

Depending on Other in the IndieWeb: Navigating Holistic and Prescriptive Building in a Decentralized Social Network

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Abstract

There is a growing movement to build alternatives to large, corporate web platforms. This is motivated largely by concerns that these platforms exercise too much power. In Franklin's terms, they do so using prescriptive technologies, which limit individuals' control for the sake of facilitating complex projects too large for any individual to manage. This paper investigates the construction of the IndieWeb, a people-focused alternative to corporate platforms composed of personal websites that are connected using simple peer-to-peer standards. IndieWeb embraces holistic technologies, emphasizing individuals' control over their online identity and experience. How can they pursue this goal while building a system for large-scale social networking, an endeavour conventionally achieved through prescriptions? I investigate this question using digital ethnography and critical making. I find that IndieWeb self-consciously attempts to maximize individual freedom at a micro-scale while using prescriptions at a macro-scale. As well as occurring in IndieWeb's technical structures, this phenomenon is evident in community and organizational structures, where it is employed to support equity and diversity. The main contribution of this paper is to unpack IndieWeb's synthesis of holistic and prescriptive technologies across scales, which offers lessons for building an equitable and empowering future real world of technology.

Introduction

Large web platforms have made it easier than ever to publish and communicate online. And yet, this has come at a cost of entrusting those platforms to make decisions about how information is presented, distributed, and archived. There is an increased tide of alternative web technologies that attempt to distribute this control among individuals and communities (e.g., Buterin, 2017; Halpin, 2018; Kahle, 2015; Schneider, 2019). Franklin's (1999) distinction between prescriptive and holistic technologies provides a valuable lens for studying this phenomenon. She articulates a trade-off where holistic technologies allow individuals to control their building processes but are limited in growth, and prescriptive technologies facilitate complex projects too large for any individual to manage, yet at the expense of individual autonomy. In this paper, I reflect on the role of prescriptive and holistic technologies in the construction of the IndieWeb (IndieWeb.org, 2020a), a community-built network of personal websites connected by simple peer-to-peer standards and software. Building large and ambitious yet equitable and empowering systems requires a careful balance between holistic and prescriptive technologies.

IndieWeb's overarching purpose is to help people take control of their online identity and experience. To that end, its central units are personal websites, vehicles for self-expression free from the prescriptions of corporate social media. However, to form a coherent network rather than just a collection of individual sites, IndieWeb turns to collectively agreed upon standards and norms as coordination mechanisms. In brief, individual acts of building for the IndieWeb are holistic, but as one moves from a micro view of individual websites to a macro view of IndieWeb's network, a complex relationship among holistic and prescriptive technologies comes into focus.

Through a combination of digital ethnography and critical making (Ratto, 2011, forthcoming), I investigate how this system is built and maintained. I describe IndieWeb's self-conscious attempt to maximize individual freedom at the micro scale while maintaining commensurability at a macro scale. I additionally describe how a risk to equity—the fact that individuals building holistically for their own needs are likely to reproduce pre-existing barriers and inequalities (Costanza-Chock, 2020)—is addressed through interventions in IndieWeb's community and organizational structures. Ultimately, I argue that holistic and prescriptive technologies must be held in balance. For IndieWeb to achieve its purpose, it is necessary for its members to take responsibility for their individual work as well as their place within a broader socio-technical infrastructure. IndieWeb's synthesis of holistic and prescriptive technologies across scales offers lessons for building an equitable and empowering future real world of technology.

Background

Prescriptive and holistic technologies

Franklin's (1999) distinction between holistic and prescriptive technologies guides this analysis. In defining these terms, she focuses on examining the practices that a technology facilitates, demands, or discourages. Both types of technology involve divisions of labour, but along different axes.

Holistic technologies support workers to have control over their labour process from beginning to end. With such technologies, workers may specialize in producing certain types of products, but do not specialize in specific stages of production. By contrast, prescriptive technologies are specialized by process. This engenders social organizations “of discipline and planning, of organization and command” (Franklin, 1999, p. 22), where work processes are prescribed to labourers. Franklin (1999) provides an illustrative description of early Chinese bronze casting as an example of prescriptive technology:

In contrast to what happens in holistic technologies, the potter who made molds in a Chinese bronze foundry had little latitude for judgement. He had to perform to narrow prescriptions. The work had to be right—or else. And what is right is laid down beforehand, by others. (p. 22)

The merit of prescriptive technologies is that they facilitate work processes too large for any individual to manage.

However, there is a significant trade-off to achieving these boons for scale and efficiency. With holistic technologies, workers retain the ability to make adjustments, personal customizations, and other decisions throughout their work. This capacity is lost in prescriptive technologies since work is pre-arranged into small discrete steps, and thus “prescriptive technologies eliminate the occasions for decision-making and judgement in general and especially for the making of principled decisions” (Franklin, 1999, p. 24). Ultimately, decisions about work processes are made by external experts—people like managers, designers, or policy-makers, and so on.

Recent design justice scholarship complements Franklin’s analysis about technology, labour and power (e.g., Costanza-Chock, 2020). A core component of this work is to bring attention to “race, class, gender, disability, and other axes of inequality” (Costanza-Chock, 2020, p. 37) that have been absent from foundational design scholarship. To do so, Costanza-Chock (2020) urges that we begin by asking “how does the matrix of domination shape affordance perceptibility and availability?” (p. 37). Prescriptive technologies make certain affordances very visible, but others are obfuscated or unavailable to some users. In this division, expertise (about a technology) and experience (actually using the technology) are routinely separated—for

example, an assembly line does not afford workers an opportunity to walk to another station and take over a different task, but it does provide visibility of the entire workflow to an “expert” manager. Franklin (1999) notes that feminist authors have “drawn attention to the overbearing role of experts in the lives of those who, like many women, have no claim to certified expertise because most of their knowledge is not separated from their experience” (p. 33). Rigid prescriptions coupled with a lack of diverse experiential knowledge can lead to exclusions. It is for this reason that Franklin (1999) writes,

Any tasks that require caring, whether for people or nature, any tasks that require immediate feedback and adjustment, are best done holistically. Such tasks cannot be planned, coordinated, and controlled the way prescriptive tasks must be. (p. 23-24)

This is pernicious in the case of online social media, where rules that seem reasonable in majority cases can unfairly target underrepresented groups (see Haimson & Hoffmann, 2016).

Concerning social media and related network infrastructures, these concepts highlight a challenging conflict. These systems operate at a scale for which prescriptive technologies seem necessary. Most attempts to build holistic alternatives are difficult to use and are rooted in open source cultures that, at least concerning gender, demonstrate even greater exclusion than mainstream technological communities (Leach et al., 2009). And yet, there is a great potential for new alternatives to develop novel emancipatory practices, technologies, and cultures.

IndieWeb

IndieWeb is a community of personal websites, connected using simple standards, to form an alternative to corporate web platforms (e.g., Facebook, Twitter). Individuals use their own websites to publish blog posts, status updates, photos, videos, RSVPs, or other types of content. Individual websites are supported by a variety of IndieWeb software and standards, which allow these websites to communicate likes, replies, shares, and other social features directly amongst themselves, rather than relying on corporate social media platforms. IndieWeb is informally structured, and largely built by volunteer hobbyists (although some contributors have incorporated IndieWeb work into their jobs).

IndieWeb began as an event in 2011, organized by Aaron Parecki, Tantek Çelik, Crystal Beasley, and Amber Case. In the following decade, it has expanded into a series of hundreds of events held internationally, online discussions through chat and a wiki hosted at IndieWeb.org, and a substantial network of at least thousands of sites, built with a variety of software. In large part, IndieWeb was created as a reaction against rising corporate control of the Internet, and frustration that attempts to retake the web were focused on “what could be possible” rather than building what actually was possible right away (Çelik, 2014, 7:24). IndieWeb’s response to

these situations is to prioritize individuals' ownership and control of their online experience through operating their own personal website. At the same time, this holistic approach to personal websites is joined by participation in a complex communication network where prescriptive approaches are entrenched. This makes IndieWeb a compelling site to revisit Franklin's concepts of prescriptive and holistic technologies.

Method

This paper draws from an ethnographic study of the IndieWeb, conducted over three years from 2017-2020. I participated in IndieWeb's chat rooms, an extensive wiki, community member's websites, software code repositories hosted on GitHub, and in-person and online events. Additionally, these sites and events are publicly documented, so I was able to engage with archived event videos, meeting minutes, chat logs, and similar resources. This was accompanied by semi-structured interviews with 15 IndieWeb contributors, ranging from 50 minutes to 3.5 hours. Interviews served to investigate motivations, experiences, and decisions that were not visible through observation. These were particularly useful for investigating diversity and inclusion, since interview participants often reflected on the difficulties of achieving these goals.

Because making (websites, software, UX flows, etc.) is a defining feature of IndieWeb, a major part of my participation was to build IndieWeb software. In doing so, I drew from critical making, "a mode of materially productive engagement that is intended to bridge the gap between creative physical and conceptual exploration" (Ratto, 2011, p. 252). Critical making involves three main activities, which often overlap: compiling relevant theoretical concepts; collaborative design and building as a means of exploring those concepts; and iterative processes of reconfiguration, conversation, and reflection, which help probe and extend theory. While building, critical making demands "focus on the lived experience of making and the role this plays in deepening our understanding of the socio-technical environment" (Ratto & Hertz, 2015). In other words, critical making is more concerned with understanding processes than it is with building products.

Across these activities, I focused on how divisions of labour structured activities in the IndieWeb. Here I drew from Randall et al.'s (2007) description of ethnomethodologically informed ethnography: "Understanding how people coordinate their work in real time, moment-by-moment, how they orient to the 'working division of labor' to make sense of what they are doing, is a feature of ethnographic explication" (p. 121). I investigated what was involved in being part of the IndieWeb and how its socio-technical infrastructures supported and constrained various activities. I documented my observations in fieldnotes, which I organized through an iterative process of initial coding (Saldaña, 2013) and reduction to core concepts for addressing my overall questions.

Findings

Building IndieWeb software

IndieWeb's core units are personal websites. Here, there is a clear division of labour by product, emphasizing that people should be able to own and control their own site (IndieWeb.org, 2020a).

Of course, it is possible to adopt templates or tools built by others, but these are not imposed. A personal website built using a content management system like WordPress is just as IndieWeb as one hand-coded from scratch. By contrast to popular social media platforms, there are no restrictions on form or content and no requirements to use specific tools or interfaces. As a result, IndieWeb's sites are built with many different tools, and include long-form blogs, microblogs, discussion forums, event listings, static profiles, photo galleries, and other structures. Co-founder Çelik once remarked that IndieWeb's "why" article (a wiki article presenting reasons for adopting IndieWeb's approach) "can be summarized in one word, and that's autonomy."¹ Particularly, this is expressed through IndieWeb's principles for building (IndieWeb.org, 2020c), which, among other things, recommend building for oneself, at least as a starting point: "Make what you need [...] If you design for some hypothetical user, they may not actually exist; if you make for yourself, you actually do exist."

This poses challenges for IndieWeb as more than a collection of individual websites; to be a useful alternative to corporate social networking sites, IndieWeb sites must be able to talk to each other. This requires coordinating across a large scale—precisely the sort of task at which prescriptive technologies excel. IndieWeb's approach focuses on technical standards, some of the most significant of which are:

- IndieAuth: Log-in to a site or application using one's personal website. Similar to logging in using a Facebook, Google, or Apple account.
- Microformats 2: Define machine-readable language for denoting people, events, articles and other entities in HTML.
- Webmention: Notify a URL when it is linked from one's website. In combination with Microformats 2, used to communicate replies, likes and other interactions between sites.
- Micropub: Post to one's website from a third-party client.
- Microsub: Build feed readers in two halves: "A Microsub server manages the list of people you're following and collects their posts, and a Microsub app shows the posts to the user by fetching them from the server" (IndieWeb.org, 2020b).

¹ See: <https://chat.indieweb.org/2014-01-16#t1389841785000000>

IndieWeb's wiki cites Berners-Lee and Fischetti's (1999) description of the early web as "a set of ideas that could be adopted individually in combination with existing or future parts" to explain that "the IndieWeb is built with a set of building blocks, instead of on a monolithic 'stack'" (IndieWeb.org, 2019a). This means there are multiple ways to do almost everything, since standards can be combined piecemeal, and there are usually multiple implementations of any given standard.

I experienced both freedom and surprising constraints while building my own IndieWeb software. I built a feed reader with which I could subscribe to feeds from various IndieWeb sites and then reply, like, or share posts by using my own site. I built this in two versions, the first of which, *Yarns Indie Reader*, was built mostly on my own from 2017-2018 (incorporating code from other open-source projects). I had been frustrated when I first set up my personal website for IndieWeb, since I found it difficult to understand IndieWeb's many building blocks. So, I made it a top priority for *Yarns* to be easy to use even for IndieWeb neophytes. My approach changed in 2018, when a new IndieWeb standard had emerged for building feed readers, called Microsub. As described above, this divides the work of a feed reader into two halves. I opted to adapt my software into *Yarns Microsub Server*. This was great! It allowed me to focus on the back-end and let someone else make the user-interface. However, even though this had many advantages, this also made *Yarns* more complicated for users to set up, since they now needed to perform authentication between client and server and generally understand how the two halves relate to one another.

Modularity itself—a firm commitment in both the IndieWeb (IndieWeb.org, 2019b) and in software development more generally (Hürsch & Lopes, 1995)—had constrained my decisions. By focusing on only one part of the system, my work was simpler and the end-product was better, but I lost sight of some of the big picture and my initial prioritization on ease-of-use was subsumed by the structures of the larger system. There are several caveats to this. First, although social influence affected my decision to use Microsub, this was not coercive and need not be permanent. Second, divisions of labour were not exclusive. I could and did participate in discussions about the IndieWeb standards that guided my coding work. Finally, IndieWeb's standards are intended to reflect observed practices, "it's not that you are inventing something and then saying 'hey, everybody, go do this.' It's reconciling multiple viewpoints, combining them, figuring out what to include, what to not include" (Interview: Aaron Parecki).

Crucially, the point of IndieWeb's minute divisions of processes across small standards is to avoid strong prescriptions upon personal websites, since individuals can pick and choose among IndieWeb's "building blocks." The ideal being pursued here is prescriptive standards at the points where they are necessary to work at a large scale (communicating across IndieWeb sites),

and holistic practices at the points where individual expressiveness is most important (designing personal websites and tailoring one's online experience).

Seeking inclusion

Whereas the previous section focused on my individual experience of building for the IndieWeb, this section describes inclusion at a community-scale. Specifically, I identify barriers to inclusion and report how IndieWeb's responses navigate a balance between prescriptive and holistic approaches.

First, tech and DIY communities in general are imbricated with exclusions, particularly related to gender (Franklin, 1999; MacArthur et al., 2019; Wajcman, 2004; Whelan, 2018). Addressing these sorts of barriers has been a priority for IndieWeb's organizers from its beginning. Interview participant #3 explained, "Rather than just saying 'we can't have too many tech dudes,' we tried to identify the types of attitudes and behaviours we wanted to avoid." For example, in an attempt to discourage (usually male) "blowhards" who talk about technology rather than building, IndieWeb's earliest events were for builders-only (Interview: #3). This aligns with Faulkner and McClard's (2014) assertion that women are generally "more interested [than men] in what technology enables, rather than in the technology itself" (p. 187). And yet, it's also evident that this has contributed to a developer-centric culture.

From this origin, IndieWeb's norm of building software for one's own needs, at least as a starting point, can frustrate attempts to extend inclusivity: "If your community is biased towards a certain demographic, [building for yourself] actually just perpetuates that because all you're doing is you're building to that demographic" (Interview: #14). Approaches that are emancipatory to core community members can be a hindrance for bringing in newcomers with different backgrounds. The creator of Micro.blog, an IndieWeb-compatible microblogging service, is generally enthusiastic about IndieWeb's approach, but described how this culture could be discouraging for some newcomers:

Sometimes I see those users, they use Micro.blog and then they discover the IndieWeb [...] and they get really lost and confused and they give up [...] Because it started with so many technical users and programmers, it can sometimes feel [as though you need to know how to program].² (Interview: Manton Reece)

IndieWeb's building block approach is a factor here. Because most IndieWeb sites use a combination of building blocks, just keeping things working smoothly has sometimes required keeping up to date on others' development, especially in IndieWeb's earlier days: "For a while, I've almost felt like you had to keep up in [chat] or follow development on GitHub [to

² In an email correspondence later, he qualified this statement by explaining that he is a big supporter of the IndieWeb and sees its potential to reach regular users (M. Reece, personal communication, July 24, 2020).

understand how to use IndieWeb plugins]” (Interview: #13). This speaks to a perceived need for holistic knowledge of the complete system, even if this doesn’t include desire or capacity to change it.

This has been mitigated by an increase in easy-to-use IndieWeb technologies, most notably simple platforms to which one can sign up without any web design knowledge³ and easy-to-use plugins for WordPress and other popular web content management systems. Crucially, the technologies themselves are supported by documentation and in-person tutorials at IndieWeb events. These demonstrate pedagogical benefits of prescriptions, for example, in one tutorial that assures readers, “Some of this tutorial might look a little geeky, but we are documenting every step and you should be able to follow through without problems even if you are not a geek” (IndieWeb.org, 2019c). At least as a starting point, these instructions are about eliminating requirements to make complex decisions, while preserving the capacity to do so if one desires.

An additional dimension of challenge is outreach to diverse newcomers. Interview participants commonly noted that it can be difficult for individuals to effectively bring in diverse newcomers:

Sometimes at the events it looks like there are only white dudes at an event, which we’re trying to actively fix. But it’s always hard because you have to do the outreach and not everyone has a network that’s even interested sometimes. Like, they just aren’t there, or your network is your work. But if you’re working in Web development, chances are that everyone at your office looks like you anyway. (Interview: #2)

To counter this challenge, some of the most meaningful forms of outreach have resulted from IndieWeb’s organizers (a core of especially active members) crafting policies from the top-down. These include a code of conduct, funding to help people from underrepresented groups attend IndieWeb events, and guidelines encouraging that event organizers and keynote speakers include people who don’t identify as white males. Just like how prescriptive technologies are used to serve newcomers, these interventions remove the need – *but not the capacity* – for individuals to personally navigate difficult decisions for which not everyone is equipped.

Discussion

Ultimately, IndieWeb is what Franklin (1999) calls a “redemptive technology” (p. 94), as it attempts to bring justice and a focus on people before technologies to online social networking. Much of the harm to which IndieWeb protests is that the *real world* of the web is dominated by large scale technologies that prescribe sociality itself. And thus, IndieWeb demonstrates a commitment to personal websites as holistic technologies while operating at a scale (online

³ These easier-to-use platforms include Micro.blog (*Micro.Blog*, 2020) and Known (Known, Inc., n.d.), both of which support a variety of IndieWeb features out of the box, without requiring complicated setup or configuration by end-users.

social networking) in which some divisions of labour by process are effectively mandatory. For understanding IndieWeb's redemptive capacities, it is important to note the location and quality of its prescriptions, and its cultural and organizational supports.

When I encountered process-based divisions of labour when building software, I noted that the specific prescriptions of this system, and the fact that it was modular at all, limited my capacity for big picture decision-making. However, these divisions served to enhance control among individual website owners—people who would use my software as part of their IndieWeb experience. Because I built only one part of the system, these people would be able to combine *Yarns* with supporting software of their choice, most obviously by selecting among multiple Microsub clients to provide a user interface. What was really happening was that my capacity to make decisions *for* end-users was diminished in order to enhance their control.

However, as I observed, this leads to a potentially confusing system for newcomers. Highly modular and flexible systems not only provide an option for decision-making, but also a responsibility. This is not just a matter of expertise as *knowing enough*, but also rooted in norms of open source and tech culture. For communities that attempt to empower, reaching out to people outside their (already empowered) core of technologists is vital. This means contending with pre-existing forms of exclusion that, in spite of community members' intentions, can lead some to feel they don't 'fit in' (Taylor et al., 2016). IndieWeb's most accessible technologies achieve this largely by prescribing decisions unto the user. To ensure that these prescriptions serve an emancipatory purpose, it is vital that they are not permanent. There should always be a capacity for individuals to take control of prescribed decisions if they desire. This must be supported by technical architectures, and by a culture that supports its members pedagogically and recognizes and values all types of innovations. With these features, IndieWeb's mantra of building for oneself becomes a vehicle for diversity.

Conclusion

In this paper, I've reflected on my experiences with holistic and prescriptive technologies while building IndieWeb software, as well as how IndieWeb's socio-technical structure shapes its inclusion efforts. Through my analysis, it became clear that interventions to an already-prescriptive domain (online communication networks) must retain prescriptive approaches to function. Further, while prescriptive technologies constrain freedom, they were necessary to build tools that were useful and meaningful for newcomers with different backgrounds from earlier core contributors. I identified IndieWeb's successes at navigating these challenges, though note that these have not been perfect, and will require continued—and holistic!—work to maintain.

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