i>Journal of Medieval Religious Cultures</i>	1974–2024	0.39	2024
<i>Le Moyen Âge</i>	1888–2024	1.96	1951
<i>Medieval Encounters</i>	1995–2024	1.37	1996
<i>Medieval English Theatre</i>	1979–2024	1.62	1983
<i>Medieval Feminist Forum</i>	1984–2024	0.51	1996
<i>Medievalia humanistica</i>	1943–2024	0	–
<i>Medieval Low Countries</i>	2014–2024	4.76	2017
<i>Medieval Sermon Studies</i>	1991–2024	0	–
<i>Medieval Worlds</i>	2015–2024	3.55	2019
<i>Medium ævum</i>	1932–2024	0.06	1958
<i>Mirator</i>	2007–2024	3.9	2010
<i>New Medieval Literature</i>	1998–2024	0.53	2002
<i>Nottingham Medieval Studies</i>	1957–2024	0.67	1990
<i>Peregrinations</i>	2002–2024	0.31	2009
<i>Peritia</i>	1980–2024	1.04	1984
<i>Perspectives médiévales</i>	1975–2024	0.78	2007
<i>postmedieval</i>	2010–2024	2.46	2011
<i>Revue d'histoire des textes</i>	1971–2024	1.58	1971
<i>Revue Mabillon</i>	1905–2024	1.45	2000
<i>Studies in Iconography</i>	1975–2024	0.47	1981
<i>Scriptorium</i>	1946–2024	1.79	1946
<i>Traditio</i>	1943–2024	1.48	1947
<i>Viator</i>	1971–2024	0.43	1986
<i>Viking and Medieval Scandinavia</i>	2005–2024	2.59	2006



the first graph tracks citation counts by authorship size across time and reveals that single-authored and small-team papers published during the mid-twentieth century were generally more highly cited. However, this pattern begins to shift in later decades, with papers authored by larger teams (five to ten authors) with a noticeable increase in citation impact. This trend is captured by the upward trajectory of the blue regression line, while the citation impact of single-authored papers remains relatively flat and even exhibits a slight downward trajectory, *suggesting stagnation in their visibility and influence over time.*

Again in Figure 10, Graph 2 covers a shorter time span (1990–2024), and the trajectory of the average number of authors per paper and its relation to citation impact is made clearer. Here, a linear increase in co-authorship

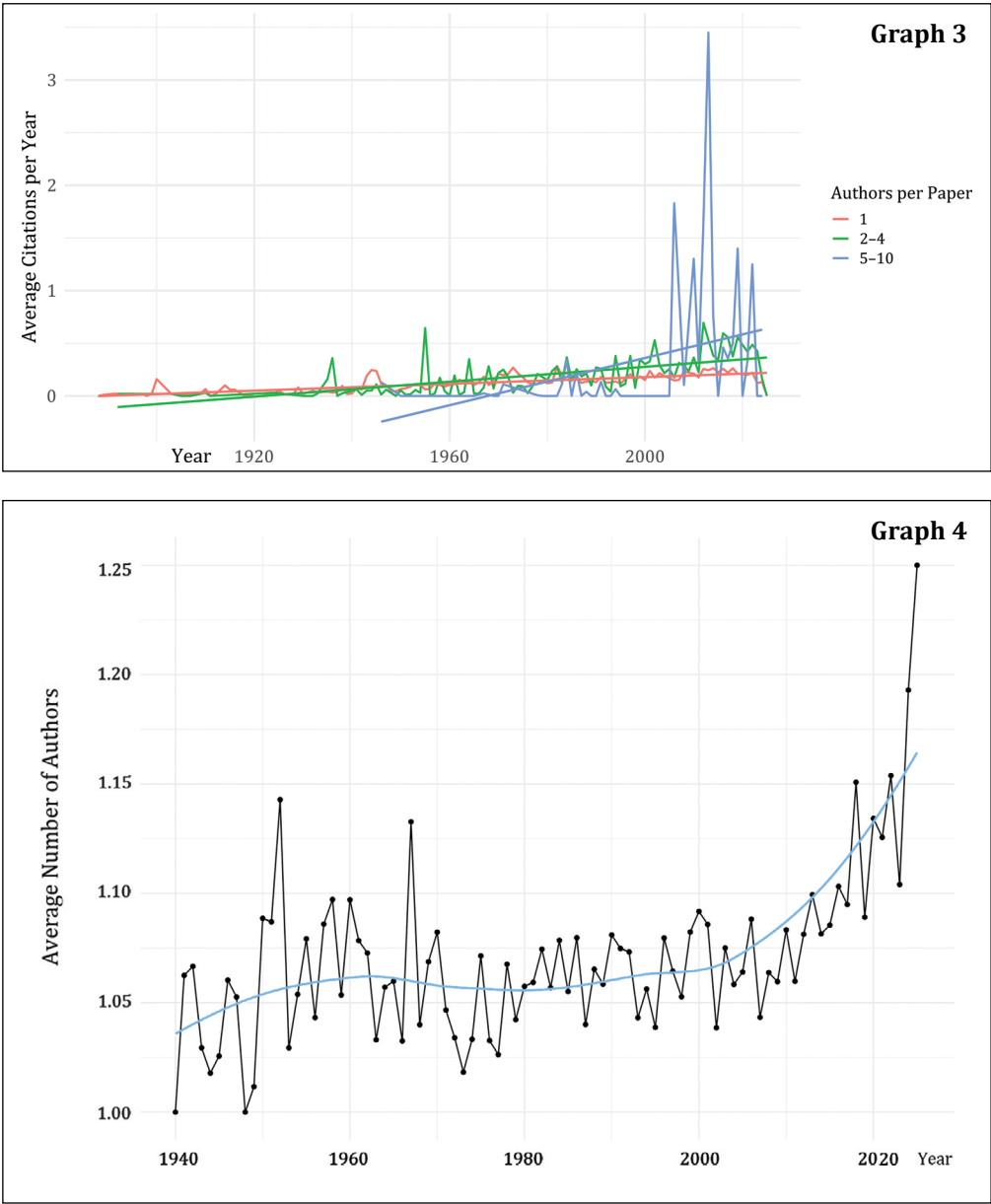


Figure 10. Graph 1 illustrates the impact of co-authorship on citation counts (total citations) between the 1900s and 2024. Graph 2 illustrates the impact of co-authorship (the number of authors per paper) on citation counts (total citations) between 1990 and 2024. Graph 3 illustrates the impact of co-authorship (the number of authors per paper) on citation counts per year between the 1930s and 2024. Graph 4 illustrates the evolution of the number of authors between 1940 and 2024. Data retrieved using the software Publish or Perish by authors. Visualization in R by authors.

becomes evident starting in the early 2000s. The red trend line representing single-author papers remains stable, suggesting little change in citation. By contrast, papers with two to four authors represented by the green line exhibit a modest increase in citation impact and generally outperform single-author publications. Most notably, papers with five to ten authors represented by the blue line illustrate a fluctuating but overall increasing trend, with significant citation peaks in 2006, around 2010–2015 and then in the 2020s. This higher variance suggests that while not all highly co-authored papers are equally impactful, the most cited works in recent years are increasingly produced by significantly larger groups of co-authors. In summary, these patterns point to a gradual, but clear, shift toward collaborative publication in the field in what could be considered mainstream, non-computational journals.

It is important to note, however, that the first two graphs represent the average total number of citations for all papers published in a given year. This approach inherently privileges older publications, which have had more time to accumulate citations, over more recent works—potentially obscuring the impact of newer research. To correct for temporal bias, dividing a paper's total citations by the number of years since its publication allows for a more equitable comparison across decades.²¹ Graph 3 of Figure 10 presents citation impact normalized by time, displaying the average number of citations per year for papers published between the 1930s and 2024. While the earlier paper may have achieved greater cumulative recognition, the latter exhibits higher relative impact within a shorter timeframe. This normalization reveals that more recent, co-authored papers often achieve significant citation momentum early on, and may in time surpass the total impact of older, single-authored works.

Graph 3 of Figure 10 reveals a gradual increase in average citations per year across all authorship categories, reflecting a general upward trend in scholarly impact over time. Notably, papers authored by larger teams—specifically those with five to ten authors, represented by the blue line—exhibit a steeper trajectory and more pronounced citation spikes compared to single-author (red line) and small-team (two to four authors, green line) papers. While single-authored publications dominated in earlier decades, the prevalence and citation impact of multi-authored papers have grown significantly in recent years. In particular, works produced by teams of five

21 For example, a paper published in 1940 with forty citations would yield an annual citation rate of approximately 0.47, whereas a 2020 publication with fifteen citations would result in an average of three citations per year.

to ten authors demonstrate a marked increase in annual citation rates, indicating a greater visibility in the field. These patterns suggest a correlation between the number of authors and citation impact: papers involving larger research teams are, on average, more frequently cited.

In one last analysis, we applied a linear regression model to examine the relationship between the number of authors on a paper (AuthorCount), the year of publication (Year), and their combined effect on average citations per year in order to assess whether the influence of co-authorship on citation rates has changed over time. The results, visualized in Graph 4 of Figure 10, reveal a statistically significant negative main effect for AuthorCount (Estimate = -6.205, $p < 0.001$), suggesting that, when holding the publication year constant, papers with more authors historically tend to receive fewer citations per year. However, the interaction between AuthorCount and Year is both positive and highly significant (Estimate = 0.0031, $p < 0.001$), indicating that this negative relationship diminishes over time. In other words, while multi-authored papers in earlier decades were associated with, on average, lower citation rates, more recent co-authored works tend to attract higher annual citations—potentially reflecting evolving norms around collaboration and its perceived value in the field. Despite the statistical significance of these findings, this analysis accounts for only a small proportion of the variance in citation impact, suggesting that other factors—such as disciplinary subfield, journal reputation, topical relevance, or methodological novelty—play a far more substantial role in determining how frequently a paper is cited than authorship count alone.

In summary, looking at some 38,000 articles in medieval studies journals has demonstrated that while single-authored papers still dominate, there is a clear, gradual shift toward co-authorship, implying increasing forms of collaboration in research. Since the early 2000s, multi-authored articles—especially those with five to ten authors—have gained greater visibility and citation impact. It is important to underscore that correlation does not imply causation: co-authorship alone does not guarantee greater visibility or influence. Importantly, not only do we not know whether co-authorship on these papers stems from collaboration between the subdisciplines of the humanities or between the humanities and the social sciences or sciences, but we are unable to assess from the numbers alone how pathbreaking these papers have been. Suffice it to say that these trends point to a slowly shifting landscape in which collaborative research with larger numbers of authors is increasingly associated with higher citation in journal articles, even in medieval studies. Traditionally dominated by individual scholarship and monographic production, the field now appears to be aligning—albeit

gradually—with broader academic patterns observed in the sciences and social sciences, where collaboration has long been a driver of research visibility and influence. The rise of multi-authored, highly cited papers might, at least partially, be due to the development of computational, digital humanities, and large-scale collaborative projects. However, since such practices do not go back many decades in any field, the question is a relatively new one, and it is hard to judge.

While the preceding analysis offers provocative insights into a changing publication culture, it is important to acknowledge some of the significant limitations in studying a dataset of citation metrics that may under-represent the prevalence of collaborative scholarship in medieval studies. There are many factors we are unable to examine, such as the academic rank and scholarly status of the authors, acceptance rates, or impact factor of the journals, as such data are not readily available. Furthermore, as we do not have millions of papers at our disposal, understanding the “disruption index” in the context of medieval studies seems problematic. Moreover, it must be acknowledged that the retrieval of data about scholarly papers using software and the Google API in only English and French could provide us with an inadequate view of journal publication. Perhaps more importantly, our choice to focus on core subject-area journals listed in Table 9 ignores some of the most important work of interdisciplinary medievalists already engaged in collaborative research who publish their work in digital or computational venues, leading us to underestimate how much co-authorship the field exhibits.²² Such venues often emphasize and welcome collaboration, with research teams drawing on diverse expertise in computational methods, data science, manuscript studies, and beyond. For this reason, the exclusion of these publications from our dataset certainly skews our findings, understating the extent and influence of co-authored work within the broader contours of the field. Future work in the bibliometrics of medieval studies will need to broaden our approach beyond core subject-area journals, incorporating publications from interdisciplinary digital venues, conference proceedings, edited collections, project-based outputs, and conferences, perhaps combining them with altmetrics and qualitative approaches such as ethnographic, oral histories of interdisciplinary endeavours. Such inclusivity would provide a fuller picture of how collaborative and computational research is reshaping medieval studies.

22 The obvious outlier in our dataset is the journal *Digital Medievalist* which has at least three times more co-authored publications than some of the mainstream journals.

Platform-Based Co-Creation of Knowledge in Medieval Studies

In the previous section, we underscored how bibliometrics of mainstream medieval studies journals over a century reveal a gradual trend toward increased numbers of co-authored publications. By focusing on journal articles, however, we run the risk of obscuring a far wider terrain of collaboration that has long preceded formal publication in our field and in many others. The intellectual labour of data creation through building corpora, transcribing manuscripts, and curating datasets—essential for fields such as bibliography, digital editing, material philology, social history and historical geography—has for a long time remained structurally invisible in the profession’s reward systems. The expanding body of digital scholarship in medieval studies makes this disjuncture ever more visible with time. Knowledge in the humanities is increasingly generated by many hands before it is ever formalized as argument in print, as the example of the creation of training data for applications of AI to text or image corpora makes clear.

In recent decades, with the availability of digitized surrogates, the physical encounter with medieval archives—a privileged, and historically central, mode of engagement for understanding the materiality and tactile dimensions of the archival object at the heart of medieval studies²³—has increasingly been supplanted by mediated, screen-based interactions with digital avatars. Direct physical engagement allows scholars to assess aspects of archival objects often lost in reproduction: parchment, ink, marginal interventions, catchwords, collation, or details of mise en page; yet our time and frequency of access to them is also significantly limited. At the same time, the ways medievalists engage with their sources have been radically reshaped by processes beyond, and on top of, digitization: e-books, online repositories, the Internet Archive, bibliographic databases, and the International Image Interoperability Framework (IIIF).²⁴ Such mediated engagement has made it possible to consult geographically dispersed archives in digitized form, to compare textual versions across collections, and to participate in collaborative platforms that enable annotation, enrichment, and increasingly large-scale computational analyses. While the growing availability of digital facsimiles has undeniably expanded access—decoupling some forms of analysis from physical archives and inviting broader participation

23 Gilissen, *Prolégomènes à la codicologie*; Van Lit, “The Digital Materiality.”

24 Francomano and Bamford, “Whose Digital Middle Ages?,” 15–27; Hanneken, “What to Think About,” 256–84; Vandendorpe, *Du papyrus à l’hypertexte*.

across geographies—it also reconfigures our relationship to our object of study, often privileging a flattened visual representation over embodied, tactile modes of engagement. In fact, high-resolution digital reproductions allow for forms of prolonged, daily engagement with archives that would be impossible in a reading room, creating opportunities for slow, detailed study, for teaching, and for collaborative analysis at a distance. Yet such sustained encounters, mediated through images, remain qualitatively different from the experience of handling the object itself.

The challenge (and promise) for computational medieval studies lies in bringing these two modes together: the irreplaceable insights of expert physical contact, and the expanded analytical capacities afforded by digital surrogates. By developing innovative methods inclusive of materiality while also exploiting the possibilities of textual, visual, and computational recombination the field will move forward—yet such methods also deepen the “computationality” of medieval studies,²⁵ where AI-driven mediation increasingly structures how knowledge is produced and discovered. This shift holds immense promise, but also raises urgent concerns: namely that algorithmic biases, opaque infrastructures, and commercial logics may shape what is visible, searchable, or valued, subtly reconfiguring the very terms of scholarly inquiry. Academic research, and the graduate education that underpins the profession of medieval studies, will not only need to innovate technically but, along with the computational humanities in general, remain critically attuned to the risks of such work. By being at the table, we believe, medievalists are more likely to influence decisions, and to model ethical and community-sustaining methods, than if they are blissfully absent.

Over the past decade or so, the notion of academic crowdsourcing—a research method that leverages public participation in, or contributions to, project activities—has gained traction as a strategy for expanding access and activating collections.²⁶ During and after the Covid-19 pandemic, a number of transcription challenges with medieval documents (also sometimes labelled a “transcrib-a-thon” or “transcriboquest”) sprung up, due in large part to the leadership of European research teams and digitally-minded North American medievalists such as Laura Morreale. To date, some of these

25 Berry, “The ‘Computational Turn,’” 1–22.

26 Hedges and Dunn, “Introduction,” in *Academic Crowdsourcing*; Dunn and Hedges, “From the Wisdom of Crowds”; Ridge, “Crowdsourcing in Cultural Heritage.”

included the Image du Monde Challenges,²⁷ *La Sfera* Challenges,²⁸ Houghton MS lat. 5: The Transcription Challenge,²⁹ Early Irish Hands TranSCRIPTION Challenge,³⁰ and the Saint Dunstan Transcription Challenge³¹ and the different iterations of the Transcriboquest.³² These events were often collocated with academic conferences or designed as summer schools. For instance, “Transcribing the *Pelerinage de Damoiselle Sapience*” happened during the Thirteenth Annual (Virtual) Schoenberg Symposium on Manuscript Studies in the Digital Age in 2020.³³

Rather than serving merely as training in digital platforms or data collection, these gatherings foster shared experimentation and collaboration—central elements in the reinvention of medieval studies. They bring together diverse communities of scholars at different career stages, demonstrating how distributed scholarly labour, when carefully focused on specialized tasks, can generate first drafts of concrete editorial outputs and stimulate entirely new research trajectories. Such initiatives also reveal how platform-based approaches may facilitate time-bound collaborations that serve as models for larger, asynchronous modes of participatory knowledge production. They align with contemporary reinventions of collective intelligence as a dynamic process that is both technical and social.

27 The Image du Monde I took place from September 25 to October 9, 2020, with five teams working on five manuscripts containing the eponymous text by Gauthier de Metz. The Image du Monde II challenge was a reprise and took place from January 8–22, 2021, with teams working on the same five manuscripts.

28 *La Sfera* Challenge I took place between May 22 and June 5, 2020, transcribing three witnesses of one text, Goro Dati’s fifteenth-century geographic treatise, *La Sfera*. *La Sfera* Challenge II which took place between July 17 and July 31, 2020, was a reprise of *La Sfera* I and included five teams. A spin-off of the transcription challenge involved geospatial analysis of the text. See Agostini and Beneš, “A Geospatial *La Sfera*.”

29 This transcription challenge took place between March 23 and March 27, 2022, in hybrid format. The participants were students in Harvard’s Latin Palaeography and Manuscript Culture course (Medieval Studies 202) who worked with a team of online volunteers to create a complete transcription of Cambridge, MA, Harvard University, Houghton Library, MS Lat. 5.

30 Volmering, “Early Irish Hands TranSCRIPTION Challenge | FromThePage.”

31 The Saint Dunstan Transcription Challenge took place virtually, between July 21 and August 4, 2023. The volunteers transcribed a saint’s legend in Middle English.

32 Biblissima+, “TranscriboQuest Summer School.”

33 Over the three-day conference, participants produced a collaborative scholarly micro-edition of *Le Pelerinage de Damoiselle Sapience*, using UPenn, MS Codex 660. See Morreale et al., “Transcribing ‘Le Pèlerinage de Damoiselle Sapience.’”

While some of these collaborative undertakings have matured into sustained projects, editions, or published articles, many others have not seen their data repurposed for broader computational research.³⁴ Despite popular narratives that platforms naturally enable collective work, the reality is more complex: collaboration is never an entirely open field in which all contributions are interchangeable. The outcome of many hands often depends on highly specific expertise, contextual judgement, and multi-step reasoning—whether in classifying galaxies, extracting information from complex documents, identifying ornithological species, or, as in our case, correcting draft ground truth for HTR from medieval manuscripts. Seemingly straightforward tasks such as transcription can entail significant learning curves, requiring participants to apply many specialized skills consistently that necessarily restrict participation to a smaller, trained, or highly motivated group.

In the Paris Bible Project we have tried to model what a future medieval studies might look like by experimenting with collaborative infrastructures that test how data models for highly specialized research questions can be implemented. We believe that their true value lies in broadening the research to include as many perspectives as possible. Many eyes on a body of material expose patterns, anomalies, and interpretive questions that no single scholar could identify alone, while also providing feedback that sharpens the design of models and methods. For this potential to be realized, however, significant community input and careful orchestration remain essential. Tasks must be clearly defined, supported by precise guidance, and moderated in ways that ensure quality and comparability across contributions.³⁵ What might appear to be processes that can run on their own, in fact, require sustained attention, with significant labour required for communication, design, and review. The challenge is not simply to collect more data, but to channel diverse forms of expertise and perception into productive feedback loops for project development. It requires providing robust quality controls, with coordination, planning, and documentation that sometimes demand as much effort as the scholarly analysis itself. Framed in this way, the scale of such initiatives is not measured only by output volume, but by the depth of insight that many sets of eyes can bring to complex materials—insight that, when sustained by dedicated infrastructure and a core team, can refine a data model, advance a specialized project, and open new research pathways.

34 The resulting transcriptions from the Image du Monde II challenge were subsequently studied by Guéville and Wrisley, “Everyone Leaves a Trace.”

35 Blickhan et al., “Individual vs. Collaborative Methods.”

Experimenting with Academic Co-Creation of Text

The academic co-creation of text, especially from medieval documents, is particularly intricate, requiring contextual expertise and prior experience. Within this landscape, event-based initiatives have emerged as important entry points for computational methods in medieval studies. For organizers, such events offer opportunities to activate particular collections, to prototype new workflows, or to build capacity within the broader scholarly community. For participants, however, the motivations for participation are often multiple and layered: they may join a crowdsourcing event to learn new technical skills, to connect with colleagues, or to experience how computation can intersect with traditional philological practices. Others may be drawn by the chance to make a meaningful contribution to collective projects, to find purpose and stimulation in uncertain times, or to participate in an intellectually and emotionally engaging form of research.³⁶ For us, the possibility of participants working in groups toward a well-framed research goal aligns well with principles of research-led teaching. Tasks such as transcription can support learning since they can draw on each other's strengths and experiences—linguistic, palaeographical, or technical. Focusing on methodology over data output allows for greater flexibility and more sustainable contributions from participants with varying levels of expertise. An example of a curricular embedding of a computational humanities experiment with HTR was our own “Paris Bible Correct-a-thon” organized at the Université Marie-et-Louis Pasteur in Besançon, France, in January 2023.³⁷

Our event took a slightly different approach than the transcription challenges mentioned above, emphasizing critical AI perspectives. Instead of transcribing from scratch, we focused on crowd-correction of transcriptions previously generated through an HTR workflow, evaluating the automated outputs, revising them as ground truth to fine-tune HTR models.³⁸ The correct-a-thon spanned approximately one week and was carried out in collaboration with the Rare Book and Digital Humanities Master's program,

36 Hossain, “Users’ Motivation to Participate in Online Crowdsourcing Platforms.”

37 We would like to acknowledge and thank all the participants in the challenge organized in January 2023. Their names are listed in the Acknowledgements section of this book.

38 An asynchronous, public challenge took place in 2022 to encourage the automated correction of errors in HTR output from Byzantine manuscripts and papyri. The target audience was the NLP and AI community. According to the organizers some 271 submissions were received, “yielding only a handful of promising approaches.” See Pavlopoulos et al., “Challenging Error Correction,” 1.

and with the participation of colleagues from local universities and GLAM institutions. We framed the “correct-a-thon”—including a hands-on encounter with a few Latin bibles housed at the Bibliothèque municipale de Besançon—as a master’s-level experiential learning exercise in book history.³⁹ The Paris Bible correct-a-thon worked with six manuscripts: Aarau KB, MS MsWettF 11; Besançon, Bibliothèque municipale, MS 4, Besançon, Bibliothèque municipale, MS 8; Beinecke, MS 1100; Palo Alto, Stanford University Libraries, MS 23 and one incunable, Beinecke, ZZi 56. Beyond the immediate pedagogical aims of transcription of medieval Latin, however, the event also pointed toward a broader trajectory for the future of academic work. As AI systems increasingly mediate scholarly access to, and processing of, cultural collections, expert opinion and critical AI perspectives remain indispensable for ensuring that outputs from processes such as HTR are accurate and meaningfully integrated into research. In this sense, graduate education takes on a new responsibility: preparing students not only to master technical workflows but to act as informed, critical mediators between automated processes and the cultural record. Such training positions the next generation of medievalists to take an active role in critiquing and shaping new professional methodologies, rather than simply inheriting ones of the past.

Our correct-a-thon had four primary learning objectives: (1) training in how to integrate digital tools into research in book history; (2) critical examination of AI tools in research, by learning to elicit specific outputs from them, as well as to evaluate those outputs; (3) acquisition of specific digital skills (using a text editor and a versioning system, training and correcting HTR models); and (4) participation in the enrichment and creation of a dataset. Two additional, more individual, objectives for us as organizers included (1) providing a model for collaborative public knowledge creation between students, researchers, and library professionals and (2) revising and expanding our project’s abbreviation transcription guidelines through working with other manuscripts.⁴⁰ The event attracted considerable interest from students, with two master’s students ultimately choosing to complete their second-year internships with our team. From the outset, the event prioritized a pedagogical focus on critical AI perspectives and collaborative,

39 See Guéville and Wrisley, “Correct-A-Thon.”

40 Some of the specific learning objectives of the Paris Bible included: learning to use a text editor, using a versioning system such as GitHub, training and correcting HTR models, reflecting critically on HTR output, authoring reflection writing in Markdown, creating an ORCID account and using it when publishing one’s data and working with computational notebooks.

experiential learning. In the end, the Paris Bible Project was able to add a half a dozen fully transcribed pages into the current training data for our HTR models. Considering the amount of post-correction required and the effort to organize and plan the event, however, a large significant increase in ground truth for the Paris Bible Project cannot be said to have been an outcome of the event.

While we organized the event as an intensive one-week exercise, the same activities could easily, and perhaps more productively, have been extended across an entire semester, allowing for deeper engagement not only with technical and collaborative skills but also with additional discussions of readings in critical AI, open standards in the GLAM sector, current debates in platform governance, and comparative experience working across HTR platforms. We underscore the importance of time in grappling with these complex issues: when framed pedagogically, introducing students or early career researchers to HTR workflows is not simply a matter of following consistent guidelines for transcribing medieval manuscripts. Rather, it opens up broader questions about the long-term scholarly implications of AI in research and pedagogy. The use of AI-based automation is not a one-off technical fix, but an ongoing methodological shift that demands sustained reflection in the academy—something that a week of practical exercises alone cannot adequately convey.

The iterative cycle of increasing the quality of HTR models—through phases of ground truth creation, model training, automated transcription, output correction, and model retraining—is slow and often opaque to non-specialists, demanding sustained commitment before tangible improvements are observed. The addition of the specificities of pre-modern manuscript context makes the tasks even more complex. Moreover, when only limited time or capacity is available for correction and retraining, the resulting outputs may not exhibit substantial gains in performance, running the risk of distancing participants from the payoff of their efforts. In this sense, the pace of HTR-driven research is markedly slow—frequently outpacing the shorter, goal-oriented time bound nature typical of an academic term or public engagement initiative. This mismatch underscores a broader tension in the integration of AI into humanities education (and into medieval studies) in our opinion: while the promise of human contribution to the improvement of applied AI processes is real, the reality of time-bound teaching is plagued by the potential of delayed returns and a lack of appreciation of the larger picture.

Academic co-creation within the humanities, be it inside or outside the curriculum, raises questions about accessibility, scope, and commitment.

While academic crowdsourcing in the humanities traditionally has been perceived as a matter of time- and space-bound events, modern digital platforms have expanded its potential, making it more accessible to a wider audience, including non-specialists, as well as to asynchronous application. The task of engaging in academic co-creation, however, often requires significant training and documentation, particularly for complex tasks, such as those involved in humanities research. The commitment of participants, whether they are simply contributing on a casual basis or engaging in more sustained research efforts, plays an important role in the success of such efforts. The concept of “citizen researchers” highlights how such crowdsourcing efforts can bring in the general public, making scholarly endeavours more inclusive.⁴¹

Moreover, the balance between machine learning and human effort is another significant consideration: how much human input is truly enough to complement the capabilities of algorithms, and how can co-creation of data adapt to meet the demands of complex, evolving research questions? Finally, ethics, paid labour, and derived value must be carefully considered, as participation in these initiatives often offers emotional rewards and meaningful engagement, rather than the highest forms of academic recognition such as peer-reviewed publications.⁴² Sustainable collaborative research projects in medieval studies will probably look less like mass collaboration of untrained participants and more like federated networks of small, highly skilled contributors, coordinated through shared infrastructures and open standards. The thoughtful design of such data includes carefully documented metadata that makes all of the transcription choices and specificities visible.

The Sustainability and Mutualization of Knowledge in Medieval Studies

Some three decades ago, Pierre Lévy introduced the notion of *collective intelligence*, which he described as an emancipatory, decentralized process of shared knowledge creation through human collaboration in online spaces—ultimately leading to the “mutual recognition and enrichment of people” (*la reconnaissance et enrichissement des personnes*).⁴³ His argument suggested that digital spaces could serve as opportunities for open

⁴¹ Heinisch et al., “Citizen Humanities.”

⁴² Andersdotter and Nauwerck, “Secretaries at Work.”

⁴³ Lévy, *L'intelligence collective*, 29.

exchange, participatory knowledge-making, and collective growth. In some cases, such as Wikipedia, open-source software communities, or HTR platforms, this vision is partially realized today: users access and contribute to infrastructure and bases of information, collaboratively contributing to shaping knowledge systems that evolve over time.

A body of literature in media ecology, critical infrastructure, and critical AI studies has since raised questions about Lévy's vision and the governance of online platforms and the unequal power dynamics embedded in them. It has been pointed out that the mechanisms through which knowledge is produced, validated, and disseminated can be opaque and controlled by a narrow set of actors—corporate or state entities and technocratic elites.⁴⁴ Despite the frequent use of metaphors of hospitality to describe digital spaces—using terms such as access, hosting, homepage, privacy, or members—to soften unequal participation of different users, online spaces are critiqued instead for being structurally exclusionary.⁴⁵ After all, platform-based infrastructures do not simply facilitate the creation and dissemination of scholarship—they actively reshape how knowledge is produced, distributed, and valued. They also raise difficult questions: who participates, and under what conditions? What forms of labour remain unacknowledged, and what ethical stakes are attached to the creation and sharing of data?

The tension between Lévy's ideal of participation and mutual enrichment and the actual infrastructures underpinning contemporary digital knowledge becomes more pronounced in the context of infrastructures which operate using AI. Today's AI development is largely concentrated in the commercial technical sector and wealthy institutions that possess the human and computational infrastructure required to support such systems. Whereas we have demonstrated, in Chapter 3, some pathbreaking applications of AI-based transcription analyzed by computational techniques with potential for reshaping how we view scribal culture, there are potential costs to the collective use of expert training data for AI. Cultural expertise, it could be argued, is transformed into an extractable intellectual labour, with uncertain benefits for the communities that provide it. That is to say, critical perspectives such as data sovereignty and platform governance are also real issues in the digital humanities and the academic commons, where the potential reproduction of old inequalities and the risk of foreclosing

⁴⁴ Crawford, *Atlas of AI*.

⁴⁵ Casilli, "Posthumani nihil a me alienum puto."

on modes of equitable collective inquiry are real.⁴⁶ If the ideals of collective intelligence are to remain relevant, they must be reconceptualized—not only in terms of technologically advanced infrastructure, but also with a redoubled focus on equity, governance, and access—acknowledging the structural realities that mediate who gets to participate in building, and deriving benefit from, collective knowledge.

Sustainability of Platforms for Knowledge Creation

As academic co-creation gains traction in pre-modern studies, questions of sustainability and scalability become more important. While a growing number of platforms such as FromThePage, Zooniverse, PyBossa, Scripto for Omeka, MicroPasts, Transkribus, and eScriptorium offer infrastructure for collaborative knowledge creation through tasks such as transcription or annotation, their long-term viability depends on consistent maintenance, institutional support and funding, and a sustained user base that, in some cases, underwrites the maintenance of such platforms through membership fees, rather than through public grants. Indeed, the sustainability of these platforms, and more generally any digital research project, cannot be taken for granted. Regular server maintenance, security, and user support all require ongoing investment and attention.

A lively and diverse global ecosystem of infrastructure supporting transcription and automated text recognition (ATR) exists today. These infrastructures differ significantly in their organization, governance structures, and adoption of the software-as-service model, with important implications for how data, rights, and access are managed across national and institutional boundaries. Software has an economy, whether its financial models are obvious to us or not. Transcription platforms such as FromThePage operate on a freemium model—where a basic version is offered for free, but users must pay to access other features, platform support or expanded usage. FromThePage has evolved from a specific digital project into a widely used subscription-based service maintained by developers with long-term experience working with the humanities and the GLAM sector. Transkribus, also initially a grant funded project, transitioned to a cooperative model with a member base made up of large GLAM sector institutions, libraries, and private members. It also offers limited free access to some elements of the basic software product while charging for full use, with profits being

⁴⁶ Crawford, *Atlas of AI*.

reinvested into research capacity and infrastructure development.⁴⁷ Calfa, by contrast, functions as a nonprofit focused on AI and natural language processing (NLP) tools for Oriental languages, linking researchers with support from cultural and philanthropic institutions. Finally, eScriptorium, also originally developed as a part of a funded project, is an open-source ATR architecture oriented toward linguistic and scriptural inclusivity, providing its code base openly to the community of researchers, rather than a hosted application delivered over the internet.

These differences in the economy of software have important implications for the humanities and for geographic locations or institutions where infrastructural support is lacking. Moreover, while open-source frameworks regularly champion accessibility and transparency, in reality, they demand sustained investments of time, expertise, and funding to be deployed, localized, and maintained. Despite being called “open” or “FAIR” such frameworks can remain out of reach for isolated researchers or under-resourced academic communities, and invisibly so to those who promulgate their usage. EScriptorium, for instance, does not provide a centralized platform, but distributes its code and documentation, to promote access and collaboration.⁴⁸ Any potential user must have access to research computing resources and the technical know-how to maintain the software. This software’s dependence on institutional resources creates a structural barrier: well-funded labs or universities can realistically host and sustain such tools, leaving smaller institutions and independent scholars at a disadvantage when they wish to participate in the broader conversations shaping the future of digital medieval studies, either experimenting with new workflows, or developing and training models tailored to their sources, as we did during the Paris Bible correct-a-thon. Whereas other initiatives rely on a paid or freemium software-as-service model, for many scholars the main barrier to eScriptorium at present remains access and scalability, requiring significant institutional or consortial resources for setup and maintenance.

In sum, the differences between these transcription infrastructures underscore how national funding regimes, institutional commitments, and technical philosophies shape not only the functionality and availability of tools, but also who can effectively use them, which languages and scripts are prioritized, and how scholarly labour is distributed and recognized. It is

47 Terras et al., “The Artificial Intelligence Cooperative.”

48 Eleftheriadi, “Online Tools for Handwritten Text Recognition”; for a trenchant critique of the FAIR principles in a global context, see Rojas Castro, “Los principios FAIR.”

easy to see how there are different forms of infrastructural inequality and exclusion inherent to each of these platforms: economic, technical, institutional, geographical or geopolitical. More generally, these issues raise important questions about the future of participatory and independent uses of AI in scholarly contexts, pushing the discussion beyond concerns of specialized knowledge and training toward broader questions of accessibility, equity, and the infrastructures that will shape medieval studies in the years to come.

Such differences in organizational models exhibit not only varied degrees of access, but also the inherent fragility of academic infrastructures that depend on external support—whether public, philanthropic, institutional, or commercial. As the broader landscape of digital infrastructure evolves, and does so especially within the larger context of a rapidly changing landscape of AI, these projects remain highly exposed to shifts in political will, funding priorities, or technological standards. While some platforms benefit from sustained investment or integration into stable research ecosystems, many others—even those rooted in long-running digital humanities communities—rely on more precarious frameworks: short-term grants or partnerships, volunteer labour, or the dedication of small, overstretched teams. Such vulnerability was starkly illustrated among federally funded digital scholarship initiatives, by the April 2025 decision of the US Department of Government Efficiency (DOGE) to cancel most grants administered by the National Endowment for the Humanities in the United States, abruptly jeopardizing the research labour underpinning them. One such project known to the North American medievalist community, is the *Middle English Text Series* (METS), which had been awarded a three-year grant to produce TEI-encoded editions of medieval texts. It was forced to seek emergency funding from its scholarly community. In a widely circulated appeal on the Digital Medievalist listserv, its directors called on supporters to sustain the project's mission, emphasizing that its future “depends on those who believe in the value of collaborative, open-access scholarship and in the importance of historical engagement and understanding.”⁴⁹

More broadly, the sustainability of such infrastructures is further complicated by the fact that academic communities and national research cultures operate with markedly different value systems of research support—some emphasizing open access, public investment and the concomitant longevity of research cooperation, others depending more heavily on commercial or institutional buy-in, or hybrid models. These divergences complicate

49 Hahn and Siebach-Larsen, email sent to the *Digital Medievalist* listserv, April 14, 2025.

transnational collaboration, particularly when technical platforms and human labour span national borders, yet lack shared models of recognition or support. For an interdisciplinary and geographically dispersed field like medieval studies, it is unclear what entity might be able to step in to fill the infrastructural gap. It seems more likely that initiatives are to remain embedded in local or national research ecosystems, each ushering forward different expectations of openness, labour, and maintenance. The result is unfortunately a patchwork of capacity and access—rich with scholarly possibility, yet persistently uneven and perennially vulnerable.

The Rise of Mutualization of Data in the Humanities

In the previous section, we discussed the different social, technical, and commercial models that exist for platforms that enable transcription and, more specifically, ATR systems. Barriers for entry exist in each of them, either through the cost of platform-as-service or through the maintenance and technical and infrastructural development of such platforms. Technical and human forms of infrastructure, however, are not the only requirements for working in the computational humanities; data relevant to the sources and research questions at hand are also fundamental. Applications of AI such as HTR or computer vision require a significant amount of data to be trained on. As we have mentioned before, the creation and sharing of datasets that work for large categories of manuscripts for which there are many digitized copies—in specific scripts, for certain chronological periods or document categories—that can be used as a baseline for further training and adaptation to specific case studies is certainly one way forward that the community of medievalists interested in machine learning have taken.⁵⁰ While the Transkribus and eScriptorium user communities have created a significant amount of data for Latin, French, and other European languages, and world languages such as Arabic, for medievalists interested in understudied research languages creating ground truth for HTR—from scratch or through correcting HTR outputs—is still onerous.

Many project pipelines using HTR continue to depend on manual labour, especially in the early stages of implementation when high-quality ground truth data must be produced from scratch or when existing segmentation and transcription models require careful adaptation for project-specific purposes. Indeed, the prospect of harnessing academic co-creation to generate this foundational data carries a compelling appeal: it offers the potential to

50 Aguilar and Jolivet, “Handwritten Text Recognition.”

distribute the labour-intensive tasks of annotation and transcription across a wider network of participants, in the hope of accelerating progress while tapping into the collective attention, expertise, and goodwill of an interested group of specialists. Yet, in fields like medieval studies, where palaeographic variation and idiosyncratic scribal practices are the norm, the challenges of coordinating such a collective effort are substantial. Especially with transcription, carrying it out according to highly specialized diplomatic conventions—or correcting preliminary HTR output with a trained eye—can be daunting, particularly when medievalists are unfamiliar with the exacting standards required for machine-readable transcription. Transcription is not an exception in computational medieval studies, however, as there are many other tasks that would face similar challenges: annotating marginalia, aligning multilingual versions of texts, or generating datasets for the recognition of visual features in illumination.

In this section, we turn to alternative modes of sourcing and sharing data within the humanities. While institutional repositories and their commercial counterparts have long supported the archiving of research papers—and, to a limited extent, datasets—such platforms focus on showcasing finished published products and can suffer from limited visibility and discoverability, diminishing their utility for collaborative or interdisciplinary research. Furthermore, scalability and language present technical and political challenges to infrastructure. For example, France has developed the IR* HumNum, a national research infrastructure that supports the social sciences and humanities (SSH) through digital services for research data. In practice, it provides digital infrastructure that enables SSH communities to develop, conduct, and preserve research programmes, data and tools, within an open science and data-sharing framework. But this structure, developed by the Ministère de l'enseignement supérieur et de la recherche, and operated by CNRS, the Campus Condorcet, and Aix-Marseille Université, is limited to French researchers and institutions. International projects are hosted only when the leading team is French. Another model of data and research paper sharing relevant to medieval studies has been proposed via the Open Science Foundation framework. In fact, there is an archive for papers in medieval studies based on OSF architecture—Bodoarxiv—although its adoption by researchers, particularly those in digital medieval studies, has been limited.⁵¹

In recent years, global researchers seeking to share or locate archival versions of datasets relevant to the humanities have turned to Zenodo, a

51 See BodoArXiv, “Welcome / About BodoArXiv,” and BodoArXiv, *BodoArXiv: Open Repository for Medieval Studies*.

platform that has become central to open data practices across disciplines. Based in Switzerland and maintained by CERN (the European Organization for Nuclear Research), Zenodo has been supported through major European Union research frameworks, including Horizon 2020 and OpenAIRE-Nexus. It represents a model of publicly funded pan-European infrastructure that is globally accessible, free, and rooted in principles of openness and long-term access. Importantly, Zenodo not only hosts datasets but also provides useful services for data-intensive fields, such as the digital humanities. It assigns persistent digital object identifiers (DOIs), supports versioning of records, and offers integration with widely used platforms like GitHub, all features that ensure that datasets remain citable, traceable, and usable over time.

At the time we are writing, an example of the desire to share or “mutualize” project data within a user community is the HTR-United initiative. HTR mutualization refers to collective efforts to centralize and share ground truth datasets—high-quality, manually transcribed texts aligned with digitized images of manuscripts—used to train models for reading historical handwriting. HTR-United is not a repository in the conventional sense, like Zenodo or Bodoarxiv, but rather a metadata commons: a structured index of datasets with documentation on standards of creation.⁵² Its goal is to standardize dataset descriptions using a shared schema, to provide guidelines, and to promote tools for quality control. Unlike repositories that focus primarily on reproducibility, HTR-United emphasizes the visibility of bespoke datasets and their potential reuse, ideally with editorial statements, lists of Unicode codepoints used, and transcription protocols that situate them in humanistic context. It draws attention to ground truth data available online for reuse for the purpose of model training and fine-tuning, and can be said to address the problem of reinventing the wheel, but its utility ultimately also depends on the alignment of goals, methods, and values across users. Beyond this model of cataloguing datasets, some researchers have begun depositing their data in Hugging Face, where projects such as the CATMuS medieval dataset offer string- and line-level transcriptions labelled with location and period. Compared to the DOI-based permanence of Zenodo or the versioning affordances of GitHub, Hugging Face offers an interactive and visible space for datasets ready for machine learning, making it well suited to model training and wider community engagement. At the same time, it lacks some of the long-term guarantees of persistence and citability that Zenodo provides, and its strong orientation toward machine learning may

52 Chagué and Clérice, “I’m Here to Fight for Ground Truth.”

not always align with slower, humanistic priorities of documentation and contextualization.

Again, the infrastructure we have described here for mutualization of data reflects a shift in the textual computational humanities at the time we are writing: rather than aiming for universal models, it acknowledges the enduring value of finely crafted data and recognizes that openly available training corpora themselves are an important part of the scholarly process.⁵³ In recent years, we have witnessed an important shift from the collective creation of data to designing the means for data pooling, a subtle but meaningful shift in how collaboration is conceived. These infrastructures for research in 2025 may not exist in a few years, having been supplanted by others. Yet, they introduce new tensions. We have argued in Chapter 2 that ground truth, especially for medieval texts, is not as universal as it is purported to be. Within the same script or language group, scholars may model different textual phenomena, apply different normalization strategies, and ask different research questions. This fact means that ground truth must be continually reassessed and models adapted for the context of new projects.

Furthermore, there are salient critiques of data mutualization in the computational humanities that highlight how infrastructural disparity is not merely a logistical inconvenience, but rather a structural issue that shapes who is able to produce knowledge, how that knowledge circulates, and whose perspectives and data are ultimately centred—or excluded. While discourses around mutualization are often framed in the language of collaboration, openness, and equity, they fall short of genuine inclusivity.⁵⁴ Mutualization presumes that all contributors have comparable access to time, funding, institutional infrastructure, and technical expertise, and, perhaps more importantly, that their academic institutions reward (or require) their contributions to open access data sharing. In reality, disparities in digital access, administrative support, training, or reward systems for open access publication frequently make it complex for less-resourced individuals, institutions without relevant programmes, and scholars working in non-Western environments to produce work that meets the expectations of mutualization. These exclusions are not incidental—they shape the very contours of the field’s development and perpetuate existing hierarchies of academic participation.⁵⁵

53 Chagué and Clérice, “HTR-United.”

54 Piron, “Postcolonial Open Access.”

55 Risam, *New Digital Worlds*.

Indeed, open access and mutualization are not a one-size-fits-all approach to knowledge creation.

Such disconnects are evident in computational manuscript studies within Western scholarly environments, where the aspiration for open access to training data often collides with the legal, material, and institutional constraints that shape access to, and distribution of, primary sources. In our work on the Paris Bible Project—focused on a genre, examples of which are found in a wide range of global collections—we have sought to include manuscripts from diverse locales in order to challenge what we have termed collection bias. However, gaining access to these materials, particularly outside well-resourced European or North American institutions, has often been difficult, let alone the acquisition of digital images of undigitized manuscripts suitable for analysis. With some libraries and archives in Europe and North America, we encountered a willingness to permit informal photography of medieval manuscripts for research purposes—including for use in HTR model training—but under the condition that such images be used solely for private research and not be disseminated publicly. As a result, we hold numerous pages of carefully proofread ground truth data that cannot be shared alongside their corresponding images, the preferred method of sharing data according to HTR-United and the necessary condition for ground truth in Hugging Face. These datasets were crucial for the analysis presented in Chapter 3, yet we would likely face resistance in parts of the computational humanities community were we to publish them without their corresponding image data. These limitations underscore the frictions between the ideal of mutualized data, the notion of reproducibility that sits behind it, and the practical realities of working with fragile or institutionally restricted archival material.

Such examples underscore the considerable labour involved in producing a wide range of datasets stemming from computational humanities research—whether they be TEI-encoded editions, geospatial gazetteers, or annotated image sets—intended for reuse under explicit licensing frameworks. While well-resourced institutions may benefit from dedicated teams for metadata curation, digital preservation, and infrastructural support, and may have funding requirements to publish research data openly, these conditions are far from universal. Although they may be published openly, humanities datasets are not neutral, fungible objects: they are deeply embedded in the interpretive labour, scholarly judgement, and material and legal constraints of the environments in which they are created. While metadata helps make these datasets more discoverable and legible to others, it cannot fully convey the subtlety of the interpretive processes underlying their

construction. In practice, many humanities datasets—particularly those emerging from under-resourced or short-term projects—can be incomplete or undeveloped in nature, making them difficult to share or reuse in other contexts, even amongst seasoned digital humanists. Carefully curated and documented corpora, such as those indexed by HTR-United, must be reassessed and often restructured when taken up for new research questions, or grounded in alternative scribal conventions. The interpretive specificity of such humanities data can resist the ideals of seamless transfer and reproducibility, promulgated by more standardized scientific data creation processes. Moreover, the work required to align, translate, or reshape inherited data to new scholarly contexts is often underestimated. It is not merely a matter of format conversion, but of grappling with embedded assumptions, historical contexts, and methodological difference. These challenges have led some scholars to question whether the promise of mutualized data reuse in the humanities is truly worth the effort.⁵⁶ The labour needed to repurpose datasets often approaches that of creating them anew, raising difficult questions about how value and credit for such work are determined. Ultimately, while the mutualization of data offers real opportunities for scholarly exchange, it cannot be divorced from the structural conditions in which data is increasingly being produced, shared, and appropriated.

Of course, multidisciplinary research has its share of pitfalls and cautionary tales—imbalances of funding, differing reward structures and timelines for research—but we believe that there is untapped potential in developing collaborative research models that expand current systems of reward. This structural fragility is compounded by disciplinary and institutional disparities. Students and scholars at institutions without access to digital humanities training, including those with rich archival collections, may not develop the computational expertise necessary to contribute to or lead data-driven projects. This paradox produces uneven development in the field, where institutions with rich archives may unfortunately experience technical exclusion, and other institutions with smaller archives may excel in technical know-how, overemphasizing the artifacts they have at their disposal. Moreover, expanding access to collaborative networks, particularly for scholars working outside major research universities, has been shown in other fields to significantly benefit researchers' careers.⁵⁷ Such collaborative work is going on, as can be gleaned from publication in digital and computational

56 Camps et al., "Data Diversity."

57 Li et al., "Early Coauthorship."

humanities venues, but if (or when) more professional societies aligned with the complex field of medieval studies were to encourage collaborative work with non-humanities fields like Statistics, Computer Science, Biology, and Environmental Studies, leading to co-publication, the field may potentially experience shifts in research impact similar to those observed in the sciences and social sciences, leading to a renewed visibility and influence.⁵⁸ As the field continues to integrate digital methodologies and data-driven research with a critical eye to the specificities of humanities archives, the importance of co-authorship in medieval studies may indeed increase.

Credit taxonomies like TaDiRAH⁵⁹ and recent thinking about crediting data provenance⁶⁰ attempts to model ways that credit for the labour of collaborative work in computational humanities can be acknowledged. Yet, the logic of artificial intelligence—where data are aggregated, generalized, and reused—complicates traditional models of (co-)authorship and citation. If ground truth data is created by one group, refined by another, and used to train models elsewhere, how do we assign scholarly credit in ways that acknowledge layered intellectual contributions, rather than contributing to them being obscured? If mutualizing data leads to its extraction and aggregation, losing the trace of such scholarly labour, is this situation one that humanists want to promote? Openness is, indeed, not an easy fix.⁶¹ These various challenges, along with the rise of synthetic data approaches for machine learning,⁶² underscore the need for more context-sensitive and ethically grounded infrastructures and transparent discussions in the field about research workflows.⁶³

58 In a North American context, many professional associations have disseminated guidelines for the evaluation of innovative forms of scholarship, particularly regarding digital humanities research: a few examples of this profession-created guidance include the Canadian Federation of the Humanities and Social Sciences (2002), American Historical Association (2015), College Art Association (2015), the American Council of Learned Societies (2021), and a recently updated report from the Modern Language Association Committee on Information Technology (2024). Digital scholarship presents specific challenges and opportunities for the humanities, as do interdisciplinary partnerships, and yet such statements on evaluating the value of the interdisciplinary are not as common within the humanities.

59 Borek et al., “Information Organization and Access.”

60 Romein et al., “Exploring Data Provenance.”

61 Klein et al., “Provocations from the Humanities,” 10–11.

62 Offert and Bell, “Generative Digital Humanities.”

63 An example, although not specifically from medieval studies, of collective reflection on workflows can be found in Baillot et al., eds., “Workflows.”

Conclusion

We conclude this chapter by advancing the proposition that the future of collaborative medieval studies should not be oriented toward scale or speed alone, but rather toward the development of community-sustaining infrastructures that support ethical and inclusive collaborative research practices, framed by a postcolonial approach to information. They must be designed to mutualize interpretive work, acknowledge diverse forms of expertise, and support a wide variety of epistemologies. And if we are to adopt the notion of the commons as a guiding model—for shared resources, datasets, methods, and publications—what forms of sharing are most likely to foster an equitable, participatory future? While the creation of high-quality metadata and ground truth datasets for HTR represents a meaningful beginning, it cannot be the endpoint. What might come next is an interconnected set of community-governed environments, annotation spaces, and pedagogical frameworks that allow scholars at different levels of technical proficiency to contribute meaningfully to the collective endeavour. If we take the conclusions of the SciSci literature seriously, a vibrant commons inclusive of many different kinds of expertise will be required. In this vision, the commons has to be imagined not merely as an index of data, but a space of encounter, negotiation, and ongoing ethical engagement, and importantly, evolving as both technology and digital literacies evolve.

Our research on thirteenth- and fourteenth-century Latin bibles surfaces general ethical questions of all forms of research in the age of AI and automation that we believe should be a matter of debate in our professional circles. Creating reusable data in research is a trend in contemporary academic research that one finds even outside of largely computational projects and we do not expect for such a trend to wane. It is important, in our eyes, that contemporary research approach the question of the diversity of research outputs with care, and in particular, not producing outputs that only have relevance in a highly specialized, quantitative, computational sphere.⁶⁴ Rather, more inclusive and integrated methods for incorporating and validating theories that arise from computational work need to be devised. In the case of medieval studies, validating them across different scales, archives and collections seems to be particularly salient, as well as in combination with other (admittedly slower) forms of codicological analysis that the face-to-face encounter with the physical codex privileges. Bringing together computational analysis with more traditional methods is also

64 Joyeux-Prunel, “Digital Humanities in the Era of Digital Reproducibility,” 41.

a way to bridge the gap between already strongly computational scholars and those learning about digital environments and methods. For researchers whose expertise lies outside the digital domain, a future of collaborative medieval studies requires infrastructure that prioritizes a *commons of interpretation*—where scholarly annotations, hypotheses, and close readings can be treated as shareable and citable outputs. Such spaces would foster knowledge-making across interpretive communities, in which contributions by non-digital scholars are not merely accommodated, but actively incorporated. Joyeux-Prunel has argued that, in the humanities, “issues of corpus, method, and interpretation cannot be separated, rendering a procedural definition of reproducibility impractical,” and she has proposed a post-computational framework for the extension of the FAIR guidelines.⁶⁵

For reasons that we have provided above about the relative size of the medieval studies community and its global distribution, it is unlikely that medievalists will take on these issues of infrastructural design and implementation by themselves. Instead, cooperation between the community and other actors and advocacy will be essential to make sure that the specificities of the discipline are included in the larger conversations. One domain, however, in which medieval studies will need to double down concerns pedagogy and the training of new generations of medievalists. In this chapter we have outlined one example of a critical student-centred training opportunity designed to introduce a new generation of students to the challenges and the promises of AI-centred data creation. It is perhaps in the domain of pedagogy that commons-based approaches can help cultivate a new generation of scholars equipped to bridge the various gaps between traditional research practices and the computational humanities.⁶⁶ The development of a pedagogical commons—comprising modular, open-access materials for a variety of historical and linguistic domains—would facilitate the integration of computational methods into medievalist training. Modelled on other commons such as the *Programming Historian* or the *Digital Orientalist*, medieval-specific contributions would emphasize interpretive engagement with issues of manuscript culture and medieval language. They would

65 Joyeux-Prunel, “Digital Humanities in the Era of Digital Reproducibility,” 25.

66 There are venues for the discussion of pedagogy in the context of medieval studies, and ones with an explicitly digital orientation, such as the *Middle Ages for Educators* where some attention is placed on the acquisition of digital and computational skills, but where most of the content engages with how to teach the Middle Ages with digital resources that have already been made. See Middle Ages for Educators, *Middle Ages for Educators*.

provide a venue for methodological discussions relevant for existing scholarly communication venues for the debate about medieval cultural objects in the post-digital era.⁶⁷ Engaging junior and senior medievalists alike in the details of reconstruction of dispersed codices or in the collaborative annotation of under-documented texts, such a commons would acknowledge the computability of the field and the mass of digitized objects we study, while facilitating a critical discussion of how new methods result in new knowledge and paths of interpretation.

It is also valuable to reflect on the larger picture of the kinds of training and support needed by new generations of medievalists to be able to take full advantage of future-forward infrastructures. Obviously, initiatives such as the Digital Medieval Studies Institute (DMSI) that took place for the first time as a collaboration between the Medieval Academy of America (MAA) and NYU's campus in Washington, DC, and that has continued collocated with the MAA conference and the International Medieval Congress in Leeds, UK, is an excellent example.⁶⁸ Training opportunities, however, vary widely depending on national contexts. In North America, students can pursue certificates alongside their main degrees (BA, MA, PhD), but there are few stand-alone degrees in digital humanities. In Europe, by contrast, there are numerous specialized master's programmes—for instance at the École des chartes, King's College London, or within several German and Scandinavian universities—as well as programmes focusing on the history of the book or manuscript studies that often integrate digital components, such as the host programme for our abovementioned Paris Bible Correct-a-thon. National systems that have invested in digital infrastructures also support a wealth of summer schools, organized by projects (e.g., Biblissima, ERC projects) or by universities in places such as Besançon, Oxford, Leipzig, Madrid, and Venice, as well as long-running programmes like the Digital Humanities Summer Institute (DHSI) in Canada. These initiatives demonstrate that there are many possible pathways into digital training, though future medievalists and early career researchers must often integrate themselves into broader, more technical networks that extend beyond medieval studies.

Disciplinary training alongside digital methods also impacts outputs produced by young scholars. According to the SciSci literature, we know that young scholars who work and publish with more experienced and established researchers, both in and outside their field, tend to develop more

67 Some of these journals include *Digital Philology*, *postmedieval*, *Fragmentarium*.

68 Medieval Academy of America, "Digital Medieval Studies Institute (DMSI) 2025."

impactful and disruptive work. While there is no magic formula for this relationship to develop, we believe that academic institutions and scholarly infrastructures need to create the context for serendipitous collaborations to develop. This context can be nurtured in multiple ways: beyond conferences and congresses, summer schools are a natural place where researchers at different career levels and from different contexts can meet and develop common scholarly interests. Mentoring initiatives within professional organizations are another way to create these relationships. More importantly perhaps, academic institutions ideally would dedicate some research time to experimental humanities in which they encourage their scholars and students to pursue tangential and collaborative projects, supported by the time, place and the funding, projects that do not result in canonical scholarly output. While there has been some advocacy work done on validating digital scholarship for the tenure-track faculty member, less attention has been paid to the young medievalist. Traditional scholarly outputs—PhD thesis, single-authored publications—are still the expected norm, particularly in the North American context. There, professional organizations and the entire scholarly worlds around medieval studies could step up and write guidelines for digital and computational work in the humanities, similar to the MLA guidelines about how to model future professional work.⁶⁹ Being explicit about the criteria for the formal evaluation of digital scholarship has the informal benefit of defining professional ideals for future scholars in training.

Professional societies and conferences with a pre-modern focus such as the Renaissance Society of America (RSA), the Medieval Academy of America (MAA), the “Co-operative for the Advancement of Research through a Medieval European Network” (CARMEN), International Medieval Congress (IMC), International Congress on Medieval Studies (ICMS) and others can lead this effort, dedicating sessions to collaborations between digital/computational humanities and non-humanities fields. Awards and recognition structures—such as prizes for collaborative projects that make data openly available or develop pedagogical toolkits—can shift incentive structures toward shared scholarly labour. Hackathons and collaborative data sprints, built around real project datasets some of which have been mentioned in this chapter, could be hosted alongside traditional paper panels, encouraging emerging scholars to engage hands-on with digital methods and to contribute to community-oriented infrastructure like the commons-based model we discussed above. Existing programmes, such as the digital humanities master

69 Modern Language Association, “Guidelines.”

at the École nationale des chartes-PSL, already organize such hackathons. In a call for papers sent in September 2025, they solicit projects focusing on AI and data science applications in the social sciences and humanities. Each challenge will be based on a data corpus (with preference for open-access sources) and designed around tasks feasible within one week, such as classification, annotation, information extraction, visualization, or modelling.

Beyond recognizing technical sophistication, however, these societies could tap into public humanities approaches to help translate interdisciplinary and computational work into forms that are legible and valuable to broader audiences, including to the profession itself. As the number of co-authored and data-rich publications rises, the profession can promote formats that integrate visualization and digital narrative in ways that invite wider participation. Conference platforms should encourage scholars to present digital findings in conjunction with critical reflections on method and pedagogy. Professional organizations and the leadership within them can help ensure that new methods do not harden disciplinary boundaries, but instead expand the interpretive commons of the field. At the same time, embracing mixed publication pipelines—wherein graduate students and early career researchers could have code notebooks, datasets, and data papers peer-reviewed—would align scholarly communication with the realities of collaborative work. It has been shown that humanities research based on freely available and openly licensed datasets is more likely to be cited, leading to increased reproducibility rates and greater public confidence in the research.⁷⁰ If we extend this scenario beyond datasets to the intermediate materials of computational humanities, such as computational notebooks or HTR ground truth, we may have an environment in which more medievalist confidence in the research can be built. As the landscape of research in the humanities evolves—driven by computational tools, interdisciplinary collaboration, and open data practices—professional organizations, scholarly conferences, and mainstream journals (many of which we studied in this chapter) must take a more active role in shaping the conditions for inclusive, future-oriented scholarship. These organizations are uniquely positioned to support innovative practices and the ethical and pedagogical frameworks that sustain its presence in the contemporary university.

70 Colavizza et al., “The Citation Advantage,” cited in Van Erp et al., “The Future of Digital Humanities Research.”