How Have Advocates For The Visually Impaired Influenced Digital Design?

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Imagine navigating the digital world without the luxury of sight. Every click, scroll, and search requires reliance on essential assistive technologies like the JAWS screen reader. JAWS was developed for computer users whose vision loss prevents them from seeing screen content or navigating with a mouse a text-to-speech and braille software (Freedom Scientific, 2024). Yet, for countless users like Bruce Sexton, the digital landscape remains scattered with websites that fail to accommodate these vital tools, leaving the visually impaired stranded in a world of inaccessible content. This is one of many lawsuits that corporations face when it comes to accessibility in their user interfaces (Dralegal, 2013). Bruce's struggle is not solely a challenge of technology, but of equity and inclusion in our increasingly digital society. According to census data, roughly 20 million Americans, eight percent of the population, have visual impairments. Visual impairments, including blindness and degenerative diseases, are one of the biggest causes of loss of independence in adults. Compared to those who do not have impaired vision, the visually impaired have difficulty performing routine tasks, seeking employment, and integrating with digital technology. As the world becomes increasingly digitized, inaccessible web pages are major inconveniences for those seeking to perform these simple tasks. Despite improving medical practices, it's estimated the number of people with visual impairments is expected to double in the next thirty years (Health Policy Institute, 2019).

This paper seeks to examine how advocates for the visually impaired improved the digital landscape using social construction of technology and systems theory (SCOT). The social construction of technology theory states that technology does not determine human actions, but rather the collective effort of individuals determines the state of technology (Klett, 2018). Consider the passionate minority who push for inclusivity and equal opportunity for the

visually impaired, advocacy groups including the National Federation of the Blind and The American Council of the Blind. Advocacy groups are a large driving force for change in the digital world. They are able to influence policy, perform litigation, and shift social views. In addition to looking at human actors, it's important to address non-human factors that play a role such as corporate practices and the legal system. Considering this, systems theory (ST) is another framework that considers non-social components which can offer a holistic view for understanding certain events (Edx, 2023). For my research topic, I claim that the theory of social construction of technology and systems theory can be used to explain the fight for digital accessibility. SCOT and ST will be used to describe how the digital landscape has evolved to become more accessible.

In its infancy, web pages contained simple text, basic fonts, colors, and sizes. Through ongoing research, experimentation, and policy development, many of these rudimentary websites have evolved into platforms that prioritize accessibility. Throughout the decades leading up to the internet age, the efforts of advocacy groups and field experts transformed user interface standards to become more inclusive towards the visually impaired. Through awareness, implemented policy/law, and litigation, entities supporting the visually impaired have and continue working towards achieving a more digitally inclusive environment. Legal frameworks, like the Americans with Disabilities Act (ADA), play a vital role in digital accessibility by mandating visual accessible design practices with noncompliance punishable by law. Advocacy groups were responsible for influencing lawmakers to place these frameworks. Using these existing laws as leverage, advocacy groups can hold companies accountable for inadequate user design.

Before accessibility laws existed, a few cases brought the issue to light. The first initiative for accessibility recorded in the U.S. was made by the American National Standard Institution. Through a lawsuit, the organization was successfully able to protect Peter Mills, a 12-year-old from being denied education based on disabilities. The judgment made by Joseph Corenlius Waddy in 1971 gave every child in the United States a legal right to pursue free education regardless of their disability (Mills v. Board of Education of Dist. of Columbia, 1972). Two years later, the first laws protecting the disabled were signed in 1973: Section 502 and Section 504, amendments of the Rehabilitation act of 1973 (U.S. Department of Health and Human Rights, 2023). Section 502 required accessibility on public infrastructure and spaces. Section 504 prohibited discrimination of the disabled in any programs utilizing federal funds. This was a pivotal moment because it was the first time the governments were legally liable to provide accessibility. Though the internet emerged decades later, these two laws served as precedent for future legislation in the digital space.

Despite its legally binding statute, the Rehabilitation Act of 1973 did not apply to entities that did not receive federal funds. Businesses without federal contracts and private entities were not held to the same standards. Because of this, there were consistent efforts by activists to expand these laws. Supporters included Senator Bob Dole and prominent advocate Justin Dart, known as the "Father of the ADA" (Rothman, 2022). Because of these efforts, Americans With Disabilities Act was signed into law on July 26, 1990 under the Bush Administration with the goal of enabling people with disabilities to obtain the same opportunities and rights as the rest of the population. This gives civil rights protections outside of federally funded programs to individuals with disabilities in similar ways to those provided on the basis of race, color, sex, age, and religion (National Network, 2024*)*. As the internet

gained in popularity, Section 508 was amended to The Rehabilitation Act in 1998, requiring web pages of businesses be accessible.

When considering the battle for accessibility in the digital era, it is vital to consider the precedent set by advocacies before the age of the internet. Advocacy groups citing legal frameworks have become one tool wielded by those pushing for web accessibility. Accessibility encompassing various forms such as visual, auditory, and physical has been a focal point for advocacy groups. SCOT can be applied to explain how social actors push for digital accessibility. Through intentional efforts, these groups have successfully influenced the integration of accessibility mandates into legal frameworks built by the previous generation of disability advocates by bringing the same expectations for inclusion in the physical space into the digital space. The threats of fines and repercussions incentivize companies and businesses to invest more in making their websites accessible, fostering a more inclusive environment. More importantly, these laws serve as leverage for advocates, providing a powerful tool to advance their agenda by deterring organizational entities from developing non-inclusive software.

In discussion of digital accessibility, a controversial issue is whether existing accessibility laws should extend to the internet realm. While some argue that the internet operates differently and should not be subject to the same regulations, lobbyists and advocacy groups contend that the principles of accessibility should apply universally. Advocacy groups use litigation as an effective means to enforcing non-accessible websites. Organizations such as the National Federation of the Blind (NFB) actively seek and prosecute companies who fail to comply with web accessibility policies. As a result, many companies have implemented policy to adhere to accessibility guidelines due to the fear of repercussions. The following are two examples of how advocates used litigation.

The Target V. National Federation of the Blind is the largest settlement made for digital accessibility, costing Target $6 million in fines (Target v. National Federation of the Blind, 2006). The NFB stated that designing a website to be accessible to the blind is technologically simple and not economically prohibitive. Protocols for designing an accessible internet site rely heavily on "alternative text": invisible code embedded beneath graphics. Plaintiffs allege that Target.com lacks these features that would enable the blind to use Target.com. Since the blind cannot use Target.com, they are denied full and equal access to Target stores. In defense, Target claimed that each of the anti-discrimination laws protecting the disabled covers access to only physical spaces. Since Target.com is not a physical space, the defendant asserted that the complaint does not state a claim under these laws. The court reasoned that the inaccessibility of Target.com impeded full and equal enjoyment of goods and services offered in Target stores pursuant to the ADA. After the filing of the present complaint, Target paid $6 million dollars and undertook certain modifications of its website to make it more accessible to the blind. In response to this litigation, Target began drafting online assistive technology guidelines based on plaintiffs' expert reports and redesigned their website to become more visually accessible.

Target isn’t the only company that has been taken to court for violating digital compliance. In 2014, plaintiff Mika Pyyhkala, a resident of Massachusetts and a blind member of the National Federation of the Blind (NFB), sued H&R Block. The NFB represented Mika Pyyhkala and argued that H&R Block’s tax return software violated the ADA by being inaccessible to people with visual and hearing impairments (NFB v. HRB DIGITAL LLC and HRB TAX GROUP, INC, 2014). H&R Block offers one of the largest tax return services in the United States. They offer do-it-yourself tax preparation, instructional videos, and live chat features to assist individuals filing their tax return. The complaint was that the company failed

to make their product accessible to those with visual and hearing disabilities. Specifically, their software failed to accommodate screen reader software, braille displays, and captioning. H&R advertises that their software enhances opportunities for millions of tax filers to meet their tax obligations while supporting cost-savings, independence, security and support. Because of the inaccessibility of the service, the plaintiffs were denied the benefits advertised, forcing them to use an alternative to independently filing their taxes. As a result of failing to comply with ADA guidelines, H&R was forced to pay $100,000 in damages and immediately modify their services to adhere to the ADA. The company has also appointed a web accessibility coordinator and offered accessibility training to employees.

There are many similar cases, whether active or closed, that advocates have brought upon corporations. It's apparent that corporations can be held accountable for failing to comply with disability laws. On one hand, many companies lack awareness, thus they neglect making their products digitally accessible. On the other hand, some companies don't see digital accessibility as a worthy enough investment (Parks, 2016). The Target v. NFB case occurred in 2006, setting an important precedent by establishing that digital platforms can be subject to the same accessibility standards as physical spaces under the ADA, resulting in shifts in corporate practices. Such cases have significant implications for corporations, requiring them to open additional employment positions relating to disability checks and balances on their user interfaces. The NFB played an important role in advocating for digital accessibility and enforcing compliance with the ADA. Despite the NFB's successes, it is worth highlighting the challenges advocacy groups face in these litigations. From 2018 to 2023, the number of ADA claims regarding web accessibility nearly doubled from 2300 cases to 4000 in 2023 (Taylor, 2023). While litigation can be an effective tool for facilitating change, it also poses challenges

by taking up time and resources required for legal action. Many of these cases can take years before a ruling due to ambiguity. Some courts have ruled that all websites should be covered by the ADA while others stated only websites of organizations with a physical location are covered (Powelwijk, 2019). Because of the conflicting rulings, the ramping litigation has been placed at a hold. This is also an issue for advocacy groups because not all individuals or organizations have the means to pursue litigation, which can limit its accessibility as a strategy for enforcement. Moreover, litigation may foster adversarial relationships between advocacy groups and corporations, hindering collaborative efforts to improve accessibility. Under the lens of SCOT, we can see how advocates represent visually impaired shape technology through litigation. SCOT focuses on relevant social groups but can undervalue non-human influences. It's also important to note that many of the litigation cases may not be successful due to the nature of the legal system. Some cases can be at a stand still for a long time and prosecutors can run out of funding before a resolution is reached. This can also be extended to corporate practices. With litigation cases on the rise, companies are readjusting their corporate structure to include additional areas of expertise around digital accessibility, resulting in increased employment and capital spent. While it may be a simple implementation for large corporations, this might be challenging for small companies who run their own websites. Because of the non-human factors present in the legal system and corporate practices, ST can be used to fill in the gap. While SCOT considers litigation efforts from advocacy groups, ST considers the additional details hidden in the legal system including funding, time taken, and previous court rulings. Advocacy groups employ litigation to challenge power imbalances and advance inclusivity. These cases show how the legal system, corporate practices, and advocacy efforts are interconnected components of a larger system.

Design experts have also propelled digital accessibility forward, notably through the World Wide Web Consortium's (W3C) Web Content Accessibility Guidelines (WCAG). The inception of the W3C was a direct result of emerging technologies. Sir Tim Berners-Lee created the W3C as a result of advocating for companies to increase investing resources into the web (W3C, 2023). Berners-Lee and his team wanted to foster a consistent architecture accommodating the rapid pace of progress in web standards, which later inadvertently became the standard in the ADA. The W3C published WCAG for businesses to follow. W3C establishes 3 levels of WCAG accessibility: A, AA, AAA (W3C, 2023). The first, A, is the minimum standard for accessibility. Non-text content should have a text, users must be able to access content using keyboard only, forms must include labels/instructions, and assistive technologies must be accommodated. The second, AA, is more strict and most businesses strive to reach this level of compliance. Example requirements include using appropriate color contrast, organizing content in logical order, and using consistent navigation across the site. The final is AAA. Despite being the most accommodating, it is difficult for many businesses to achieve this due to costs and complexity. AAA compliant sites require extended audio descriptions for pre recorded videos, more text and contrast specifications, and having sign language as translation for video (What is the difference between WCAG A, AA and AAA, 2022).

Viewing this under SCOT highlights the process of social led adaptations, wherein certain interpretations and designs of technology become dominant and stabilized over time. In the case of digital accessibility, standards such as WCAG have emerged as widely accepted benchmarks for creating inclusive web environments, contributing to the standardization of accessible design practices. In the realm of digital accessibility, feedback exists between technology developers, advocacy groups, policymakers, and end-users, shaping the iterative

process of designing, implementing, and improving accessible technologies. In the case of the W3C, the creation of the web standards established by the organization later became cited in the ADA years later. SCOT recognizes the importance of social constructions, such as advocacy efforts, while also considering factors, such as feedback loops, in shaping accessible technologies.

In recent discussions of digital accessibility, a controversial issue has been whether existing accessibility laws should extend to the internet realm. On the one hand, some argue that the unique nature of the internet necessitates different approaches to regulation. On the other hand, advocates leverage existing laws and legal precedents to advocate for comprehensive accessibility standards that apply universally. While entities may initially resist these efforts, the societal benefits of digital accessibility are undeniable. In sum, the issue is whether businesses should prioritize short-term costs or long-term social responsibility in their approach to digital accessibility. In this paper, I have utilized the theoretical framework of Social Construction of Technology (SSCOT) and systems theory (ST) to analyze the development of digital accessibility for the visually impaired. It helps explain how these actors have driven advancements in digital accessibility through their concerted efforts while considering non-human factors as well. Using both SCOT and ST has enabled us to explore the dynamics underlying the progression of digital inclusivity. This framework has allowed us to consider how social constructions interact with systemic factors to shape the accessibility of digital technologies. Although the state of the internet is still imperfect, many essential web services, such as government-related web pages, tech organizations, and general web developers have made enormous strides to improve digital inclusivity for the visually impaired. While progress has been made, challenges persist. To advance the research, a deeper exploration of the

strategies employed, strategies faced, and future directions is needed. The remaining questions involve understanding how emerging technologies will be designed to include digital inclusivity. With these emerging technologies, how might the strategies and arguments employed by advocacy groups change?

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