Yemeni Manuscripts Online: Digitization in an Age of War and Loss

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Um, Nancy () "Yemeni Manuscripts Online: Digitization in an Age of War and Loss," *Manuscript Studies*: Vol. 5 : Iss. 1 , Article 1.

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Yemeni Manuscripts Online: Digitization in an Age of War and Loss

Abstract

In 2013, a corpus of manuscripts from Yemen became openly accessible to the public through the Princeton University Digital Library portal. Numbering around 250 codices, most were digitized and cataloged from three private collections held in Yemen, under the auspices of the Yemeni Manuscript Digitization Initiative (YMDI), a scholarly network that was underpinned by institutional support from the Princeton University Library and Freie Universität Berlin. This article delves into the YMDI project, as a significant case study, with the goal of considering how this group of digital surrogates functions as an online collection, rather than viewing the Princeton portal as a transparent access point for these manuscripts or examining any of the YMDI volumes or their contents individually. Mass digitization projects are often sketched as efforts of “salvage,” focusing on issues of both preservation and accessibility. By contrast, here, it is asserted that the meaning and significance of these manuscripts have not been sustained through the act of digitization, but rather transformed, particularly amidst Yemen’s current unstable political situation. It is hoped that this article will provide a critical backdrop to the YMDI collection, by situating the cultural act of digitization historically, thereby helping users to understand these collections more substantively and inspiring us to think critically about how and why we digitize historic manuscripts in a precarious contemporary world.

Keywords

Yemen, manuscripts, Zaydism, Houthis, digitization, metadata, Princeton Library, visualization, heritage

MANUSCRIPT STUDIES

A Journal of the Schoenberg Institute for Manuscript Studies

VOLUME 5, NUMBER 1

(Spring 2020)

Manuscript Studies (ISSN 2381-5329) is published semiannually
by the University of Pennsylvania Press

The Schoenberg Institute
for Manuscript Studies

UNIVERSITY of PENNSYLVANIA LIBRARIES

MANUSCRIPT STUDIES

VOLUME 5, NUMBER 1

(Spring 2020)

ISSN 2381-5329

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Published by the University of Pennsylvania Press,
3905 Spruce Street, Philadelphia, PA 19104.

Printed in the U.S.A. on acid-free paper.

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Yemeni Manuscripts Online: Digitization in an Age of War and Loss

NANCY UM
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IN 2013, A CORPUS of manuscripts from Yemen became openly accessible to the public through the Princeton University Digital Library portal: <http://pudl.princeton.edu/collections/pudl0079>. Numbering around two hundred and fifty codices, most were digitized and cataloged from three

The author thanks David Hollenberg for his collegiality in consulting on this project. He generously agreed to answer countless questions over the phone and by email and has been a valuable source of support and encouragement. She also thanks Joyce Bell, Peter Green, and Nathan Spannaus, who kindly provided unpublished catalog records, training documents, and many helpful comments about the cataloging process. Ahmad Eshaq, Director of the IZbACF, and Ali Alkohrani, a researcher, also generously commented on this article via WhatsApp from Sanaa. However, all of the opinions and interpretations presented in this article are independent and do not represent the views of any of the individuals who provided feedback on it or those who participated in the YMDI project. It should also be noted that the situation in Yemen is changing by the day and will have undoubtedly shifted by the time this article is published. The author agonized over portraying contemporary events in a way that would be satisfactory and fair, while also recognizing that her perspective is distant from the current conflicts. Certain readers believed that the language used here conveyed the coalition's viewpoint, while others may find it to be too conciliatory toward the Houthi position. What has been made clear, sadly, is that middle ground will be hard to find between these various views. This article uses the *International Journal of Middle East Studies* transliteration system, although it will not be applied to terms and proper names that have accepted spellings in English, such as Houthi, Sanaa, and imam, unless they are in a construction or are being quoted from another source. Common era dates are generally used, unless they were derived from a *hijrī* date. In that case, they are noted with the Islamic calendar date first followed by a slash and then the common era date.

private collections held in Yemen, under the auspices of the Yemeni Manuscript Digitization Initiative (YMDI), a scholarly network that was underpinned by institutional support from the Princeton University Library and Freie Universität Berlin.¹ Included among these digital surrogates were a few manuscripts from Yemen that are held today in the Staatsbibliothek in Berlin and Princeton's own collection. At the time the project launched, it was an exciting development because it presented a corpus of historic books that were previously inaccessible to the public. It is estimated that around fifty thousand codices are kept in private homes in Yemen today, of which very few have been cataloged or digitized.

The value of this digital collection increased in late 2014, when Anṣār Allāh, known more widely as the Houthis, an opposition group based in northern Yemen, took the capital city Sanaa, causing the internationally recognized leadership to withdraw. A few months later, in 2015, a coalition led by the Kingdom of Saudi Arabia (KSA), joined by other Arab states and supported logistically by the United States, the United Kingdom, and France, began a campaign of airstrikes to expel the Houthis from Sanaa and other Yemeni cities, with the goal of reinstalling the government of the president-in-exile Abdrabbuh Mansour Hadi. This crisis has escalated into a devastating war that has killed thousands, as well as instigating a staggering humanitarian disaster, resulting in mass displacement, starvation, and disease within the country. Cultural heritage, including manuscripts, but also monuments, museums, and archaeological sites, has also suffered through the course of this war. In some cases, sites of cultural significance have been targeted directly by the various warring parties that wish to inflict further damage on local communities.² At the time of writing this article, no clear resolution to this conflict is in sight, even though several

1 David Hollenberg, "The Yemen Manuscript Digitization Initiative," *Chroniques du manuscrit au Yémen* 13 (2012), <https://journals.openedition.org/cmy/1931>. YMDI was funded by a National Endowment for the Humanities/Deutsche Forschungsgemeinschaft Enriching Digital Collections Grant.

2 Lamya Khalidi, "The Destruction of Yemen and Its Cultural Heritage," *International Journal of Middle East Studies* 49 (2017): 735; Mwatana for Human Rights, "The Degradation of History: Violations Committed by the Warring Parties Against Yemen's Cultural Property," unpublished report, November 2018, 10.

international efforts have been made to stop the war. The digital surrogates made available by YMDI now offer entry into a world of manuscripts that is difficult for most researchers to gain access to in person.

It is important to underline that YMDI's mission, which started in earnest in 2010, was not an international response to the current crisis that began in 2014, even if the war has cut short YMDI's potential to expand, while also further endangering historic manuscripts in the region.³ In fact, YMDI built upon local cultural preservation initiatives that had started much earlier. Moreover, it is only one of several projects that have aimed to document Yemeni manuscripts, through microfilm or digitization, and have been carried out by various regional and international organizations, as early as the 1950s.⁴ Currently, there is a major effort under way to digitize the entire corpus of Zaydī manuscripts from Yemen, held in dispersed global collections, and to provide a single electronic portal to gain access to them. The Zaydī Manuscript Tradition (ZMT), a collaboration between the Institute for Advanced Study, Princeton, New Jersey, and the Hill Museum and Manuscript Library at Saint John's University, Collegeville, Minnesota, launched as the umbrella for this ambitious project in 2017.⁵

This article delves into the YMDI project, as a significant case study, with the goal of considering how this group of digital surrogates functions as an online collection, rather than viewing the Princeton portal as a transparent access point for these manuscripts or focusing on any of the YMDI volumes or their contents individually. Mass digitization projects are often

3 YMDI was intended as a pilot project that would have continued had it not been for the outbreak of the war. Sabine Schmidtke, "The Zaydī Manuscript Tradition: Virtual Repatriation of Cultural Heritage," *International Journal of Middle East Studies* 50 (2018): 125.

4 Sabine Schmidtke, "The History of Zaydi Studies: An Introduction," *Arabica* 59 (2012): 191, 195–96; Anne Regourd, "Introduction: Sur la trace de l'histoire des collections et des bibliothèques du Yémen," *Journal of Islamic Manuscripts* 5 (2014): 113; Schmidtke, "The Intricacies of Capturing the Holdings of a Mosque Library in Yemen: The Library of the Shrine of Imām al-Hādī, Ṣa'da," *Manuscript Studies: A Journal of the Schoenberg Institute for Manuscript Studies* 3 (2018): 223.

5 *The Zaydi Manuscript Tradition*, Institute for Advanced Study, Princeton, last modified on 11 April 2017, accessed 16 September 2019, https://www.ias.edu/digital-scholarship/Zaydi_manuscript_tradition.

sketched as efforts of “salvage,” highlighting concerns of both preservation and accessibility.⁶ By contrast, here, it is asserted that the meaning and significance of these manuscripts have not been sustained through the act of digitization, but rather transformed, particularly amid Yemen’s current unstable political situation, which is poorly understood outside of Yemen and certain international specialist circles. It is hoped that this article will provide a critical backdrop to the YMDI collection, by situating the cultural act of digitization historically, thereby helping users to understand these collections more substantively and inspiring us to think critically about how and why we digitize historic manuscripts in a precarious contemporary world.

The Changing World of Yemeni Zaydism

The YMDI manuscripts are associated with Zaydism, in that they were part of collections amassed by Zaydī scholars, although they also include content related to other Muslim religious traditions.⁷ Zaydism is one of the three main substrands of Shīʿism and survives today only in its Yemeni form, although there was a branch situated in the Caspian Sea region that died out in the sixteenth century. As such, medieval Zaydism provided a link between two distinct traditions, Yemeni and Persian, which came together in the twelfth century to constitute a unique cross-cultural intellectual strand in Islam.⁸ With this limited sphere of influence, Zaydism is surely the least known of the Shīʿī traditions, even though it has emerged on the political horizon in recent years with the rising visibility of the Houthis, who have promoted a contemporary Zaydī revival. As such, their ongoing war with the Saudi coalition is often sketched in reductive terms as a Sunnī-Shīʿī

6 Schmidtke, “Virtual Repatriation,” 126.

7 Valentina Sagaria Rossi and Sabine Schmidtke, “The Zaydi Manuscript Tradition (ZMT) Project: Digitizing the Collections of Yemeni Manuscripts in Italian Libraries,” *COMSt Bulletin* 5 (2019): 44.

8 Sabine Schmidtke and Jan Thiele, *Preserving Yemen’s Cultural Heritage: The Yemen Manuscript Digitization Project*, Hefte zur Kulturgeschichte des Jemen 5 (Sanaa, 2011), 13.

battle, indeed, as a proxy war between KSA and Iran, each as a representative of its sect. But, as will be shown below, these affiliations do not encapsulate the complexities of the current conflict.⁹

In order to understand the roots of the Houthi movement, one must dig deeper into Yemeni history and geography. Yemen sits at the southern corner of the Arabian Peninsula. Its interior is constituted by high mountain ranges that are bordered by coastal lowlands to the west and the south. The eastern expanse bleeds into a vast desert. The interior highlands are dominated by tribes that adopted Zaydism beginning in the tenth century, while the lowlands are Sunnī, mainly following the Shāfiʿī *madhhab*, or school of law. Smaller communities of Jews and Ismāʿīlī Muslims have lived among both groups. This geopolitical split between inland-dwelling Zaydīs and lowland and coastal Sunnīs was generally sustained in Yemen until the seventeenth century, when the Qāsimī imams, who originated from a Zaydī family based in the city of Shihāra, incorporated southern Yemen into their territorial fold, bringing Sunnī communities under the rule of the Zaydī imam for the first time in their history. This contact provided the opportunity for Zaydī thought and scholarship to come under the increasing influence of Sunnī views and positions. As a result, today, Zaydism is generally characterized as the Shīʿī tradition that is the most compatible with Sunnism, sometimes referred to as its fifth *madhhab*.

Zaydī rule in Yemen continued under the Qāsimīs, until the Ottomans occupied Yemen, for the second time, in 1872. When the Ottomans ceded control after the Treaty of Daʿān in 1911 and the subsequent fall of their empire, Imam Yaḥyā Hamīd al-Dīn restored the imamate across Yemen. In the 1940s, following the wave of nationalist movements that had spread throughout the Arab world, Yemenis began to call for the establishment of a new secular republic. Imam Yaḥyā was assassinated in 1948, and his son Aḥmad succeeded him. Upon his death, his son, Muḥammad al-Badr, became imam, but was quickly deposed by the coup d'état that initiated the 1962 revolution. A war ensued for eight years, supported at the outset by

9 Ibrahim Jalal, "After Aramco: Will Halting Houthi Attacks on Saudi Arabia End Yemen's War?" *Middle East Institute*, 1 October 2019, accessed 4 October 2019, <https://www.mei.edu/publications/after-aramco-will-halting-houthi-attacks-saudi-arabia-end-yemens-war>.

Egyptian forces, and eventually put an end to the imamate. It is also necessary to emphasize that, during the revolution, the Saudis had supported the Zaydī imam as a royalist ally, which suggests that current sectarian conflicts do not reflect an unshakable Sunnī-Shīʿī divide.¹⁰ At the conclusion of the revolution, the Yemen Arab Republic was established. The British, who had captured the port of Aden in 1839, left in 1967, and the People's Democratic Republic of Yemen formed as a socialist state in the south. In 1990, the north and the south were united, although a civil war broke out in 1994, lasting for only a few months. Even so, the rift between the two parts of Yemen remains deep today. Established under the banner of the Southern Transition Council, separatists have been calling emphatically for secession, an agenda that has been supported by the United Arab Emirates, which withdrew its forces from coalition efforts in August 2019.

The effects of the 1962 revolution were quite devastating for many among Yemen's Zaydī elite, whose members had held positions of privilege for generations. Also, under the new Republican order, a "standardization of religious beliefs and practices, condemning Zaydī doctrines and teachings" was implemented.¹¹ As a result, the population in many Zaydī majority areas became alienated from the newly established central government, a consequence that spurred on a Zaydī resurgence in northern Yemen as early as the 1980s. This activist enterprise, which intensified in the 1990s after the civil war, promoted Zaydism, but was also "a defensive movement to counter the radical Sunnī and Salafī onslaught and the government policy of neglect" in this region.¹²

In addition to the establishment of a Zaydī political party called Ḥizb al-Ḥaqq, this revival movement took shape on several distinct cultural and

10 Gabriele vom Bruck, *Islam, Memory, and Morality in Yemen: Ruling Families in Transition* (New York: Palgrave, 2005), 57.

11 Marieke Brandt, *Tribes and Politics in Yemen: A History of the Houthi Conflict* (Oxford: Oxford University Press, 2017), 103.

12 Brandt, *Tribes*, 347–48. See also Bernard Haykel, "A Zaydī Revival," *Yemen Update* 36 (1995): 20–21; James Robin King, "Zaydī Revival in a Hostile Republic: Competing Identities, Loyalties and Visions of State in Republican Yemen," *Arabica* 59 (2012): 413; Gabriele vom Bruck, "Regimes of Piety Revisited: Zaydī Political Moralities in Republican Yemen," *Die Welt des Islams* 50 (2010): 185–223.

educational fronts.¹³ Some Zaydis began to actively reinvigorate Shīʿī-specific activities that had long been suppressed, such as the commemoration of ʿĪd al-Ghadīr, which marks the Prophet Muḥammad’s appointment of ʿAlī as his successor, according to the Shīʿī tradition. New schools that taught Zaydī-oriented curricula were established, and a series of summer programs was offered to Zaydī children around the city of Ṣaʿda.¹⁴ In the world of manuscript studies, the Imam Zayd b. ʿAlī Cultural Foundation (Muʾassasat al-Imām Zayd ibn ʿAlī al-Thaqāfiyya, hereafter referred to as IZbACF) has been a major engine for the preservation of Zaydī scholarly heritage since it was established in 1994 and even more so since its digitization efforts began in 2000.¹⁵ Sabine Schmidtke, the scholar of Zaydī texts who has spearheaded the ZMT project, calls the IZbACF “the most active NGO dedicated to preserving the heritage of the Zaydī community through the publication of manuscript catalogues and critical editions as well as through the digitization of manuscripts.”¹⁶ As described by David Hollenberg, YMDI’s director, IZbACF had been receiving many requests to furnish digitized materials to international scholars.¹⁷ YMDI was constituted to aid in and improve these ongoing efforts at digitization, while also streamlining access to the surrogates that IZbACF was already generating. A major grant supported a five-day workshop for IZbACF staff in Berlin in December 2010, facilitated by the staff of the Princeton Library and the Staatsbibliothek. The participants were trained to digitize and catalog the YMDI manuscripts according to international standards. The project also

13 Brandt, *Tribes*, 112.

14 King, “Zaydī Revival in a Hostile Republic,” 413.

15 WhatsApp communication to the author from Ahmad Eshaq, 20 September 2019.

16 Schmidtke, “The History of Zaydī Studies,” 196. A WorldCat search brings up 128 books under the IZbACF imprint (although some duplicates are included) sometimes in conjunction with other publishers. The earliest book was published by IZbACF in 1999. At that time, printing was undertaken in Amman, but also sometimes in McLean, Virginia; Sanaa; or Beirut. Since 2003, their books have generally been published in Sanaa. The most recent title, *Al-ʿIqd al-thamīn fī tabyīn abkām al-aʾimma al-hadīn*, by al-Manṣūr bi-Allāh ʿAbdallāh ibn Ḥamza ibn Sulaymān and edited by ʿAbd al-Salām ibn ʿAbbās al-Wajīh, appeared in 2017, in its second edition.

17 Email communication to the author from David Hollenberg, 7 August 2019.

provided the IZbACF with cameras, copy stands, laptops, hard drives, and software. Then, over the following two years, the IZbACF staff in Sanaa engaged in the digitization of over two hundred manuscripts on site, often working under difficult conditions, “including severely restricted access to electricity, fuel, and at times even drinking water.”¹⁸ The hard drives with the images and associated metadata were sent to Princeton in 2012.¹⁹

This article acknowledges the singular leading institutional role that the IZbACF has played in facilitating scholarship in the much-overlooked area of Zaydī studies, with a track record of around eight thousand manuscripts digitized. According to Ahmad Eshaq, director of the IZbACF, work continues even amid the difficult conditions of the war.²⁰ But, it is necessary to understand that the Zaydī resurgence that led to the establishment of the IZbACF also spurred the rise of the Houthi movement, which has gained steam as a full-fledged opposition group with expansionist aspirations within the past twenty years. For this reason, it is difficult to separate the cultural activities of the Zaydī revival from its political manifestations. In 2012, when the Houthi movement was much less influential than it is today, James Robin King wrote about these sensitive associations. According to King, the IZbACF had to walk a narrow path in promoting Zaydī heritage, without being seen as a threat to the state, a concern that was apparent in the careful wording of its website and other promotional materials circulating around that time.²¹ By contrast, the Houthis first adopted their incendiary *shi‘ār*, or slogan, which calls for the downfall of both the United States and Israel, in 2000.²² Their oppositional political status was crystallized in 2004 with the first of the six Ṣa‘da wars, which were a series of battles fought between the Houthis and Yemen’s central government until 2010. Although they participated in the National Dialogue process, which was a

18 Hollenberg, “The Yemeni Manuscript Digitization Initiative.”

19 Bell wrote, “the political situation seriously affected shipping shortly after the project began and we were unable to achieve the regular exchange of hard drives originally planned.” Email communication to the author from Joyce Bell, 5 August 2019.

20 WhatsApp communication to the author from Ahmad Eshaq, 30 September 2019.

21 King, “Zaydī Revival in a Hostile Republic,” 423.

22 Brandt, *Tribes*, 133.

conciliatory effort to determine Yemen's future following the removal of the long-term president Ali Abdullah Saleh from office in 2013, Anṣār Allāh took the capital the next year.²³ Since then, international groups have issued several evidence-based claims of serious abuses committed by the Houthis, such as using banned landmines, persecution of religious minority groups, censorship, corruption, recruitment of child soldiers, recklessly endangering civilians, torture, sexual violence, and hindering the delivery of food aid and medical care to the population.²⁴ It is necessary to add that the Saudi-led coalition has been accused of committing many of the same crimes.²⁵

This extended historical discussion has been offered to illuminate why Zaydī cultural heritage and scholarly efforts have been tied up with the embattled political legacy of the Houthis, even if the affiliation Zaydī “suggests a wide range of possible identifications and loyalties,” as King has indicated.²⁶ Indeed, several works of Badr al-Dīn al-Ḥūthī (b. 1926), the Zaydī scholar whose son Ḥusayn initiated the Houthi movement, appear as publications under the IZbACF imprint.²⁷ This connection also helps to illuminate why certain sites of Zaydī cultural, historical, and religious

23 Brandt, *Tribes*, 339–40.

24 “Yemen: Houthi Landmines Kill Civilians, Block Aid,” Human Rights Watch, 22 April 2019, accessed 2 October 2019, <https://www.hrw.org/news/2019/04/22/yemen-houthi-land-mines-kill-civilians-block-aid>; “Concern over Bahai’ [sic] Followers Trial by Yemen Rebels,” *BBC News*, 1 October 2018, accessed 2 December 2019, <https://www.bbc.com/news/world-middle-east-45709322>; Aziz El Yaakoubi and Lisa Barrington, “Yemen’s Houthis and WFP Dispute Aid Control as Millions Starve,” *Reuters*, 4 June 2019, accessed 2 October 2019, <https://www.reuters.com/article/us-yemen-security-wfp/yemens-houthis-and-wfp-dispute-aid-control-as-millions-starve-idUSKCN1T51YO>; Justin Shilad, “Journalists in Yemen Under Attack from All Sides as Rival Forces Crack Down on Critics,” Committee to Protect Journalists, 7 September 2018, accessed 2 October 2019, <https://cpj.org/blog/2018/09/journalists-in-yemen-under-attack-from-all-sides-a.php>.

25 Nick Cumming-Bruce, “War Crimes Committed by Both Sides in Yemen, U.N. Panel Says,” *New York Times*, 3 September 2019, accessed 2 October 2019, <https://www.nytimes.com/2019/09/03/world/middleeast/war-crimes-yemen.html>.

26 King, “Zaydī Revival in a Hostile Republic,” 406.

27 *Al-Zubri: aḥādīthuhu wa-sīratuh* (Amman: Mu’assasat al-Imām Zayd ibn ‘Alī al-Thaqāfiyya, 2002); *Miftāḥ asānid al-zaydiyya* (Sanaa; Amman: Mu’assasat al-Imām Zayd ibn ‘Alī al-Thaqāfiyya, 2002) and *Man hum al-rāfiḍa* (Sanaa: Mu’assasat al-Imām Zayd ibn ‘Alī al-Thaqāfiyya, 2002), both with introductions by Ibrāhīm ibn Muḥammad ‘Ubaydī.

importance may have been targeted by coalition airstrikes, such as the Great Mosque of Ṣāʿda, the key Zaydī mosque and shrine in Yemen, which was damaged in 2015.²⁸ Moreover, the chaos that has been caused by this ongoing conflict has fostered the conditions for increased looting and trafficking of Yemeni artifacts, including manuscripts.²⁹ So, this is yet another case in which objects of heritage have become tied up with acts of war in inextricable ways. As art historian Heghnar Zeitlian Watenpaugh has eloquently shown, in the current conflicts in the Middle East, heritage is not just a “collateral damage of war,” but has become deeply involved and intertwined with its processes, as both “combatant” and “victim.”³⁰ Moreover, as indicated above, the movement to preserve and digitize Zaydī texts has become dire and urgent at a time when monuments, manuscripts, and intangible heritage are all increasingly subject to damage and loss.³¹ For these reasons, these digitized manuscripts cannot be viewed through the dehumanized portal of the screen as neutral historical artifacts. Rather, they must be situated amid these recent conflicts and contestations, which have contributed to the rise of the IZbACF and its efforts at digitization.

The YMDI Collection

The majority of the manuscripts that were digitized by YMDI and are held in the Princeton digital library come from three private collections. Yet the names of the owners were purged from the public record after the onset of

28 David Hollenberg and Anne Regourd, “Manuscripts Destruction and Looting in Yemen: A Status Report,” *Chroniques du manuscrit au Yémen* 21 (2016): 167–68; Rossi and Schmitdke, “Italian Libraries,” 46; Mwataana for Human Rights, “The Degradation of History,” 77–80. However, destruction of Zaydī shrines took place even before the war. Haykel, “A Zaydi Revival?”

29 Hollenberg and Regourd, “Manuscripts Destruction,” 159–60.

30 Heghnar Zeitlian Watenpaugh, “Cultural Heritage and the Arab Spring: War over Culture, Culture of War and Culture War,” *International Journal of Islamic Architecture* 5 (2016): 247.

31 Najwa Adra, “Tribal Mediation and Empowered Women: Potential Contributions of Heritage to National Development in Yemen,” *International Journal of Islamic Architecture* 5 (2016): 301–37.

the war for fear that these collections may be targeted through coalition airstrikes or subject to looting.³² These precautions indicate that even digital facsimiles of precious manuscripts can be precarious and that digital assets cannot be freed easily from the physical context of their originals, especially in a charged context like contemporary Yemen. Indeed, in this case, it is feared that the public circulation of digital surrogates could potentially instigate the loss of the manuscripts themselves.

As a consequence, it is quite difficult for distant users of the YMDI online collection to understand the original physical context of its books, which extended far beyond the dates when they were first written and include histories of copying, reading, rebinding, repair, ownership, transfer, and now digitization. In the YMDI case, these codices can be tied directly to known owners; indeed, many of the texts were copied or inscribed by them. In this section, I provide some information about these books, the private libraries that they are held in, and the generalized identities of their original owners, as gleaned from a 2002 study of Yemeni private collections, compiled by ‘Abd al-Salām al-Wajīh, a prominent scholar of Zaydī texts in Yemen, and published by the IZbACF.³³ However, all personal names and specific identifying information have been omitted or anonymized, in the interest of preserving the safety of the collections.³⁴ In the following, each collection will be referred to by number, rather than by name. As an example, the text with the accession number ymdi_02_14_04 is part of collection 2. Collection 4, which constitutes a grouping of thirty-three manuscripts

32 “Projects,” The Yemeni Manuscript Digitization Initiative, accessed 24 July 2019, <https://ymdi.uoregon.edu/projects>.

33 ‘Abd al-Salām ‘Abbās al-Wajīh, *Maṣādir al-turāth fī al-maktabāt al-kbāṣa fī al-Yaman* (Amman: Mu’assasat al-Imām Zayd ibn ‘Alī al-Thaqāfiyya, 2002). Some information was also conveyed in al-Wajīh, “Makhṭūṭāt madīnat shihāra wa ‘usarhā al-‘ilmiyya,” *Journal of Islamic Manuscripts* 5 (2014): 357–80.

34 It is possible to deduce who holds these collections today by reading the ownership records and other traces that appear in the Princeton portal. Even so, the author follows the directive of the YMDI project in omitting owners’ names and identifying information. Additionally, footnotes to specific sections of al-Wajīh’s text have been excluded because al-Wajīh often provides the exact addresses of the private collections and sometimes even the phone numbers of the current owners.

that are held by the IZbACF and originally come from various archives, will not be treated here.

Collection 1 is held currently by a Yemeni *sayyid* (a notable who claims direct descent from the Prophet, referred to by Gabriele vom Bruck as “a Zaydī hereditary elite”), residing in Sanaa. It was originally put together by his father, who was born on 17 Ramaḍān 1318/4 January 1901 in the town of Shihāra, where he grew up.³⁵ The family descends from the line of the imam who established the Qāsīmī Imamate, al-Manṣūr Qāsim ibn Muḥammad. The original owner had studied grammar and logic with Aḥmad ibn Yaḥyā, before he became imam, and other important scholars, at the Great Mosque of Shihāra. He also assisted the *qāḍī*, or judge, of Shihāra, thus gaining experience in legal matters. For that reason, Imam Yaḥyā appointed him as *qāḍī* of the town of Ḥabūr.³⁶ After holding that position for twenty-four years, he was transferred to the city of ‘Abs, in the Tihāma. He remained there until the revolution started, when he was jailed for a few months. He then became ill and returned to his village, Ṣalāḥ, outside of Ḥabūr, which is where he died and was buried in 1385/1965–66. The collection, which includes only eight volumes that were digitized by YMDI, represents just a fraction of its original holdings. A large part of the collection was lost during the revolution, when the owner’s house near Ḥabūr was plundered. The collection was further subdivided among the heirs of the original owner after his death. Other books were lost after the collection was transferred to Sanaa. Al-Wajīh identifies the collection’s most important volumes as a compilation of histories, including a copy of *Rūḥ al-Rūḥ* by ‘Īsā ibn Luṭf Allāh al-Muṭahhar and *Al-mukhtaṣar al-mustafad min tārikh al-‘imād* and *Ṭayyib al-kisā’*, both by Muḥsin abī Ṭālib, and another compilation that includes *Al-sulūk al-dhababiyya* by Muḥammad Ibrāhīm al-Mufaḍḍal and a history by the poet Yaḥyā ibn Muḥammad al-Hādī.

35 Al-Wajīh draws this biography from an account written by the original owner’s son.

36 Al-Wajīh claims that this individual was appointed to this post in 1375/1955–56 and then served for twenty-four years, which is not a plausible timeline. The error was probably in the date of the appointment, which would have been in the 1350s AH.

Collection 2 is larger than collection 1, with forty-one manuscripts in the YMDI collection. The original owner hailed from the line of the Sharaf al-Dīn imams, tracing lineage to Ḥamza ibn abī Hāshim. He was born in Kawkabān in 1332/1913–14 and died in 1395/1973. In Kawkabān, he studied with Aḥmad ibn Muḥammad Sharaf al-Dīn and then moved to Thulā', where he became affiliated with its newly established *madrasa 'ilmiyya* and studied *fiqh* (jurisprudence), language, *uṣūl* (theory), logic, *ḥadīth*, and *tafsīr* (exegesis). He was then appointed as a teacher at the school. His collection was amassed for his own studies and teaching, including many titles that were copied in his own hand, along with works that he authored himself. As such, collection 2 could be compared to the larger private library of Muḥammad ibn Muḥammad al-Manṣūr, studied extensively by Schmidtke.³⁷ Those books also served as teaching volumes, some with inscriptions and notations that help us understand pedagogical practices at the Yemeni *madrasa 'ilmiyya* in the middle of the twentieth century. Although many of the texts in collection 2 were copied or authored in the past century, one work, the tenth part of al-Bukhārī's *Ṣaḥīḥ*, is dated 746/1345–46, one of the earliest texts in the YMDI collection. Today, these volumes are held by the original owner's son and housed in Sanaa.

Collection 3 was owned by a *sayyid* from a renowned scholarly family, who was born in Hijrat al-Kibs in upper Khawlān, in Shawwāl 1307/1890. He then moved to al-Ahnūm in 1326/1908–9, where he studied with the local *ulamā*, including Luṭf Allāh ibn Muḥammad Shākir and others. After he married one of the daughters of Imam Yaḥyā, he was named as a regional governor, with jurisdiction over Shihāra. When the revolution broke out in 1382/1962, he was taken to Ta'izz, where he was executed. The library was moved from Shihāra to Sanaa sometime in the first half of the twentieth century, although some volumes were lost in Shihāra. According to al-Wajih, these volumes were acquired by inheritance, purchased, or copied for it. This is the largest of the three collections, with 155 books. The current owners of

37 Sabine Schmidtke, *Traditional Yemeni Scholarship amidst Political Turmoil and War: Muḥammad b. Muḥammad b. Ismā'īl b. al-Muṭabbhar al-Manṣūr (1915–2016) and His Personal Library* (Cordoba: UCO Press, Cordoba University Press, 2018), CNERU IAS Series Arabo-Islamica 1, 136–42.

the library emigrated to KSA. Al-Wajīh characterizes the collection as encompassing *tafsīr*, *uṣūl al-dīn* (doctrine), *fiqh*, *uṣūl al-fiqh* (legal theory), *ḥadīth*, language, history, and astronomy.

These descriptions, even in summarized and anonymized form, provide a sense of the historic character of these collections, which were amassed by important Zaydī officials and scholars of Yemen during the reign of Imams Yaḥyā and Aḥmad. Table 1 presents a distribution of the original locations where these collections were held, as described above, mapped and scaled by the number of codices that YMDI scanned from each collection.³⁸ The map shows that these collections were acquired in and associated with various *hijar*, or sites of Zaydī learning, in Yemen, such as Ḥabūr, Shihāra, Kawkabān, and Thulā', even if they were all eventually moved to the capital. The owners of these collections were members of the Zaydī elite, some of whom were in the circle of the imam; two held major official posts.

For that reason, it is not surprising to find within these books remnants of the final chapter of the imamate's history in Yemen. As described in the next section, many of these texts were copied in the first half of the twentieth century, an active moment for the acquisition and production of books among the Zaydī scholarly community. The ownership records and reading notes that are inscribed in these manuscripts also point to this era as a key phase in Yemen's scribal tradition. Material attributes provide important, but often overlooked perspectives, which the librarian Eryn Kropf has called for greater attention toward, while also suggesting that digital surrogates can be used effectively for their study.³⁹ In the YMDI case, the Princeton portal provides views of all of the parts of the books, and not just their core textual contents, which allows for such a material inquiry to be carried out from a distance. For example, it was common in Yemen, as well as elsewhere

38 In each case, al-Wajīh cites more manuscripts in the collection than those that YMDI features, indicating that certain volumes were not digitized.

39 Eryn Kropf, "Will That Surrogate Do?: Reflections on Material Manuscript Literacy in the Digital Environment from Islamic Manuscripts at the University of Michigan Library," *Manuscript Studies: A Journal of the Schoenberg Institute for Manuscript Studies* 1 (2017): 57.

in the Islamic world, for books to be rebound or repaired with scrap material, some of which can be dated.⁴⁰ Pages from *al-Imān*, a monthly newspaper that was issued by Imam Yaḥyā beginning in 1926, were used as pastedowns in a few manuscripts in collection 2 (fig. 1).⁴¹ One of the columns mentions President Truman's recent appointment of Dwight Eisenhower as Supreme Commander of the Allied Forces in Europe, which happened in December 1950. Other manuscripts, in the same collection, were repaired with pages from an Arabic newspaper, likely *al-Imān*, along with scraps from *The Brooklyn Eagle*, an American daily newspaper (fig. 2).⁴² The text that appears in one of the fragments mentions the Vandenburg Resolution of 1948 as an event of current interest. Another manuscript is reinforced with scrap pages from Arabic and English newspapers, likely *al-Imān* and *The Brooklyn Eagle*, in addition to a cover from a student exercise book. It is called “daftar al-waṭan,” or national notebook, and features an image of Imam Aḥmad. The vendor of the notebook was “R. Jumāndās,” likely an Indian merchant, whose store was located in the main market of Aden (fig. 3).

40 Evyn Kropf, “Historical Repair, Recycling, and Recovering Phenomena in the Islamic Bindings of the University of Michigan Library: Exploring the Codicological Evidence,” in *Suave Mechanicals: Essays on the History of Bookbinding*, ed. Julia Miller, vol. 1, 7; Gerald J. Obermeyer, “*Al-Iman* and al-Imam: Ideology and State in the Yemen: 1900–1948,” in *Intellectual Life in the Arab East, 1890–1939* (Beirut: American University of Beirut, 1981), 176–92.

41 Although the calendar dates of these newspaper scraps are not visible in the fragments, two are identified as having been published in “Year 25” and “Year 27.” These years appear to correspond to the running dates of the newspaper, which began in May 1926. A more complete title page of *al-Imān* was consulted for comparison. It was dated Dhū al-Qa‘da 1354 (January/February 1936) and is numbered “Year 10.” Thanks to Menashe Anzi for providing me with the cover of that issue, reproduced from an Israeli periodical. No full set of copies of this historic newspaper can be found outside of Yemen.

42 It ran under the title *The Brooklyn Eagle* between 1938 and 1963. The previous title was *The Brooklyn Daily Eagle*, which ran from 1849 to 1938. “About Brooklyn Eagle,” *Chronicling America: Historic American Newspapers*, accessed 16 September 2019, <https://chroniclingamerica.loc.gov/lccn/sn83031150/>. The publication was revived as an online newspaper, with the title *The Brooklyn Daily Eagle*, in 1996: <https://brooklyneagle.com>.

FIGURE 1. Back pastedown, featuring scrap material from the Yemeni newspaper, *al-Imān*, an issue numbered "Year 25," which was published ca. 1950-51, ymdi_02_03. Image used by permission of the Imam Zayd b. 'Ali Cultural Foundation, courtesy of the Yemeni Manuscript Digitization Initiative and the Princeton University Digital Library.

FIGURE 3. Reinforced page at the end of ymdi_02_15, featuring the cover of an exercise book from the period of Imam Aḥmad (r. 1948–62), overlapped with scrap newspaper, likely from *al-Imān* and *The Brooklyn Eagle*. Image used by permission of the Imam Zayd b. ‘Alī Cultural Foundation, courtesy of the Yemeni Manuscript Digitization Initiative and the Princeton University Digital Library.

Although most of these examples, bound or repaired with historically dated or datable scrap material, were part of collection 2, a few manuscripts in collection 3 incorporate scraps from historic newspapers as well. Pages from the Egyptian newspaper *al-Muqaṭṭam*, which was published from 1882 to 1952, were used to reinforce the front and back covers of a 1770 copy of *Hidāyat al-ʿuqūl ilā ghāyat al-swʿul fi ʿilm al-uṣūl*. The newspaper issue is numbered 926 and dated October 1919 (fig. 4).⁴³ Figure 4 also shows a small reading note in the corner, added by Aḥmad ʿAlī ʿAbd al-Raḥmān al-Kuḥlānī, dated 14 Rabīʿ al-Awwal 1348/20 August 1929. Thus, it indicates that this late eighteenth-century volume was read around one hundred and fifty years after it was first penned, but also that the newspaper fragment was relinquished as a scrap for repair within ten years of its publication.

These are just a few examples of the historically significant fragments engrained within the fabric of these bindings; further research is still needed. But even this preliminary study suggests a continued engagement with book culture through the middle of the twentieth century, in addition to an unexpectedly international outlook at a time when Yemen was cast as quite insular. Owning and acquiring books required their continuing maintenance. The volumes were repaired and rebound using the materials that were at hand among their owners, such as midcentury newspapers and leftover notebooks and ledgers from the era.⁴⁴ They also provide a sense of the scholarly conditions that were made possible during Yemen's last imamate, which fostered the flourishing of Zaydī book culture, until the 1962 revolution. Only five manuscripts, all in collection 2, were identified as having been copied after 1962 and none after 1973. Yet ownership and transfer

43 Fragments from an unidentified English language newspaper appear in ymdi_03_25, as well, and they appear to date from the same year. The front pastedown mentions the attempt of Harry Hawker and Kenneth Mackenzie-Grieve to fly across the Atlantic, departing from Newfoundland, which took place in May 1919.

44 Claudia Colini, Marco Di Bella, and Marcella Rubino studied these repair practices in the Sanaa marketplace in the early twenty-first century. The Siraji brothers, whose workshop was located near the Great Mosque, had a large bag of scraps of modern and historic books to use for the repair of pastedowns and boards. C. Colini, M. Di Bella, and M. Rubino, "Bound by Tradition: New Ways and Old Paths in Yemeni Bookbinding Workshops between XIXth and XXth Centuries," *Chroniques du manuscrit au Yémen* 20 (July 2015): 46.

FIGURE 4. Back pastedown, ymdi_03_02, featuring scrap reinforcements from the Egyptian newspaper *al-Muqattam*, dated October 1919, and a reading note, dated 1348/1929. Image used by permission of the Imam Zayd b. 'Ali Cultural Foundation, courtesy of the Yemeni Manuscript Digitization Initiative and the Princeton University Digital Library.

notes continued to be added in the following period. As an example, a copy of *Kitāb qabūl al-bushrā bi al-taysīr li al-yusrā* by Muḥammad ibn Ibrāhīm ibn al-Wazīr in collection 2 bears a note that indicates that it was sold in Dhū al-Ḥijja 1393/1973–74.⁴⁵

In contrast to the YMDI volumes, a large part of the Yemeni manuscripts that are found in global libraries today left the country in the late nineteenth or early twentieth centuries, and are associated with well-known travelers, scholars, agents, and book dealers of that period, such as Eduard Glaser, Giuseppe Caprotti, Luca Beltrami, Amīn al-Madanī, ‘Alī Efendi, and others.⁴⁶ These books serve as the basis for some of the major collections of Yemeni manuscripts outside of the Arabian Peninsula, at the Staatsbibliothek in Berlin, the British Museum, the British Library, the Austrian National Library, the Ambrosiana in Milan, Bayerische Staatsbibliothek in Munich, the Vatican Library, Leiden University Library, Millet Kütüphanesi in Istanbul, and others. The majority of these transfers and transactions were concluded by 1940, when this early period of active acquisitions from Yemen slowed down.⁴⁷ As Schmidtke has shown, those manuscripts that ended up in European collections served as the sources for the earliest Orientalist studies of Zaydism, whereas Yemeni scholars generally relied upon the texts that remained available locally, thus creating two distinct realms of scholarship.⁴⁸ It is this fissure in the availability

45 See the record for ymdi_02_06_04: <https://catalog.princeton.edu/catalog/7849011>. It is acknowledged that many readership and transfer notes have not been recorded in the bibliographic records and thus do not appear in the metadata for these volumes. Moreover, several volumes in collection 4 bear more recent notes of exchange and purchase, as well. For example, see the ownership notes for ymdi_04_01, 04_12, 04_14, 04_16, and 04_18_01.

46 Schmidtke, “The History of Zaydī Studies,” 187–89; Schmidtke, “Virtual Repatriation,” 124–25; Schmidtke and Thiele, *Preserving*, 19–23.

47 These institutions and others continued to acquire books from Yemen, through various channels. For two examples, see Eryn Kropf, “The Yemeni Manuscripts of the Yahuda Collection at the University of Michigan: Provenance and Acquisition,” *Chroniques du manuscrit au Yémen* 13 (2012), <http://journals.openedition.org/cmy/1974>; Jan Just Witkam, “Yemeni Manuscripts in the University of Leiden Library. Acquisitions of the Year 2000: Texts and Themes,” *Journal of Islamic Manuscripts* 5 (2014): 275–356.

48 Schmidtke, “Virtual Repatriation,” 125. Rossi and Schmidtke describe a few unsuccessful efforts at manuscript repatriation. Rossi and Schmidtke, “Italian Libraries,” 48–49.

of sources, within and outside Yemen, that the ambitious ZMT project aims to address.

As anthropologist Brinkley Messick describes in *The Calligraphic State*, the culture of libraries in Yemen was undergoing transformation precisely during the era when the three YMDI collections were being built up.⁴⁹ Imam Yaḥyā established a library for manuscripts in Sanaa in 1925 and decreed that certain endowed and private collections be transferred there.⁵⁰ Although the library did lend to users who had been vetted, it removed these books from private use or collections held in mosque libraries and consequently governed them by new rules of conduct.⁵¹ Users could not enter the library with books in hand, writing in the volumes was not allowed, deposits were to be placed for books that were removed from the premises, and silence was to be maintained. While some of these rules will not seem unusual to a modern library user, it is necessary to remark that these new behaviors suppressed the standard practices of private libraries and endowed collections, where readers would inscribe notes in the books that they consulted, thus keeping an active record of scholarly use, and recitation was a common pedagogical tool. In contrast to the newly institutionalized volumes, those codices that remained in private collections continued to be read, but also repaired, rebound, and inscribed, as we can see from these YMDI specimens. Indeed, the volumes in al-Manṣūr's collection, as Schmidtke describes, continued to be used until very recently, and thus attest to a manuscript culture that "persisted beyond the turn of the twenty-first century."⁵² Like the YMDI collection owners, al-Manṣūr's scholarly life began during the era of Imam Yaḥyā. But unlike the YMDI cohort, whose habits of acquisition were cut short by death, and even execution, al-Manṣūr's career continued after the revolution and until he passed away in 2016.⁵³

49 Brinkley Messick, *The Calligraphic State: Textual Domination and History in a Muslim Society* (Berkeley: University of California Press, 1993), 119–22.

50 Messick, *The Calligraphic State*, 120; Schmidtke, "The History of Zaydi Studies," 189; Schmidtke, "Capturing the Holdings," 222.

51 Messick, *The Calligraphic State*, 121.

52 Schmidtke, *Traditional Yemeni Scholarship*, 144–45.

53 Schmidtke, *Traditional Yemeni Scholarship*, 45–46.

The private manuscripts that were digitized by YMDI characterize a very different corpus than those in the major international library and museum collections mentioned above, but also those that were placed in archival institutions in Yemen beginning in the early twentieth century. The evolving lives of those books were inevitably stopped short when they were taken out of circulation and entered the formal space of a library, whether in the Middle East or the West. Like those acquired by al-Manṣūr, the books held in the three YMDI collections continued to circulate through the twentieth century, which extended their lives as scribal products, thereby resulting in the addition of later reading and ownership notes and sometimes other active material transformations.

Messick's illuminating study highlighted the structural changes that not only affected libraries, but also extended across educational culture in twentieth-century Yemen, such as Imam Yaḥyā's 1926 establishment of the *madrasa 'ilmiyya* as a new type of school founded on a system of curricular reforms. Around the same time, Imam Yaḥyā also spearheaded efforts to print Zaydī texts, including those which had long circulated in manuscript form and newly authored commentaries, such as *The Gilded Crown*, which was published in the 1930s and 1940s.⁵⁴ But, even in the midst of these efforts at modernizing scholarly and book culture, the manuscript-oriented "textual order" persisted, as Messick acknowledges.⁵⁵ Hollenberg and Anne Regourd, a specialist of Yemeni manuscripts, extended that timeline, asserting that local manuscript culture in Yemen was actually challenged at a much later stage, and not by print, but rather by the arrival of the photocopying machine, following the founding of the republic.⁵⁶ Schmidtke goes even further to contend that photocopied codices did not represent a break with manuscript culture, as these "mechanically produced" volumes were often bound in a manner similar to handwritten books and were added to personal libraries that also included historical exemplars.⁵⁷ As Schmidtke

54 Messick, *The Calligraphic State*, 129; Brinkley Messick, *Sharī'a Scripts: A Historical Anthropology* (New York: Columbia University Press, 2018), 86–89.

55 Messick, *The Calligraphic State*, 1, 117.

56 Hollenberg and Regourd, "Manuscripts Destruction and Looting," 161.

57 Schmidtke, *Traditional Yemeni Scholarship*, 144.

describes, Yemeni scholars have not necessarily considered photocopied volumes to be inferior to older books, even if such volumes would not be deemed worthy of preservation in international archives, museums, or libraries. In this way, the historical timeline of Yemen's evolving book culture is unique and may not follow the accepted ruptures that define global, or even regional, book history as it is conventionally sketched.

As an online group, the historic character of the YMDI collection has been obscured intentionally, due to concerns about the safety of the manuscripts that remain in Yemen. Here, some historic framing has been offered to enhance our understanding of these digital surrogates, which were derived from manuscripts that must be understood within Yemen's twentieth-century history of revolution, but also reform. Through their life histories and materiality, the YMDI volumes attest to the modern scribal culture of copying and circulation that flourished in the era of Imams Yaḥyā and Aḥmad in Yemen. Unlike those manuscripts that were removed from the region or from private use during the late nineteenth and early twentieth centuries, these books witnessed the 1962 revolution and the following period, which entailed changing, indeed diminished, circumstances for Zaydī religious culture. And now, as digital assets, these manuscripts are experiencing a new, repackaged life amid a revived interest in Zaydī heritage locally in Yemen, but also globally from the scholarly community, with these large-scale efforts at digitization and public access. In this way, the online YMDI collection speaks to a widened audience that comes to it with a new set of questions and demands.

YMDI by the Numbers

The YMDI materials were cataloged in an extensive, detailed, and consistent fashion, which allows for them to be studied as a data set, to reveal patterns that may not be discernible when considered on an object by object basis. Joyce Bell, formerly Cataloging and Metadata Services Director, and Peter Green, Cataloging and Metadata Technology Specialist, both of the Princeton University Library, provided the author with the MARC catalog records for the YMDI collection, which served as the basis for the following

exploration. The paragraphs below contend that manuscript digitization is significant not only for the access that it provides to historic books and their content, but also for the production and circulation of metadata, which can extend the life cycle of bibliographic records so that they may be put to uses that exceed the original intentions of the catalogers.

Before delving into the data, it is necessary to underline that the process of digitizing and cataloging the YMDI collection required considerable translation across cultural, linguistic, and institutional lines. As Bridget Whearty, a scholar of medieval manuscripts and their digital lives, has highlighted, “This sense of digital access as an intimate, one-to-one communion of lone researcher with distant book is founded on a great deal of invisible and undervalued labour.” She cites the work of a “community of curators, photographers, and metadata and remediation specialists,” whose contributions often remain hidden.⁵⁸ This section highlights those processes, which took place across continents, while also attempting to recognize some of the people who undertook them, thereby also responding to Whearty’s provocative “Caswell test,” which challenges academics to rightfully acknowledge the foundational intellectual work conducted by archivists and librarians, beyond the brief words of thanks that are usually tucked away in footnotes.⁵⁹

During the December 2010 workshop in Berlin, mentioned above, two senior technicians from IZbACF, AbdulRahman al-Neamy and Abdullah al-Wajih, were taught how to photograph the manuscripts and edit images according to Princeton’s technical specifications.⁶⁰ They were also provided with information about international cataloging standards, some of which

58 Bridget Whearty, “Adam Scriveyn in Cyberspace: Loss, Labour, Ideology, and Infrastructure in Interoperable Reuse of Digital Manuscript Metadata,” in *Meeting the Medieval in a Digital World*, ed. Matthew Evan Davis, Tamsyn Mahoney-Steel, and Ece Turnator (Amsterdam: Amsterdam University Press, 2018), 159.

59 “The Caswell Test,” from Bridget Whearty, “Invisible in ‘The Archive’: Librarians, Archivists, and The Caswell Test,” part of “Medieval(ist) Librarians and Archivists: A Roundtable,” presented 11 May 2018 at the 53rd International Congress of Medieval Studies, Kalamazoo, MI, 10–13 May 2018, accessed 14 September 2019, https://orb.binghamton.edu/english_fac/3/.

60 Hollenberg, “The Yemen Manuscript Digitization Initiative.”

were applied to these collections. Providing support materials in both English and Arabic, Bell conveyed the prevalent standards for cataloging and authority control, such as AACR2 (Anglo-American Cataloging Rules), RDA (Resource Description and Access), MARC (Machine Readable Cataloging), MODS (Metadata Object Description Schema), and METS (Metadata Encoding and Transmission Standard), but also topic-specific resources, such as AMREMM (Descriptive Cataloging of Ancient, Medieval, Renaissance, and Early Modern Manuscripts) and the ALA/LC romanization table for Arabic.⁶¹ The IZbACF had been working with an Arabic handlist, referred to simply as the *fibrlist*, or index, an extended spreadsheet that did not follow an accepted international standard, even if it provided a basis for IZbACF's cataloging efforts, with over five thousand entries at the time when this workshop was held. Bell and her colleagues created an informal crosswalk, so that the fields of the *fibrlist* could be transformed into MARC categories. This process was by no means straightforward, and the workshop entailed conversations about how the IZbACF was using certain fields and notational conventions, particularly surrounding dates, titles, and sections of multipart works. A bilingual glossary of all relevant terms was created to ensure that uniform standards were maintained. The IZbACF staff members were charged with photographing the manuscripts, but also producing and delivering the metadata in Arabic script according to the requested categories (figs. 5 and 6). After the records were sent to Princeton, Nathan Spannaus, a doctoral candidate from McGill University who was hired specifically for this project under the title Arabic Manuscript Specialist, romanized the records, provided subject headings, and transformed other fields, all based on the spreadsheet that the IZbACF staff had submitted. Bell and Green then worked to transform the records into the MARC XML format.

It is beyond the scope of this essay to delve into all of the details of these transformations and the specificities of the metadata. The goal is, rather, to show that the process of cataloging and data input associated with these

⁶¹ Bell produced seventeen unpublished training documents, which she kindly shared. These documents provide a sense of some of the challenges faced while cataloging the YMDI materials.

FIGURE 5. IZbACF digitization team member at the foundation's lab in Sanaa. Image used by permission of the Imam Zayd b. 'Alī Cultural Foundation.

FIGURE 6. IZbACF digitization team, photographing manuscripts in the Ṣa'da Governorate. Image used by permission of the Imam Zayd b. 'Alī Cultural Foundation.

digital facsimiles required the sharing of standards and methods, and many stages of interpretation and transformation, which went beyond simple translation and transliteration. As Bell describes: “It truly was an international asynchronous collaboration.”⁶² By necessity, these processes had to bridge different modes of thinking about and documenting manuscripts. Even so, the metadata was produced in a single batch according to updated standards and with a limited number of individuals involved over the course of three years. As such, it constitutes a consistent and well-ordered data set, and in this way differs from those library records that have been produced and amended by different individuals, following different standards over the generations.⁶³ But, it should also be acknowledged that the YMDI materials posed certain cataloging challenges because most of these manuscripts are compilations of texts (*majmū‘a* [sg.]), rather than single-text volumes.⁶⁴ Zaydī books generally bring together disparate works, of varied authorship, subject matter, length, and date, between the covers of a single codex.⁶⁵ The following visualizations intend to “represent” some of the complicated aspects of the YMDI materials. A digital companion to this article, which features the same tables in interactive form, can be found online: <http://bit.ly/YMDIbytheNumbers>.

Table 1 breaks down the books from the three collections into around two hundred volumes. By contrast, the number of texts included therein approaches six hundred. In regard to the date of copying (rather than the original date when the texts were composed), most of the volumes, with their mixed contents, cannot be dated to a single period. The individual

62 Email communication to the author from Joyce Bell, 5 August 2019.

63 As a point of comparison, Whearty presents the challenges entailed in merging metadata from medieval manuscripts produced on different standards, all of which are recognized international ones. Whearty, “Adam Scriveyn.”

64 The Arabic term *majmū‘a*, or “compilation,” is used in order to avoid confusion between a *majmū‘a* and a collection of volumes.

65 This complexity is clear in the study of al-Manṣūr’s collection. Schmidtke categorizes each *majmū‘a* by its digital shelfmark under the ZMT project number, but the cataloging is uneven because the digital surrogates are not always complete and do not always correspond with the various (unreconciled) handlists of the collection. Schmidtke, *Traditional Yemeni Scholarship*, 62–142.

texts are generally dated or datable, even if some of the dates that have been assigned are uncertain. When mapped out chronologically, the texts from the three collections confirm the chronology mentioned in the previous section. The YMDI texts represent a surge in scholarly activity in the first half of the twentieth century, when many were copied and compiled into volumes (table 2). The reader will note that the majority of the texts are dated to the year 1900, which represents a dramatic spike in table 2. But this date was rarely used with certainty by the catalogers. Rather, it represents a general twentieth-century dating, inserted in the absence of a dated inscription or other historic proxy. When we filter out the uncertain dates, a smaller group is obtained, but it renders the same general patterns (table 3). In a 2014 article, Leiden University librarian Jan Just Witkam wrote that he was “not aware of statistics of dated vs. undated manuscripts from the Yemen,” and the present author has not located any reliable analysis along those lines either. So, table 3 serves as a starting point of reference for more expansive questions about dating, such as the one that Witkam poses.⁶⁶ Both histograms (tables 2 and 3), with and without the uncertain dates, also demonstrate another rise in production, which is not as steep, but begins in the seventeenth century, peaks in the middle of that century, and then decreases through the eighteenth and nineteenth centuries. This era corresponds to the Qāsimī period, mentioned above as a moment of political expansion for the imamate. This era is often described as a Zaydī golden age, when scholars undertook the first major efforts to produce comprehensive works about the imams and their histories, and many copies of important works were penned.⁶⁷ However, the Qāsimī period witnessed great instability beginning in the eighteenth century, a decline that culminated when the Ottomans returned for their second occupation of Yemen in the middle of the nineteenth century. These patterns in Zaydī political history can be seen quite clearly through the chronology of the manuscripts that are featured in tables 2 and 3.

⁶⁶ Witkam, “Yemeni Manuscripts,” 339.

⁶⁷ Schmidtke, “The History of Zaydī Studies,” 185–86; Schmidtke and Thiele, *Preserving*, 19.

TABLE 1. Map of YMDI Manuscripts by Collection.
The count indicates the number of manuscripts that were scanned for the YMDI project. The actual holdings of each collection are larger. To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

These histograms are useful in understanding the general temporal trends of the texts in these collections. But all visualizations are abstractions, which tend to skew aspects of the data that they present, even while providing certain new and important insights. In this case, tables 2 and 3 can be misleading as they treat those texts as if they were independent, when in fact, they are embedded within compilations, physically joined to other texts. In fact, it is not unusual to find varied works of jurisprudence, history, philosophy, poetry, manners, grammar, or arithmetic bound within a single book. As such, we should also consider the shape of these books in a different way, which takes each text as a part of a single manuscript. Table 4 represents each volume as a bar, which indicates the number of texts within. While each of the shortest bars indicates a single text volume, the

TABLE 2. Dates of YMDI Texts.

These are the dates when the texts were copied, not originally written. They include both dates that are supported by inscriptions or other historic proxies and uncertain dates that have been attributed during the cataloging process. To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

taller ones represent multipart compilations. A manuscript in collection 3 holds the largest number of texts of the YMDI manuscripts, thirteen. In tables 5-1, 5-2, and 5-3, their dates of copying have been added, thus representing the multiple temporalities that can be encompassed within any single one of these volumes. The earliest text is in collection 3, dated to 1278, and the most recent, in collection 2, is dated 1973. Tables 5-1, 5-2, and 5-3 present each of the YMDI books as complex codices with disparate chronological footprints within their covers, although they do not seem to be ruled by any governing pattern. The same can be said for the length of the individual texts, which are by no means even or balanced. Some of the texts are short *qaṣīdas* of a few leaves. Others are long chronicles or works of grammar numbering hundreds of leaves. The longest text, in collection 3, is

TABLE 3. Dates of YMDI Texts by Date Certainty.

These are the dates when the texts were copied, not originally written. They are divided by “certain dates” in orange, which are supported by inscriptions or other historic proxies and “uncertain dates” in blue that have been attributed during the cataloging process. To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

1,100 folios. One can gain a sense for the varied structural rhythms of the individual codices in tables 6-1, 6-2, and 6-3, which break up each volume according to the number of leaves in each text, divided first by collection and then by codex.

The YMDI data set can be queried to highlight patterns of authorship and copying as well. For instance, Table 7 shows all of the authors that occur more than two times across the three YMDI collections. Not surprisingly, Muḥammad ibn Ibrāhīm ibn al-Wazīr, the fifteenth-century *Zaydī mujtahid*, appears the most frequently across collections 2 and 3, as the author of twenty texts represented in these collections, followed by Yaḥyā ibn ‘Alī

TABLE 4. Number of Texts in Each Volume.

Most of these volumes are collections or compilations, which hold various texts on differing topics that were written at different times, bound together. Each volume is represented by a bar. Some hold only a single text, and others hold over ten. To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

al-Dhāriḥī, who died in 1973. Only three authors appear at least once in all three collections, ‘Abdallāh ibn Aḥmad al-Fakīhī (899/1493–94 to 972/1564–65), ‘Uthmān ibn ‘Umar ibn al-Ḥājib (1175–1249), and Yaḥyā ibn Aḥmad ibn al-Muṭaḥhar (669/1270–71 to 749/1348–49). Table 8 treats the copyists that appear more than once among these volumes.⁶⁸ Whereas certain authors are featured across two or even three collections, copyists were

⁶⁸ Whereas the names of the authors were recorded in Arabic script and in transliteration, the copyists were recorded only in transliteration.

TABLE 5-1. Texts in Each Volume with Dates, Collection 1.
To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

TABLE 5-2. Texts in Each Volume with Dates, Collection 2.
To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

clearly more limited in their scope. Particular individuals served as frequent copyists for certain collections, such as Muḥammad ibn Muḥammad al-Kibṣī (fifteen), Aḥmad Shuwayl (eleven), and Ṣalāḥ ibn Aḥmad Ḥaymī (eleven) for collection 2 or Yaḥyā ibn ‘Alī al-Dhāriḥī (twenty-two, also a frequent author) and Muḥammad ibn ‘Abdallāh al-Warad (six) for collection 3.

These three sets of visualizations have provided various examples of how the library cataloging data can be repurposed to understand the shape of distant manuscript collections. The first set of visualizations, tables 2 and 3,

TABLE 5-3. Texts in Each Volume with Dates, Collection 3.

To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

focuses on chronology. They confirm what we already know about the rise in production of Zaydī manuscripts in the seventeenth century and then again in the first half of the twentieth, rather than providing novel insights about scholarly production.⁶⁹ Yet we can filter for certainty in order to bolster confidence in these results. The second group, tables 4, 5, and 6, simply provides a different way to see these manuscripts, as defined not by their individual texts, but by codex, and highlights the composition, chronology, and length of the texts within each volume. The final group, tables 7 and 8,

⁶⁹ Schmidtko, *Traditional Yemeni Scholarship*, 144.

TABLE 6-1. Number of Leaves of Each Text in Each Volume (Scaled), Collection 1.
To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

TABLE 6-2. Number of Leaves of Each Text in Each Volume (Scaled), Collection 2.
To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

queries various fields within the data set, in order to identify patterns in authors and copyists that could be investigated across the wider Yemeni corpus.

These are just some of the possible visualizations that can be generated from the MARC records, which, after an extended process of cleaning, tidying, and transformation, constituted a machine-ready data set.⁷⁰ It must

⁷⁰ Restructuring of the data was performed using R’s tidyverse suite of packages, and granular cleaning was done with OpenRefine. Visualizations were produced on Tableau, and the online version of the tables is hosted by Tableau Public. The author thanks Ryan Cordell and

TABLE 6-3. Number of Leaves of Each Text in Each Volume (Scaled), Collection 3.
To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

be recognized that the data analyzed here suffers from some of the original input errors that are inevitable in the cataloging process, although efforts were made to eliminate spelling variations, inconsistencies, and errors. It should also be noted that these types of problems would be quite difficult for a librarian to notice during the cataloging process, moving from manuscript to manuscript or from record to record. Yet those discrepancies are immediately detectable by machine when the same materials are considered

Greg Palermo for providing an extremely useful introduction to the world of the tidyverse at the Digital Humanities Summer Institute in 2019.

TABLE 7. Authors That Appear Frequently in YMDI Texts. These authors were identified or attributed during the cataloging process. They appear at least two times in the YMDI corpus, some of them across collections. To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

as a data set, as they have been here. Certain important questions, however, cannot be answered by the data set in its current format. For instance, the titles of works resisted computational analysis because there were too many substantial variations in them, in addition to commentaries upon the same works. Moreover, most of the texts were represented only in parts, and there were significant variations in the ways that the titles of those parts were recorded. Along the same lines, there were two categories of paratextual material, ownership records and notes, that provided a great deal of important data regarding the historic character of these texts and the books that hold them, but the data was embedded within lengthy prose sections. Had the dates and names been parsed out into separate categories, they could be subject to the kinds of queries offered above, such as those oriented

TABLE 8. Copyists of YMDI Texts.

These copyists, as identified or attributed during the cataloging process, appear at least twice in the YMDI collection. The majority of texts do not have a copyist or scribe named. To consult an online interactive version of this table and others, visit the digital companion to this article: <http://bit.ly/YMDIbytheNumbers>.

around date, author, and copyist. For the al-Manṣūr collection, Schmidtke has demonstrated the potential analytical richness of these materials.

Without question, the categories mentioned above, in addition to others, could be transformed for computational study, but this would involve a significant amount of specialized human labor and dedicated effort. Any intensive interventions that would invite, rather than hinder, ready computational analysis would have to be implemented at the cataloging stage, based on the promise of clear and significant scholarly outcomes. Instructive along these lines are the principles of the Collections as Data movement, with its interest in fostering “a strategic approach to developing, describing, providing access to, and encouraging reuse of collections that support computationally-driven research.”⁷¹ Indeed, these bibliographic

71 For guidelines, best practices, and resources on this topic, see “Collections as Data: Part to Whole,” accessed 27 July 2019, <https://collectionsasdata.github.io>.

records are not just finding aids to digital assets, but should be considered digital assets in their own right. As Nanna Bonde Thylstrup identifies, “collections are increasingly digitized to be read by machines instead of humans, just as metadata is now becoming a question of machine analysis rather than of human contextualization.”⁷² While the present author contends that machine analysis must always be conducted with considerable and purposeful human guidance, Thylstrup’s point should instruct us about the possible uses to which digital manuscript collections can be put in the future.

The scholars associated with the Open Islamicate Texts Initiative (OpenITI) at the University of Maryland have identified two of the biggest problems that are posed by Islamic manuscript digitization endeavors, as a global phenomenon. The first is that most repositories do not adhere to international cataloging standards (as seen with the IZbACF), and the second is that digital facsimiles are not always associated with scholarly metadata.⁷³ The analysis offered here echoes those concerns, while also contending that metadata standards should matter to humanities scholars and that there is value in understanding the processes of digitization and cataloging, in order to consume the end results of both more responsibly.

Digitization as a Cultural Act

This article has presented a picture of the YMDI collection as a group of digital assets that were generated through an impressive cross-cultural effort of collaboration during a difficult time in Yemen’s history. It asserts that these manuscripts must be situated within the divisive political climate that led to their digitization, but also continues to affect their status, as well as that of their digital surrogates since the outbreak of the devastating war that began in 2015. The YMDI online collection is not composed of neutral

72 Nanna Bonde Thylstrup, *The Politics of Mass Digitization* (Cambridge, MA: MIT Press, 2018), 21.

73 Matthew Thomas Miller, Maxim G. Romanov, and Sarah Bowen Savant, “Digitizing the Textual Heritage of the Premodern Islamicate World: Principles and Plans,” *International Journal of Middle East Studies* 50 (2018): 103.

cultural products. Rather, as globally mobile files, these assets have become charged in an era of politicized Zaydism and conflict in the southern Arabian Peninsula.

The YMDI project also produced a data set that could be analyzed for historical study. This data set could be further transformed and then queried in many more ways depending on the questions that other scholars may have, as well as the energies that they wish to devote to making the data set more tractable computationally. By exploring, analyzing, and visualizing some of the YMDI metadata, including aspects that have been intentionally removed from public circulation, this essay provides a sense of how the commitments and preoccupations of the library cataloger could be brought into productive connection with those of the digital humanist.

This inquiry is timely because many large-scale Islamic manuscript digitization projects are currently under way. Most relevant to the YMDI project is the ZMT, mentioned several times above, which is in the process of making digital surrogates of the entire global corpus of Zaydī manuscripts available through a single online portal. When completed, the ZMT intends to provide access to the YMDI materials hosted by Princeton as well, in addition to thousands of other codices held in global collections and other private collections in Yemen.⁷⁴ As of late 2019, over 1,500 records have been uploaded to the vHMML collection, the virtual reading room of the Hill Museum and Manuscript Library. Yet, unlike the YMDI online collection, the manuscripts that are available are accompanied by only minimal metadata. The institutions associated with the project have promised that robust metadata, subject to rigorous authority control, will be offered at a later stage in the project and will be made available to the public.⁷⁵ In a discussion of

74 The ZMT has already added some manuscripts that are associated with the YMDI initiative to the vHMML. They do not overlap with the three collections that have been treated in this essay. The ZMT has, by contrast, publicly identified the names of the collection owners.

75 The contents have been scanned from both original manuscripts and microfilm from some private collections in Yemen, in addition to U.S., U.K., and European holdings. "Digital Copies of the Rossi, Ansaldi and Caetani Yemeni Manuscript Collections Now Available in vHMML Reading Room," 27 February 2018, accessed 27 July 2019, <http://hmml.org/digital-copies-rossi-ansaldi-caetani-yemeni-manuscript-collections-now-available-vhmml-reading>

the development of the vHMML and the functionality that it seeks to provide, its executive director, Father Columba Stewart, signals that this portal is not only an access point for digital versions of physical manuscripts, but rather presents an entirely different research opportunity. He thereby invites “new kinds of humanists” to engage with these materials using updated methods and approaches.⁷⁶ The present author aspires to join this emerging cadre of scholars and eagerly awaits the appearance of the ZMT data set, with the hopes that it will be structured in a manner that welcomes future computational analysis, while also providing valuable access to digital surrogates and bringing international attention to Yemen’s fragile cultural heritage.

-room; Columba Stewart, “Giving Voice to Ancient Texts: Manuscript Scholarship in the Digital Era,” *International Journal of Middle East Studies* 50 (2018): 121; Schmidtke, “Virtual Repatriation,” 126; Schmidtke, “Capturing the Holdings”; Arnoud Vrolijk, “Digitisation Project of Yemeni Manuscripts at Leiden University Libraries,” *Leiden Special Collections blog*, 15 November 2018, accessed 14 September 2019, <https://leidenspecialcollectionsblog.nl/articles/digitisation-project-of-yemeni-manuscripts-at-leiden-university-libraries>.

⁷⁶ Stewart, “Giving Voice,” 122.