

Making Marx More Readable: A Minimal Computing Approach to a Community-Driven Edition of *Capital Vol. 1*

Steven Gotzler <sgotzler_at_unc_dot_edu>, University of North Carolina at Chapel Hill  <https://orcid.org/0009-0005-9155-6075>

Avery Wiscomb <awiscomb_at_vt_dot_edu>, Virginia Tech  <https://orcid.org/0000-0003-1159-4337>

DOI: pending

Abstract

The following article presents MARXdown, a minimal digital reading edition of Karl Marx's *Capital Vol. 1*, as a retrospective case study in applying minimal computing principles to create accessible, community-driven digital humanities (DH) projects. Developed by graduate students at Carnegie Mellon University in 2019–20, MARXdown demonstrates how framing minimal computing as *practical commitments* can lower access barriers, demystify computing labor, and facilitate knowledge sharing. The project leveraged lightweight, open-source tools to create a collaborative reading environment that addressed specific community needs. This approach allowed for adaptability during the COVID-19 pandemic, transforming MARXdown into a vital support for collaboratively reading Marx under lockdown. The article argues that practical commitments to minimal computing can promote replicable models for building digital reading editions, useful for distributing marginalized or banned texts in underserved communities. By unpacking some of MARXdown's development process, this study offers insights into both the potential and limitations of minimal computing in academic and community-driven contexts, contributing to discussions about accessibility, sustainability, and ethics in DH.

Making Marx More Readable: A Minimal Computing Approach to a Community-Driven Edition of *Capital Vol. 1*

Introduction

This article presents a case study of MARXdown, a minimal digital reading edition of Karl Marx's *Capital Vol. 1* (1867) developed for graduate students at Carnegie Mellon University [Gotzler and Wiscomb 2019]. MARXdown improved access to *Capital Vol. 1*, enabling community annotations and relevant commentary using accessible tools for collectively implementing a minimal reading edition online. In doing so, MARXdown was developed through a minimal computing framework, asking specifically: How can digital tools enable collaborative reading and knowledge sharing for underserved communities with limited resources [Risam 2018, 143–144]? As Roopika Risam argues, such collaborative, locally-situated digital approaches can help address equity gaps and reshape the digital cultural record in academia, even with limited resources [Risam 2018, 89–90].

MARXdown's development demonstrates how minimal computing can be approached as "practical commitments." By practical commitments, we refer to the concrete, actionable decisions and design trade-offs that digital humanists make when applying minimal computing principles in the context of their work. Practical commitments represent the situated choices we make when confronting real constraints of resources, expertise, time, and community needs. Being intentional about what these commitments are, and how we cultivate them, ensures that minimal computing principles remain rooted in embodied practice, rather than ossifying into a set of purely abstract ideals. Therefore, practical commitments emerge directly from a continual process that lies at the core of minimal computing: the ongoing

negotiation between what is desirable and what is feasible.

Throughout what follows, we also use the term “practical commitments” to emphasize how MARXdown’s development involved continuous community decision-making about what to prioritize, what to simplify, and what to forgo entirely. Rather than frame technical limitations as compromises, we reframed them as affirmative choices in ways that aligned our project not just with minimal computing principles, but also our community’s specific requirements. By unpacking these commitments, we show one way to reorient DH practices towards accessibility, transparency, and collaborative knowledge sharing. We argue that MARXdown, despite its obvious limitations, offers a replicable model for minimal digital reading editions. For example, such a model could be valuable for sharing marginalized texts, orphan and public-domain works, or banned books in underserved communities.

MARXdown emerged from specific community needs we experienced as graduate students. Our reading group faced practical challenges, such as fluctuating membership as students entered and left the program, limited financial resources for purchasing multiple copies of texts, difficulties in maintaining a cohesive record of our collective engagement with Marx, and the need to reconcile different editions and translations. These constraints demanded a solution that would enable persistent yet flexible collaborative reading across changing circumstances. As we’ll show, these situated needs shaped our approach to minimal computing. Instead of creating a comprehensive scholarly resource, we prioritized communal knowledge-building, accessibility, and collaborative annotation, which are essential functions for any reading community.

MARXdown — Context and Community

The need for a digital reading edition of *Capital Vol. 1* sprung from three questions, each rooted in the material constraints facing members of the Contemporary Marxist Reading Group at Carnegie Mellon University (CMRG-CMU), in the late 2010s.^[1] First, how could we preserve the memory of our ongoing engagement with texts over time? Second, how could we enrich the experience for newcomers with supplemental material deemed important to the group? And third, how could we ensure memories and materials would persist and be easily maintainable?

Formed in 2014, the group initially consisted of PhD and MA students in the Literary and Cultural Studies program at CMU, to continue our engagement with Marx and Marxist theory as we transitioned out of coursework into dissertation writing. The group developed as a space for encouraging the study of contemporary Marxist theories on campus, and the digital reading edition eventually facilitated connections between students at other institutions like the University of Pittsburgh, Duquesne University, Yale University, and Brown University, as well as with local political organizations such as the Pittsburgh Democratic Socialists of America (DSA) and Socialist Alternative (SA).

From the beginning, we lacked records to revisit or share with new members as a repository of institutional memory. For example, all that remained from our sessions reading *Capital Vol. 1* together during the summer of 2016 were private notes saved as .docx files on local hard drives, or myriad Zotero folders, along with a few unsuccessful attempts to use the forum widget on the group’s fledgling — and now defunct — Wordpress.com site.

The group’s university setting also presented additional complexities. *Capital Vol. 1* is a formidable and intimidating book, one we could not feasibly (re)read every summer. Yet it was a key text in critical theory, which many newcomers to the group often wanted to tackle — preferably not alone. Besides needing to accommodate the fluctuating roster of members, we also experienced uneven participation from students and graduate instructors who were actively reading. Group participation depended on the level of interest in Marx and Marxism during any given cohort year. Students’ varying stages of degree progress, including among MA students, and other demands on the organizers’ time complicated efforts to maintain continuity and engagement with the text.

Under these conditions, we found it challenging to construct a single, unified reading or group “guide” to *Capital Vol. 1*. Essentially, we lacked a way to collect and preserve composite records of diverse academic interests and the situated perspectives that enriched readings, and that would allow existing and new members to incorporate new interests and lines of inquiry.

By 2018, our group began a sustained engagement with the resurgent energies invested in social reproduction theory in contemporary Marxist studies. So, the group explored scholars such as Tithi Bhattacharya and Susan Ferguson, who prompted us to revisit writings on sex, gender, and reproduction by postwar socialist feminist thinkers and activists associated with the international *Wages for Housework* campaign of the early 1970s, including Mariarosa Dalla Costa, Leopoldina Fortunati, Selma James, and Silvia Federici. Their interventions into Marxism became fundamental to our group's critique of capital, and integrating them into our established readings underscored the need for an approach to collaborative reading that was flexible enough to absorb new intellectual trajectories without losing continuity.

With an influx of Marx-minded, graduate-student members in 2019, we undertook another comprehensive reading of *Capital Vol. 1*. However, we soon realized that not everyone there who wanted to participate even owned a copy of Marx's book. For example, some members insisted on reading the book online, valuing the text's free access and portability. And even among those who owned physical copies, differences in translations or page numbering hindered group discussions.

The limitations of the group — along with our desire to make the text genuinely pleasant to read on-screen and mobile devices — shaped the “architecture of necessity” [Oroza 2012] for our digital reading edition of *Capital Vol. 1*. We envisioned it as a resource designed to address the group's needs, while enhancing the collective reading experience of our community. Set within this context, the environmental constraints out of which MARXdown sprung can be productively framed as responding to the first two “what-type” questions posed by Gil and Risam in the 2022 *Digital Humanities Quarterly* (DHQ) special issue on minimal computing: What do we have? And what do we need? [Gil and Risam 2022].

What the group had was an established, and growing, community of committed readers, and a shared desire to engage with a single text (*Capital Vol. 1*). What we needed was a way to leverage our prior knowledge of the text, and to enliven the experience of those old and new to *Capital Vol. 1*. We also needed a method for ensuring that group memories and materials would persist. The method would need to remain flexible and responsive to insights and intellectual trajectories brought by new members, and be easily maintained in future iterations of the group after we were gone. Ultimately, we felt that our situation demanded not a comprehensive scholarly edition, with its apparatus of back-end databases and front-end research tools; instead, we needed something more modest and more communal: a digital reading edition.

Digital Reading Editions

We think that digital reading editions like MARXdown differ fundamentally from other types of digital scholarly editions in their scope, intended use, and audience. Scholarly editions typically integrate paratexts, catalogs, databases, research tools, facsimile images, and more into comprehensive digital resources. Reading editions prioritize accessibility and participatory experience for collaborative reading and discussion within specific communities.

Digital scholarly editions (a broad category encompassing several subtypes) serve different purposes than digital reading editions, and they face distinct challenges in the current academic funding landscape.^[2] Scholarly editions establish authoritative texts with critical apparatus, notes, sometimes competing translations, tools and historical and cultural context. In formal terms, these robust digital editions vary depending on scholarly purpose. They include critical editions focused on establishing definitive texts, diplomatic and facsimile editions oriented toward faithful transcription or reproduction of sources, and genetic or variorum editions that trace a text's development across versions [Beshero-Bondar et al. 2020]. Therefore, scholarly editions often require extensive metadata and coding, though infrastructure requirements vary significantly by project. Scholarly editions thus tend to serve advanced research purposes for researchers over the needs of a general readership.

The strengths of scholarly editions are well-established in academic practice; they offer a measure of rigor, richness, and scholarly authority difficult to replicate in minimal, reading-focused editions. However, the weaknesses of scholarly editions involve a steep learning curve for their deployment, maintenance, and expansion, often due to a preference for feature-rich front-end web publishing tools. These dynamic web projects also tend to be resource-intensive, so scholarly

editions risk vulnerability to increasingly precarious funding models [Otis 2023]. Finally, scholarly editions address a much narrower audience than a reading edition, since they're primarily designed for experts and specialists.

We propose the term *digital reading editions* to describe a distinct category of digital editions that prioritize collaborative reading experiences over comprehensive scholarly apparatus. At the level of text delivery, digital reading editions focus on making highly readable texts across platforms by relying on lightweight markup language and free (or very cheap) hosting for ease of production and maintenance. Primarily, these editions' minimal and low-lift technical features are designed to facilitate collaborative reading, live and/or asynchronous annotation, and group discussion. The strengths of digital reading editions include accessibility, flexibility, ease of engagement, and rapid deployment. However, the major weaknesses of reading editions are the trade-offs between limited contextual apparatus and a lack of scholarly authority. Though more responsive and readerly than database-driven alternatives, the static sites such editions are deployed on still retain some technical barriers, which can limit participation for less experienced users. And typically, the only authority a reading edition can command is that of the community they serve.

In terms of their underlying priorities, digital reading editions focus on minimal technical requirements, community engagement, and accessibility. By introducing this classification for reading editions, we highlight how lightweight and community-driven approaches to publishing digital texts can serve different purposes than traditional scholarly editions. We think such editions can address specific needs for collaborative reading and annotation that may be overlooked in discussions focused primarily on scholarly rigor or textual authority.

Far from new, the concept of digital reading editions has precedents in print culture, where publishers have distinguished between scholarly critical editions and more accessible reading texts. In digital contexts, McGann [McGann, J. 2001a] [McGann, J. 2001b], Greetham [Greetham 1994], and Siemens et al. [Siemens et al. 2016] discuss the spectrum between scholarly and reading-oriented digital editions, but without defining digital reading editions as an analytical category. The formulation of digital reading editions as community-oriented, minimal computing projects represents a contribution to this taxonomy.^[3] Scholarly editions offer resources primarily for academic research. Digital reading editions like MARXdown offer a group of readers one text they share in common, useful for engaging with in digital spaces, annotating it collaboratively, and reading and discussing the book across platforms.

MARXdown attempted to implement minimal computing principles for digital reading editions in several ways. For example, it leveraged lightweight, open-source tools like Markdown, the Ed. Jekyll theme, and GitHub Pages, eschewing proprietary blogging software or complex custom website design using content management systems such as Drupal. MARXdown used Markdown for content encoding and Jekyll as its static site generator, both well-established in DH workflows. Jekyll transforms Markdown files into complete websites without databases or server-side processing, and already powers many academic sites due to its low hosting costs and minimal infrastructure requirements. Taking a minimal approach to digital reading editions allowed MARXdown to be accessed, used, and maintained at no financial cost to students or community members.

MARXdown also exposed its Git-based version control system to the group's readers, users, and future developers. To that end, we attempted to demystify the site's underlying infrastructure [Underwood 2014] [Posner 2016]. GitHub allows users to store, share, and collaborate on code and text projects, while GitHub Pages is a free service that turns files stored on GitHub into public websites. Picking this combination allowed us to maintain the *source files* of our project and publish them as a front-end website without additional hosting costs. As a result, the edition increased accessibility for future development, eliminated cost, and lowered participation barriers through plain-text and mobile-friendly formats. Markdown syntax, designed for readability and ease of learning for the uninitiated, kept technological skill requirements still fairly low for current and future members. And using Markdown syntax ensured that MARXdown content remained readable even outside its original digital context.

Choosing to deploy the site through GitHub Pages offered several sustainability advantages, while recognizing the tension between *Capital Vol. 1* and the Microsoft-owned GitHub proprietary platform. For example, GitHub can potentially limit long-term access or change its terms of service. And yet it offers a free hosting service that generates static sites directly from repository content, which eliminates database dependencies and reduces the technical

overhead of maintenance. The separation between the code and the platform in MARXdown meant that even if GitHub's policies changed, our source files would remain accessible and could be migrated to alternative hosting. Therefore, we tried to strike a pragmatic balance between available, “free” resources and minimal computing's concern for long-term access and reduced dependencies. Furthermore, we thought GitHub's widespread adoption in DH communities increased the likelihood the platform will remain accessible to academics and Marxist reading groups for the foreseeable future, while its version control system created transparency about the project's development process.

Therefore, MARXdown's commitments to minimal computing principles made possible a digital reading edition that we thought was accessible, sustainable, and mostly transparent. However, committing to minimal computing in DH projects carries real benefits, alongside genuine tensions and pitfalls worth examining.

23

The Minimal Turn

In the last decade, *minimal computing* has emerged as a new orientation in DH, emphasizing the importance of meeting community needs *within* resource constraints. The turn to minimal computing prioritizes accessibility and sustainability over maximalist computing for its own sake, focusing on contexts of use for situated communities [Gil 2015] [Sayers 2016] [Gil and Risam 2022]. However, it's important for DHers to note that the “minimal” in minimal computing still often relies heavily on other resources such as time, goodwill, space [Knight 2017], and technical and emotional labor [Dombrowski 2022].

24

By most DH accounts, the concept of *minimal computing* began formalization in a GO::DH working group as early as 2014. However, minimal computing's antecedents are numerous and nebulous [Gil and Risam 2022]. In 2014, the GO::DH working group defined the approach as “computing done under some set of significant constraints of hardware, software, education, network capacity, power, or other factors,” encompassing both refurbished machines for DH work, often out of necessity, and the application of streamlined computing hardware [‘About’]. As Gil and Risam later elaborated [Gil and Risam 2022], minimal computing principles cluster around three interrelated aims: (1) to reduce technological dependencies and demystify infrastructure; (2) to sustain accessibility and lower participation barriers; and (3) to cultivate environmental and cultural humility in design, with the broader aim of enhancing access, freedom, and knowledge-sharing for situated communities [Risam 2018] [Posner 2016] [Nowvskie 2016].

25

Put another way, minimal computing seeks to cultivate a caring *habitus* or *way of being* [Bourdieu 1977] tailored to community needs through considerate design choices. By embracing accessibility and sustainability, it aims to serve immediate and future users justly, attending especially to communities for whom maximalist computing infrastructure remains financially, or technically, out of reach. The minimal computing ethos also connects productively to prior concepts in IT, critical infrastructure studies, and early DH or humanities computing, including *sustainable computing*, *responsible computing*, *green IT*, and *poor computing*. These concepts, antecedent to minimal computing, encouraged purposeful work with limited computational resources, either out of ethical or economic necessity, or to intentionally experience hardware and IT restrictions others face, especially in the Global South by those in the Global North.^[4]

26

While minimal computing offers numerous benefits in the abstract, we think it's still important to scrutinize its implications in increasingly under-funded or austerity-stricken higher education contexts. Some ways minimal computing often becomes entangled in university labor include:

27

- **Precarity:** The turn to minimal computing risks celebrating and entrenching the highly unstable, un- and under-compensated labor of graduate students, adjunct faculty, contract digital project workers, and Alt-Ac careers.
- **DIY Overload:** Promoting minimal computing practices in the humanities can also rationalize already excessive labor asked of early career scholars, students, or other workers in maximizing productivity or public-facing projects, under increasingly finite resources.
- **Feature Creep and Worker Control:** Minimal computing may start with a “cheap” baseline, yet that doesn't preclude future demands for additional functionality without proper support, potentially enabling uncontrolled feature creep and further worker exploitation.

- **De-funding Retrospective:** Invoking minimal computing's virtues for sustainability and accessibility can provide convenient post hoc cover for continued systematic and structural cuts in funding, including cuts in equipment, staffing, and other austerity measures [Otis 2023].

If misappropriated, the minimal computing ethos in DH echoes the entrepreneurial logic of lean or agile software and startup development models popularized in the late 2000s and early 2010s [Blank 2013] [Ries 2011]. In other words, power structures like the university and its funding agencies can exploit the “lean” circumstances of an increasingly “agile” workforce. However, we should be cautious that the ideals of minimal computing and resource constraint do not further subject vulnerable DH practitioners to austerity's consequences — unless coupled with meaningful protections and renewed investment. Left unchecked, exploitation in minimal computing contexts for humanists dangerously compounds, or becomes super-exploitative.^[5]

28

The academic labor conditions we're addressing are grounded in the North American higher education context, where the casualization of academic labor, reliance on graduate-student teaching, along with declining tenure-track positions, represent specific institutional arrangements. So, our group's conditions may differ from academic systems in other regions outside the United States and Canada. Yet, we still see similar trends in computing labor issues, toward a “doing more with less” ideology, which persists globally in many DH contexts.

29

Graduate student labor in DH contexts has been particularly well documented. For example, Miriam Posner [Posner 2016] and Jacqueline Wernimont [Wernimont 2015] have early on and often addressed the ways DH projects rely on undercompensated graduate student labor. And, as Risam and Edwards [Risam and Edwards 2018] argue, DH work frequently involves *invisible labor* of all kinds, which remains uncredited and undervalued despite being essential to a project's success. In this context, minimal computing approaches must first acknowledge what Tanya Clement [Clement 2015] called the “labor of building” that often falls disproportionately on those with the least institutional power.

30

Despite our cautionary notes about minimal computing, we still think the approach can have significant positive impacts. For example, minimal computing, especially in classroom contexts, can help draw students' attention to how financial and temporal limitations shape user experiences and interactions. Espousing minimal computing principles can also help buttress claims against *computational empowerment*, which frequently overlook divides across class, gender, race, geography, access to technologies, as well as disability status [McPherson 2012] [Hughes, J. 2016]. Likewise, committing to minimal computing aligns with principles of democratic participation shaped by communal needs and material realities, not merely abstract ideals of technological progress. And finally, aligning oneself to minimal computing echoes practices like Cuban resolve — ingenious inventions under constraint that reject the capitalist logic of growth for growth's sake [Oroza 2012] [Gil 2015]. Therefore, adherence to minimal computing in DH contexts has the potential to reorient design thinking around what is minimally necessary to create, deploy, access, use, and maintain digital projects over time.

31

Minimal Computing as Practical Commitments

Deploying MARXdown demonstrated to us how minimal computing principles could extend beyond technical preferences or resource-scarcity solutions — to constitute active, ongoing practical commitments in DH practice. We think emphasizing the “practical commitments” of the project mainly offers a perspectival reminder, cautioning against the pitfalls of seeing minimal computing as a set of constraints, and instead reasserting it as an active process of deliberate decision-making. For example, in the MARXdown project, we tried to approach minimal computing not just as “making do with less,” but as determining what was necessary and sufficient for our specific community context.

32

Shifting the group's perspective toward what's necessary offered several advantages. Conceptually, framing principles as commitments helped to clarify conversations about digital methods and design, giving shared language to a group with varying familiarity with DH discourse and the minimal turn. Practically, it also made our decision-making more inclusive and accountable. Concrete commitments rooted in our immediate circumstances were easier to evaluate, revisit, and revise than abstract computing principles held at a distance.

33

When struggling together to answer questions about the value of our DH projects, we're left to confront a whole host of

34

situated technical, material, and social needs. What was needed in our context was to establish shared intellectual priorities, negotiate the sacrifices in functionality and scope, and respond to our uneven access to material support and prior technical training. In contexts like these, minimal computing decision-making can operate not only as a way to support an innovative set of low-lift digital solutions, but also as a deliberative framework for pushing back on shortfalls in resources and technological infrastructure engendered by exploitative academic labor conditions [Risam and Edwards 2018].

MARXdown and the *Capital Vol. 1* reading edition first emerged as a technological solution addressing the constraints and needs of our graduate-student reading group. But later, during the COVID-19 pandemic, the project evolved into vital support for the community's virtual operations. This shift reframed our group's minimal computing engagements as more direct interventions within the technological infrastructures that shape our work in the university. What that reframing looked like in practice was a reading edition of *Capital Vol. 1* that fostered a community of collectivized information access through readerly means. In this context, minimal computing transcended its role as merely a design heuristic, becoming a practical response to the conditions under which we conduct humanities computing labor.

Computing both imposes and resolves contradictions between technological infrastructure and work in the humanities. If we neglect the tension between the humanities and infrastructure, we risk reducing minimal computing to an empty protocol, making DH vulnerable to the logic of budgeting, expense, productivity, and austerity, and pitted against forces often antithetical to humanities scholars and their communities. Novel digital methods can be weaponized to undermine worker security and autonomy, rationalizing demands to “do more with less,” while imposing accelerated productivity amid diminishing support [Losh 2015]. However, finding novel ways to continually negotiate a minimal ethos can ensure our digital projects are committed to embodying flexibility, adaptability, and accessibility, projects that support communities, point out labor inequities, break down technological barriers, and confront institutional marginalization.

Considering labor perspectives in minimal computing projects matters [Chan and Sayers 2022]. Adjudicating between different valences of *minimal* in our DH projects and their relation to labor can help graduate students, faculty, and staff locate efforts in ways that attend to what Alan Liu has called “academic infrastructure, and how it connects higher education to, but also differentiates it from, the workings of other institutions in advanced technological societies” [Liu 2016]. When built from the minimal computing heuristic we've started to outline here, such commitments foreground what Liu calls “institutional forms of technologically assisted knowledge work,” and engage our “shared but contested information-technology infrastructures” [Liu 2016].

Adopting Liu's perspective ensures that we don't accidentally mistake the *minimal* of minimal computing as merely a *design aesthetic* for digital building. At the same time, Liu's perspective provides an infrastructural framework for aligning practical commitments with the end goals that we expect technology to help society — let alone the university — achieve. For our Marxist reading group, those “shared but contested information-technology infrastructures” had a concrete shape: a growing reading community, a single foundational text, and no reliable way to hold either together over time. Therefore, what we needed was an infrastructure adequate for both, one that embodied, rather than only endorsed, the practical commitments we've been describing. MARXdown was one attempt to build it.

MARXdown — Design and Implementation

MARXdown's reading edition of *Capital Vol. 1* operationalized minimal computing principles as practical commitments, using free web hosting; preexisting web tools; and a straightforward public-domain translation to prioritize reading-group engagement and participatory interpretation over comprehensive scholarly apparatus.

What we prioritized:

1. We prioritized accessibility — by ensuring the text and annotation layer were persistent, resizable in the browser window, and mobile-friendly.
2. We prioritized readability — by keeping the text and its footnotes typographically legible, and minimally styled.
3. We prioritized portability — by making the Markdown files publicly available and usable across

environments and platforms, and reusable in other applications by group members or the public.

Across these three priority areas we tried to focus only on what felt necessary, and then only what could be done efficiently — and for free.

41

What we were willing to give up:

42

1. We were willing to give up scholarly scope on the site. But it resulted in a targeted repository of materials, of both primary and secondary sources, and annotations related to *Capital Vol. 1* in a shared Zotero folder and on hypothes.is
2. We were willing to give up synchronicity and the emphasis on shared physical space. But it resulted in asynchronous engagement with the text and, arguably, more reflective notes and comments in the annotation layer than if we had discussed them in person, presenting opportunities for online collaboration with readers at other universities.
3. We were willing to give up copyrighted translations, even if we thought such translations were better. But it resulted in us greatly improving the formatting of the public-domain translation already available on marxists.org
4. We were willing to give up encoded metadata. But utilizing Markdown instead of TEI-XML resulted in a much lower barrier of entry, better human readability, and higher speed of production and greater sustainability, with more portable outputs.

Rather than reinvent the wheel, committing to minimal-computing principles as a practical decision-making heuristic led us to seek new ways of leveraging lightweight, pre-existing web-publishing tools.^[6] Instead of attempting to design and build “The Greatest Marx Archive Ever,” or hosting related sources on the website, we utilized free storage and groups from Zotero and hypothes.is. And we incorporated the pre-existing online annotation software that hypothes.is provides, as an embedded conversation layer for texts, with individual group members retaining ownership of their annotations and the ability to edit or modify them later. This approach permitted the group to generate situated yet persistent readings of *Capital Vol. 1*.

43

MARXdown’s text for *Capital Vol. 1* was taken from the website marxists.org, using Wget to execute an automated download of the site contents relevant to *Capital Vol. 1*. We converted pages from HTML to Markdown. And we cleaned the pages using Regular Expressions and *typeset* them in plain text editors like Atom and Sublime. Despite the myriad translations of Marx’s text, we opted for the marxists.org source text for two reasons related to “what we had.” First, the public domain version (using the original 1887 English translation by Moore and Aveling, revised in 1906 under Engels’ editorial supervision) serves as the de facto standard on the web for a broader community of radical reading groups, especially abroad. Therefore, the group’s choice linked the project to existing online library infrastructure provided by marxists.org. Second, using the public domain version of Marx’s text ensured we could publish the reading edition on an open-source repository like GitHub for free. While marxists.org is invaluable as a resource hub for critical theory, we thought we could improve on the text’s readability and design. Therefore, MARXdown aimed to enhance accessibility and user experience, while maintaining its connection to established online resources. Figure 1 and Figure 2 below offer a side-by-side comparison of our digital reading edition and the marxists.org text that illustrates the kind of enhanced readability we achieved.

44

Chapter One: Commodities

Contents

Section 1 - [The Two Factors of a Commodity: Use-Value and Value](#)

Section 2 - [The two-fold Character of the Labour Embodied in Commodities](#)

Section 3 - [The Form of Value or Exchange-Value](#)

A. Elementary or Accidental Form of Value

1. [The Two Poles of the Expression of Value: Relative Form and Equivalent Form](#)

2. [The Relative Form of Value](#)

a. [The Nature and Import of this Form](#)

b. [Quantitative Determination of Relative Value](#)

3. [The Equivalent Form of Value](#)

4. [The Elementary Form of Value Considered as a Whole](#)

B. Total or Expanded Form of Value

1. [The Expanded Relative Form of Value](#)

Figure 1. Ch.1, Section 1 on marxists.org

Chapter 1 - Commodities

Index- Capital Vol.1

Next: Chapter 2 - Exchange

Section 1. The Two Factors of a Commodity, Use-Value and Value

The wealth of those societies in which the capitalist mode of production prevails, presents itself as “an immense accumulation of commodities,”¹ its unit being a single commodity. Our investigation must therefore begin with the analysis of a commodity.

A commodity is, in the first place, an object outside us, a thing that by its properties satisfies human wants of some sort or another. The nature of such wants, whether, for instance, they spring from the stomach or from fancy, makes no difference². Neither are we here concerned to know how the object satisfies these wants, whether directly as means of subsistence, or indirectly as means of production.

Every useful thing, as iron, paper, &c., may be looked at from the two points of

Public

Annotations²⁰ Page Notes²

averywiscomb (edited Feb 9, 2020) Feb 7, 2020

Section 1. The Two Factors of a Commodity, Use-Value and Value

Marx's analysis of a capitalist system begins by postulating that it's fundamentally composed of units called commodities. In the capitalist system commodities have two features.

1. They are produced
2. They are produced by capitalists

Capitalists produce commodities by employing workers to produce them.

In this section, Marx begins his analysis of the first feature of the capitalist system (viz. that it is commodity producing). Workers and capitalists will not appear in Marx's analysis for several more chapters.

Commodities Money Use Value Value CMRG-CMU

Capitalists Capitalism Summary Chapter One

GORMANA2 (edited Jan 30, 2020)

prevails

In the original German, 'prevails' is rendered 'herrscht.' Herrscht shares a common root with the ordinary German word Herr (Mister, or, more evocatively, Master). 'Lordship' (as, in the chapter

Figure 2. Ch.1, Section 1 on MARXdown

The enhanced readability of *Capital Vol. 1* in MARXdown was made possible by the Jekyll theme *Ed*. Designed for textual editing by Alex Gil, Susanna Allés Torrent, Terry Catapano, and Johann Gillium, the *Ed*. theme aligns with minimal computing principles, emphasizing typographic legibility, durability, ease of use, and flexibility. While *Ed*.s website primarily showcases short texts, it offered features for deploying digital reading editions of much larger works. As Jentery Sayers aptly summarized, *Ed*. “reduces not only the formats, proprietary software, and infrastructure needed for textual editing but also file sizes (for preservation), bandwidth usage (for access), labor (for annotation), learning curves (of scholarship), and features (of interfaces)” [Sayers 2017].

By adopting the *Ed*. theme rather than building a theme from scratch, we immediately gained valuable features such as automatic table-of-contents generation, search functionality, formatted bibliography creation, linked citations in footnotes, and more (see Figure 3).

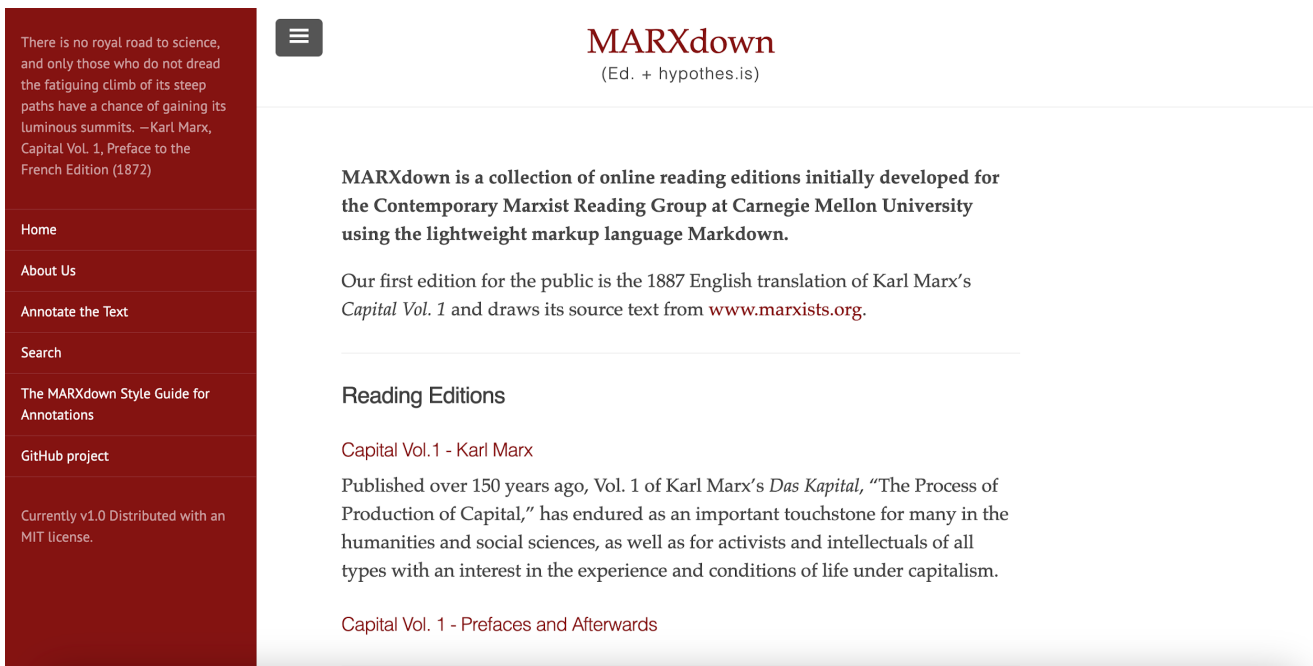


Figure 3. MARXdown static website homepage using Ed theme for Jekyll

Utilizing Ed. to launch our static site on Jekyll allowed us to easily integrate hypotheses.is, enabling near real-time or asynchronous discussions within the text itself. As a digital annotation tool, hypotheses.is works like a transparent layer over websites where readers can highlight text, add comments visible to others, and reply to existing comments. So, hypotheses.is created a collaborative reading experience similar to a group of scholars writing notes in the margins of a shared book — except annotations could include links to other resources and remain editable, accessible, and persistent online. Adding the annotation feature to the site created the potential for debates among group members and public interlocutors, while also providing a simple way to link relevant passages to supplementary resources and secondary sources hosted on Zotero or the internet (see Figure 4).

47

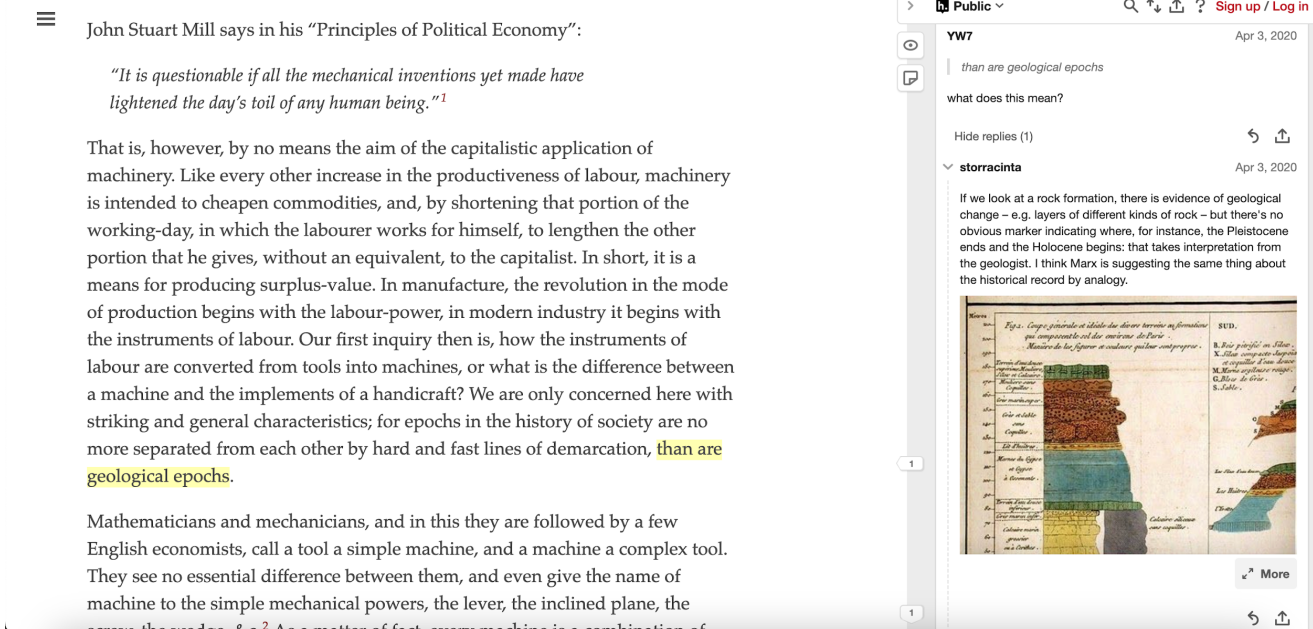


Figure 4. annotations with hypotheses.is for collaborative reading

The integration of hypotheses.is in MARXdown aligned with our practical commitments to accessibility and collaborative

48

reading, yet they also represented a calculated compromise. It meant relying on an external software layer, a component that we could not directly control. Adding the ability to annotate the text introduced a dependency that could also undermine our commitments to durability and ease of maintenance, for example, if the service were ever to shutter, implement paywalls, or significantly change its functionality. In architectural terms, the static site itself operates as a client-only resource, which requires no server-side processing to render, while *hypothes.is* introduces a client-server dependency that might compromise the long-term durability that a purely static edition could otherwise guarantee. However, the group accepted this risk deliberately, weighing *hypothes.is*'s open-source, non-profit ethos, its data portability features, and the technical overhead we avoided by using it, against the potential costs of the dependency.

In implementing *hypothes.is*, the group ensured the annotations' portability by making the edition still readable and valuable, even if *hypothes.is* became unavailable, since the Markdown files and static site persisted independently of the annotation layer (see Figure 5). To lower barriers to group participation further, members developed a style guide for creating annotations, along with tutorials for setting up a *hypothes.is* account. This helped to ensure the collaborative layer of the edition remained accessible to new members regardless of their prior experience with Markdown or web annotation tools.

49

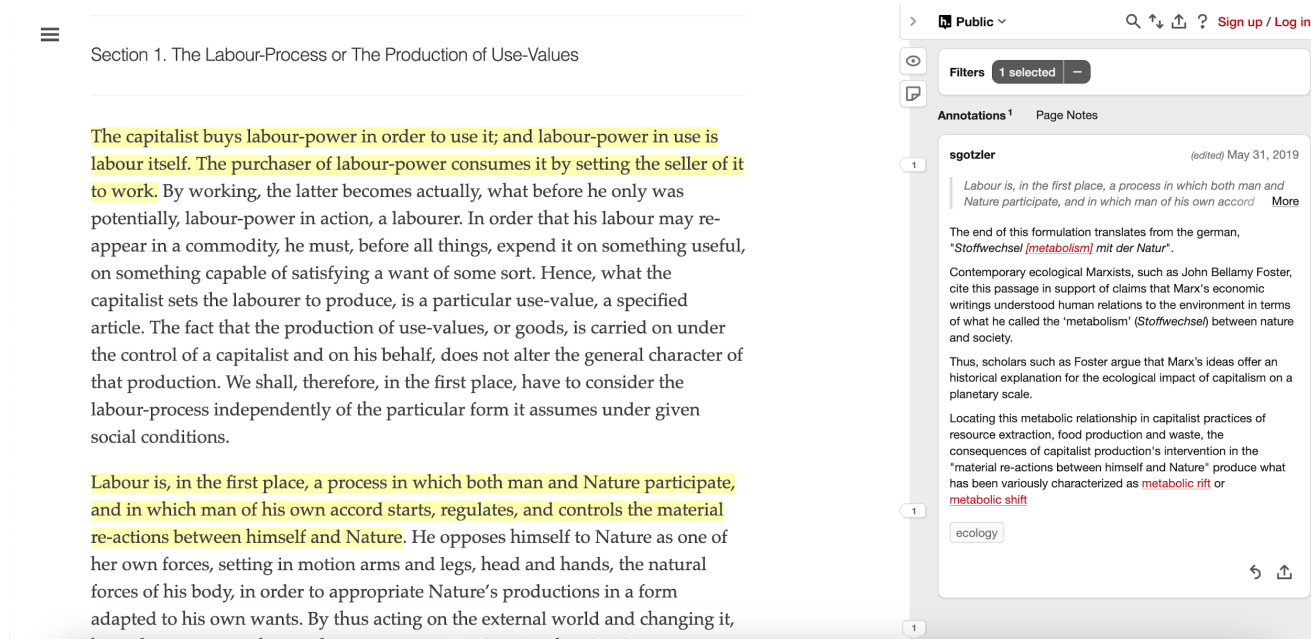


Figure 5. using portability of *hypothes.is* annotations to ensure core text readability

The Endings Project [Holmes et al. 2023] cautions against exactly these kinds of external dependencies. Part of a minimal computing initiative at the University of Victoria, The Endings Project offers a useful point of comparison, particularly because of its focus on digital longevity. However, MARXdown departs from Endings' framework — both in its integration of GitHub Pages and *hypothes.is*, and by choosing Markdown over TEI-XML — not inadvertently, but as a consequence of the practical commitments that shaped our design decisions.

50

We chose to (re)write Marx's text in Markdown, a lightweight language abundant in preexisting online tutorials and "cheat sheets." The group's decision to use Markdown rather than TEI-XML was driven by the barrier-to-entry differential between the two. TEI-XML, while the established standard for digital scholarly editions, still requires specialist knowledge of a complex encoding schema that most humanities graduate students don't arrive with, and shouldn't necessarily be expected to learn. By contrast, Markdown is designed for human-readability in its raw form and learnable in an afternoon or two. For a digital reading edition built exclusively by graduate student labor, that difference was determinative. Choosing Markdown still came with costs, since TEI-XML would have enabled far richer semantic encoding (e.g., marking up speakers, dates, places, variant readings, and other metadata) in ways Markdown cannot. But for a reading edition rather than a scholarly edition, that richness was ultimately unnecessary for the community.

51

We saw four things that Markdown delivered in TEI's place: lower barriers to entry; human readability; speed of editorial production; and portable outputs. All four of Markdown's advantages mapped directly onto the group's practical commitments. For example, Markdown files are notably more durable in a minimal computing context, requiring no specialized software to read or edit. And Markdown files remain legible as plain text even outside their intended environment. Therefore, the digital reading edition could also be more easily maintained by future group members without specialist training.

Our commitment to durability in MARXdown meant we wanted to address the same long-term accessibility concerns central to minimal computing initiatives like The Endings Project, with its focus on sustainability and longevity. MARXdown lacked the formal standardization of TEI-XML, which Endings endorses as a preferred open-standards format. But we accepted Markdown deliberately as a practical commitment relevant to the community. Fundamentally, we imagined the reading edition would be passed along to future iterations of the group, members who would now need less technical training than TEI-XML to maintain, update, or add additional Marx texts.

```
1 layout: narrative
2 title: "Chapter 25 - The Generalist Law of Capitalist Accumulation"
3 author:
4 part: "Part VII. The Accumulation of Capital"
5 toc:
6 - Section 1. The Increased Demand for Labour Power that Accompanies Accumulation, the C
7 - Section 2. Relative Diminution of the Variable Part of Capital Simultaneously with the
8   Accompanies It
9 - Section 3. Progressive Production of a Relative Surplus Population or Industrial Reser
10 - Section 4. Different Forms of the Relative Surplus Population. The General Law of Cap
11 - Section 5. Illustrations of the General Law of Capitalist Accumulation
12 - A. England from 1846-1866
13 - B. The Badly Paid Strata of the British Industrial Class
14 - C. The Nomad Population
15 - D. Effect of Crises on the Best Paid Part of the Working Class
16 - E. The British Agricultural Proletariat
17 - F. Ireland
18 - Footnotes
19 ***
20 ***
21 ***
22 [[*Index*]] *Capital Vol. 1*[[* site.baseurl *]]{{% link capindex.md %}}
23
24 [[*Previous*]] Chapter 24 - Conversion of Surplus-Value into Capital[[* site.baseurl *]]
25 [[*Next*]] Chapter 26 - The Secret of Primitive Accumulation[[* site.baseurl *]]{{% link
26 ***
27
28 ### Section 1. The Increased Demand for Labour power that Accompanies Accumulation, the
29 ***
30
31 In this chapter we consider the influence of the growth of capital on the
32 lot of the labouring class. The most important factor in this inquiry is the
33 composition of capital and the changes it undergoes in the course of the
34 process of accumulation.
35
36 The composition of capital is to be understood in a two-fold sense. On the
37 side of value, it is determined by the proportion in which it is divided into
38 constant capital or value of the means of production, and variable capital or
39 value of labour power, the sum total of wages. On the side of material, as it
40 functions in the process of production, all capital is divided into means of
41 production and living labour power. This latter composition is determined by
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
```

Figure 6. Markdown source file for Chapter 25 of MARXdown, illustrating the human readability and low technical barrier of plain-text encoding.

However, as Quinn Dombrowski [Dombrowski 2022] argues, even "Jekyll ain't easy." And committing to minimal computing tools still posed significant barriers. For example, the complexity of configuring and implementing Jekyll still required some measure of technical expertise and labor, from updating ruby gems to changing the `_config.yml` file. Our group's experience with MARXdown exposed some of these limitations, and at different times throughout the development and implementation of the *Capital Vol. 1* edition we relied on labor from staff at Carnegie Mellon to resolve bottlenecks and help us recognize coding errors in our work.^[7] Since digital reading editions can permit access to politically marginalized or undertaught materials in academia, MARXdown sought to embody the key technical and ethical commitments of minimal computing, despite (or in spite of) the very important barriers Dombrowski identifies. The project's practical commitments to lightweight infrastructure, plain-text orientation, and sustainability for us represented a deliberate attempt to curb the marginalization that uneven access to digital tools so often reproduces in the university.

Conclusion

MARXdown found its first community of readers in fall of 2019, for a year-long successful reading of *Capital Vol. 1*.^[8] Built over that previous spring and summer, taken from a text scraped from marxists.org, formatted in Markdown, and typeset using Ed., the reading group's members annotated collaboratively through hypothes.is, referred to the edition

and its annotations in discussions, shared the edition with peers in other graduate programs, and built a large Zotero repository of additional readings.

The COVID-19 pandemic in spring 2020 transformed our inter-institutional network from an ancillary feature to a necessity. Embracing the shift to virtual engagement, we invited participants from across the U.S., including the University of Illinois at Chicago, Brown University, and Yale University, expanding the community of readers beyond Carnegie Mellon through university-hosted Zoom sessions. The group's forced pivot to virtual engagement revealed something that our practical commitments throughout the project's development enabled: the edition's portability, asynchronous annotation layer, and lightweight infrastructure were not design conveniences in the face of constraints but rather emerged as genuine resilience features under conditions of institutional crisis.

56

As a case study in why and what to build into digital reading editions, MARXdown will hopefully prompt others to meditate on the generative possibilities, both institutionally and politically, for similar DH reading projects. MARXdown's approach to the design and development of digital reading editions could be replicated for other marginalized texts, potentially transforming engagement with multi-ethnic literatures, decolonial efforts, feminist interventions, and other underrepresented voices in the digital cultural record, whether in the classroom or in organizing and activist spaces. Future applications in this vein might explore lowering technical barriers further. Such editions could incorporate multiple translations or expand scholarly scope without sacrificing simplicity [Visconti et al. 2020] — building on MARXdown's practical commitments to minimal computing principles.

57

Future digital reading editions might also more explicitly address the labor that sustains them, by implementing contribution tracking systems that could make visible the often invisible work digital projects depend on. As Gregg argues, digital labor frequently blurs the boundaries between voluntary contribution and exploitative work, a tension that the practical commitments framework we've outlined here is well-positioned to directly address [Gregg 2011]. Committing to open-source tools and open standards at every layer of an edition's development and deployment is one concrete way such editions could begin to redistribute that labor more equitably, lowering barriers to participation while keeping the work of building and maintenance transparent and accountable.

58

The *practical commitments* perspective we've started to outline hopefully provides an instructive case study by emphasizing the situated, intentional nature of the group's minimal computing choices. Technical barriers and the constrained reliance on a public domain translation served to reinforce rather than undermine commitments to accessibility and community-driven knowledge sharing. Rather than presenting a radical redefinition, we've tried to offer a situated (re)description of minimal computing in practice, necessarily located in our own particular, and personal, experiences of labor, computing, and community. Nevertheless, this approach helps bridge the gap between minimal computing theory and practice and provides a vocabulary — and a case study — for discussing how digital reading edition projects navigate real-world constraints, while maintaining their ethical and technical integrity.

59

Notes

[1] Although edited and built by Gotzler and Wiscomb [Gotzler and Wiscomb 2019], MARXdown was developed with help from other reading group members: Natalie Suzelis, Christopher Wike, Jacob Goessling, Corbin Hiday, and Marah Nagelhout. Special acknowledgement goes to members Alex Gorman for creating the annotation style guide and to Chloe Perry for typesetting and uploading prefaces and afterwords from various *Capital* Vol. 1 editions. The dSHARP lab at Carnegie Mellon University Libraries, including at different times Daniel Evans, Jessica Otis, Matthew Lincoln, and Scott Weingart, provided technical support to overcome project bottlenecks (see n. 7). For more on Carnegie Mellon University Library Labs, see [Lincoln and Weingart 2021].

[2] Examples of digital scholarly type editions include Folger Digital Texts, The William Blake Archive, The Frankenstein Variorum, Electronic Beowulf, The Walt Whitman Archive, Mark Twain Project Online, Jane Austen's Fiction Manuscripts. Examples of digital reading type editions include Walter Benjamin Digital, Manifold Scholarship (e.g., Debates in the Digital Humanities), and the democracy Journal Archive (1981–83).

[3] The Pan-Africanism Data Project uses a Zotero group for collaborative resource management. Wearing Gay History demonstrates how minimal computing can make marginalized histories more accessible and visible on a basic Wordpress site. The Cyberfeminism Index shows how simple, text-based design can effectively present specialized content. These and other projects illustrate the versatility of minimal computing principles in creating accessible, community-oriented resources, which are not necessarily synonymous with static websites.

[4] Following Gil and Risam [Gil and Risam 2022], we use *Global North* and *Global South* as shorthand terms to describe the economic divide between high-income and low-income economies, which result largely from colonialism. We acknowledge that these terms, and related concepts such as *developed countries*, *the First World*, or *the West*, have limitations due to their tendency to oversimplify and their geographical vagueness.

[5] By *super-exploitation*, we mean the employment of labor at rates and under conditions below general remuneration levels. Humanities

graduate students are routinely expected to perform extensive research, writing, and teaching alongside technical work on DH projects, typically for stipends that fail to meet living costs in most metropolitan areas. In many cases, DH work simply amounts to more work. Many graduate students accrue debt paying for the privilege of engaging in unremunerated digital labor. This condition is characteristic of the North American academic model, where graduate students occupy an ambiguous category between student and employee. Many serve as primary instructors while lacking the staff status, benefits, and protections commonly afforded to doctoral candidates in European university systems.

[6] What we prioritized was a result of answering the second pair of Gil and Risam's decision-making prompts for minimal computing projects — *what must we prioritize?* and *what are we willing to give up?* Gil and Risam [Gil and Risam 2022] offer a useful framework for narrating design and implementation processes, which should be generalizable to other digital reading edition projects.

[7] Development *bottlenecks* often stemmed from several challenges. For an account of challenges facing static sites, most of which we encountered, see Dombrowski [Dombrowski 2022]. In practice, these challenges included navigating and updating Ruby gems via the command line and modifying the `_config.yml` file without compromising functionality. Authoring paratextual content in Markdown and the Ed. template presented additional hurdles, particularly with Marx's many complex footnotes. These and other technical issues consistently posed obstacles throughout the development process.

[8] The edition benefited from diverse feedback. For example, digital specialists at Carnegie Mellon Libraries, Marx scholars, and DH practitioners provided valuable input during work-in-progress presentations at the Cultural Studies Association conference (June 2019, New Orleans), the Association for Computers and the Humanities meeting (July 2019, Pittsburgh), and the annual MLA Convention (January 2022, San Francisco). We are especially grateful to Alex Gil, Kathy M. Newman, and Michael Denning for their early feedback and support. Early development of the edition was also supported by scholarships from the University of Victoria's Digital Humanities Summer Institute (DHSI) to attend relevant summer courses, and a grant from Carnegie Mellon University's dSHARP Initiative (2017-2021).

Works Cited

'About' (n.d.) *Minimal Computing: A Working Group of GO::DH*. Available at: <https://go-dh.github.io/mincomp/about/> (Accessed: 14 September 2024).

Beshero-Bondar et al. 2020 Beshero-Bondar, E. et al. (2020) "Frankenstein Variorum." Carnegie Mellon University. Available at: <https://doi.org/10.1184/R1/C.4805868.V1>.

Blank 2013 Blank, S.G. (2013) *The four steps to the epiphany: successful strategies for products that win*. Fifth edition. California: K & S Ranch.

Boler 2008 Boler, M. (ed.) (2008) *Digital Media and Democracy: Tactics in Hard Times*. Cambridge, MA: MIT Press.

Bourdieu 1977 Bourdieu, P. (1977) *Outline of a Theory of Practice*. 1st ed. Translated by R. Nice. Cambridge University Press. Available at: <https://doi.org/10.1017/CBO9780511812507>.

Bousquet 2002 Bousquet, M. (2002) "The waste product of graduate education." *Social Text*, 20(1), pp. 81–104. Available at: https://doi.org/10.1215/01642472-20-1_70.

Bousquet and Nelson 2008 Bousquet, M. and Nelson, C. (2008) *How the University Works: Higher Education and the Low-Wage Nation*. New York: New York University Press.

Chan and Sayers 2022 Chan, T. and Sayers, J. (2022) "Minimal computing from the labor perspective." In *Digital Humanities Quarterly*, 016(2).

Clement 2015 Clement, T. (2015) "Where is methodology in digital humanities?" in Gold, M.K. and Klein, L.F. (eds) *Debates in the Digital Humanities* 2016. University of Minnesota Press.

Dombrowski 2022 Dombrowski, Q. (2022) "Minimizing computing maximizes labor." *Digital Humanities Quarterly*, 16(2). Available at: <https://dhq.digitalhumanities.org/vol/16/2/000594/000594.html> (Accessed: 24 September 2024).

Fiormonte 2017 Fiormonte, D. (2017) *Digital Humanities and the Geopolitics of Knowledge. Digital Studies/Le champ numérique*, 7(1), p. 5. Available at: <https://doi.org/10.16995/dscn.274>.

Fitzpatrick 2019 Fitzpatrick, K. (2019) *Generous Thinking: A Radical Approach to Saving the University*. Baltimore: Johns Hopkins University Press.

Gil 2015 Gil, A. (2015) *The User, the Learner and the Machines We Make*. Minimal Computing, Minimal Computing: A Working Group of GO::DH. Available at: <http://go-dh.github.io/mincomp/thoughts/2015/05/21/user-vs-learner/> (Accessed: 11 September 2024).

Gil 2019 Gil, A. (2019) "Design for diversity: The case of Ed." 20 June. Available at: <https://des4div.library.northeastern.edu/design-for-diversity-the-case-of-ed-alex-gil/> (Accessed: 24 September 2024).

Gil and Ortega 2016 Gil, A. and Ortega, Élika (2016) "Multilingual practices and minimal computing." in Constance Crompton, Richard J. Lane, and Ray Siemens (eds) *Doing Digital Humanities: Practice, Training, Research*, NY: Routledge, 2016. pp. 22–34.

- Gil and Risam 2022** Risam, R. and Gil, A. (2022) "Introduction: The questions of minimal computing." *Digital Humanities Quarterly*, 016(2).
- Gotzler 2019** Gotzler, S. (2019) *Deploying Lightweight Digital Editions in the Community and Classroom, praxis-session*. Available at: <https://sgotzler.github.io/praxis-session/> (Accessed: 1 October 2024).
- Gotzler and Wiscomb 2019** Gotzler, S. and Wiscomb, A. (2019) *MARXdown*. Available at: <https://MARXdown.github.io/> (Accessed: 1 October 2024).
- Greetham 1994** Greetham, D.C. (1994) *Textual Scholarship: An Introduction*. Available at: <https://archive.org/details/textualscholarsh0000gree>.
- Gregg 2011** Gregg, M. (2011) *Work's Intimacy*. Cambridge: Polity Press.
- Holmes et al. 2023** Holmes, M. et al. (2023) "Endings Principles for Digital Longevity." Version 2.2.1. University of Victoria. Available at: <https://endings.uvic.ca/principles.html>. (Accessed: 31 March 2026)
- Hughes, J. 2016** Hughes, J. (2016) *Minimal Computing: A Working Group of GO::DH*. Available at: <http://go-dh.github.io/mincomp/thoughts/2016/10/07/minimal-definitions-notes/> (Accessed: 17 September 2024).
- Knight 2017** Knight, K. (2017) *Making Space: Feminist DH and a Room of One's Own*. Minimal Computing: A Working Group of GO::DH. Available at: <http://go-dh.github.io/mincomp/thoughts/2017/02/18/knight-makingspace/>.
- Kuehn and Corrigan 2013** Kuehn, K. and Corrigan, T.F. (2013) "Hope labor: The role of employment prospects in online social production." *The Political Economy of Communication*, 1(1), pp. 9–25.
- Lincoln and Weingart 2021** Weingart, S.B. and Lincoln, M. (2021) "CMU Library Labs (2020-2024)" p. 455911 Bytes. Available at: <https://doi.org/10.1184/R1/13522718>.
- Liu 2016** Liu, A. (2016) "Drafts for against the cultural singularity" (book in progress). Available at: <https://doi.org/10.21972/G2B663>.
- Losh 2015** Losh, E. (2015) "Utopian pedagogies: Teaching from the margins of the digital humanities" in P. Svensson and D.T. Goldberg (eds) *Between Humanities and the Digital*. The MIT Press, pp. 429–440. Available at: <https://doi.org/10.7551/mitpress/9465.003.0037>.
- Luka and Millette 2018** Luka, M.E. and Millette, M. (2018) "(Re)framing big data: Activating situated knowledges and a feminist ethics of care in social media research." *Social Media + Society*, 4(2).
- McGann, J. 2001a** McGann, J. (2001a) "The Rationale of Hypertext" in *Radiant Textuality: Literature after the World Wide Web*. New York: Palgrave Macmillan, pp. 53–74. Available at: https://doi.org/10.1007/978-1-137-10738-1_3.
- McGann, J. 2001b** McGann, J. (2001b) "Editing as a Theoretical Pursuit" in *Radiant Textuality: Literature after the World Wide Web*. New York: Palgrave Macmillan, pp. 75–97. Available at: https://doi.org/10.1007/978-1-137-10738-1_4.
- McPherson 2012** McPherson, T. (2012) "Why are the digital humanities so white? Or thinking the histories of race and computation" in M.K. Gold (ed.) *Debates in the Digital Humanities*. NED-New edition. University of Minnesota Press, pp. 139–160. Available at: <https://www.jstor.org/stable/10.5749/j.cttv8hq.12>.
- Nowviskie 2016** Nowviskie, B. (2016) "On the origin of *hack* and *yack*" in M.K. Gold and L.F. Klein (eds) *Debates in the Digital Humanities* 2016. University of Minnesota Press, pp. 66–70. Available at: <https://doi.org/10.5749/j.ctt1cn6thb.10>
- Oroza 2012** Oroza, E. (2012) "Architecture of Necessity." Available at: <http://architectureofnecessity.com/>.
- Otis 2023** Otis, J. (2023) "Follow the money?: Funding and digital sustainability." *Digital Humanities Quarterly*, 017(1). Available at: <https://digitalhumanities.org/vol/17/1/000666/000666.html>.
- Posner 2016** Posner, M. (2016) "What's next: The radical, unrealized potential of digital humanities" in M.K. Gold and L.F. Klein (eds) *Debates in the Digital Humanities* 2016. University of Minnesota Press, pp. 32–41. Available at: <https://doi.org/10.5749/j.ctt1cn6thb.6>.
- Ries 2011** Ries, E. (2011) *The lean startup: how today's entrepreneurs use continuous innovation to create radically successful businesses*. 1st ed. New York: Crown Business.
- Risam 2018** Risam, R. (2018) *New digital worlds: postcolonial digital humanities in theory, praxis, and pedagogy*. Evanston, Illinois: Northwestern University Press.
- Risam and Edwards 2018** Risam R. and Edwards, S. (2018) "Transforming the landscape of labor at universities through

digital humanities.” in Kear, Robin and Joranson, Kate, *Digital Humanities, Libraries, and Partnerships*. 3–17. Cham, Switzerland: Chandos, 2018. Available at: <https://digitalrepository.salemstate.edu/handle/20.500.13013/1010>.

Sayers 2016 Sayers, J. (2016) *Minimal Definitions, Minimal Computing: A Working Group of GO::DH*. Available at: <http://go-dh.github.io/mincomp/thoughts/2016/10/02/minimal-definitions/>.

Sayers 2017 Sayers, J. (2017) *Ed., Minimal Computing*. Available at: <https://jentry.github.io/minimal/ed/>. (Accessed: 11 September 2024).

Scholz 2013 Scholz, T. (ed.) (2013) *Digital Labor: The Internet as Playground and Factory*. New York: Routledge.

Siemens et al. 2016 Siemens et al. (2016) *Doing Digital Humanities: Practice, Training, Research*. NY: Routledge, 2016.

Terranova 2000 Terranova, T. (2000) “Free labor: Producing culture for the digital economy.” *Social Text*, 18(2), pp. 33–58.

Underwood 2014 Underwood, T. (2014) “Theorizing research practices we forgot to theorize twenty years ago.” *Representations*, 127(1), pp. 64–72. Available at: <https://doi.org/10.1525/rep.2014.127.1.64>.

Visconti 2016 Visconti, A. (2016) “Building a static website with Jekyll and GitHub Pages.” *Programming Historian* [Preprint]. Available at: <https://programminghistorian.org/en/lessons/building-static-sites-with-jekyll-github-pages> (Accessed: 10 September 2024).

Visconti et al. 2020 Visconti, A., Walsh, B. and Scholars' Lab Community (2020) “Running a collaborative research website and blog with Jekyll and GitHub.” *Programming Historian* [Preprint]. Available at: <https://programminghistorian.org/en/lessons/collaborative-blog-with-jekyll-github> (Accessed: 14 October 2024).

Wernimont 2015 Wernimont, J. (2015) “Build a better panel: Feminist interventions in digital studies.” *Jacqueline Wernimont Blog*, 23 January. Available at: <https://jwernimont.com/build-a-better-panel-feminist-interventions-in-digital-studies/>

Wiscomb 2016 Wiscomb, A. (2016) *democracy Journal Archive (1981-1983)*. Available at: <https://democracyjournalarchive.wordpress.com/> (Accessed: 10 October 2024).



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.