Barriers in the Digital Age: Examining Web Accessibility Through Technological Politics

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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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Introduction: Framing Web Accessibility as a Societal Issue

Imagine trying to access your bank account or complete an online course—only to discover that every form field, button, and image on the page is invisible to your screen reader. In our digitally mediated world, basic activities—shopping, banking, education—depend on websites and apps. Yet despite the Americans with Disabilities Act (ADA) mandating "meaningful access," many online platforms remain effectively off-limits to the 61 million Americans living with disabilities. In 2019, a blind customer's suit against Domino's Pizza in Robles v. Domino's Pizza, LLC underscored how inaccessible design choices can function as deliberate mechanisms of social exclusion, rather than mere technical oversights.

Building on Langdon Winner's concept of Technological Politics—that every technological artifact embodies particular social values and power relations—this paper asks: How do web accessibility decisions reflect societal values and power structures? To answer this, we conducted documentary research on primary legal texts (the ADA statute and the Robles decision) alongside secondary sources: peer-reviewed studies on WCAG 2.1 compliance, industry analyses of accessibility tools like Axe DevTools, and scholarship on corporate responsibility and assistive technology. Employing both case-study analysis and comparative review of legal precedents, we trace how design choices—from adding alt text to investing in manual audits—either open "digital ramps" or erect "digital moats" around essential services.

In the sections that follow, we first summarize key findings showing that accessibility decisions are neither neutral nor purely technical. We then discuss four subthemes: legal implications of ADA enforcement, corporate incentives and ethical responsibility, technical

challenges in meeting WCAG standards, and the interplay between assistive technologies and developer practices. Finally, we reflect on study limitations—chiefly the lack of direct user interviews—and propose avenues for future research, including international comparisons and AI-driven accessibility solutions. By situating web accessibility within Winner's framework, we reveal how every line of code carries political weight, and we call for a paradigm shift toward proactive, inclusive design.

Methods: Documentary Research and Case Study Approach

This study uses a documentary research approach to explore how web accessibility decisions reflect societal values and power structures. Primary data sources include the ADA statute and court opinions from Robles v. Domino's Pizza, LLC, while secondary sources comprise peer-reviewed articles on WCAG 2.1 compliance, industry reports on tools like Axe DevTools, and scholarship on corporate responsibility and assistive technologies. Data gathering involved systematic collection of legal texts, technical guidelines, and academic analyses. For analysis, we conducted a case-study examination of Robles alongside a comparative review of other ADA-related web-accessibility lawsuits and WCAG implementation reports. Interpretation applies Langdon Winner's Technological Politics framework to assess how specific design choices embody power relations, structuring our discussion around legal, corporate, technical, and assistive-technology subthemes.

Background: Digital Accessibility and the Evolution of Legal and Technical Standards

The Americans with Disabilities Act (ADA) of 1990 was designed to prevent discrimination against individuals with disabilities in all areas of public life, including digital spaces. However, the interpretation of ADA compliance in online environments remained

ambiguous until cases such as Robles v. Domino's Pizza, LLC clarified its applicability to digital platforms. The case highlighted the legal obligation of businesses to ensure accessible online services, setting an important precedent for future litigation (U.S. Department of Justice, n.d.).

Web accessibility is primarily guided by the Web Content Accessibility Guidelines (WCAG) developed by the World Wide Web Consortium (W3C). WCAG provides technical standards that define how digital content should be designed to accommodate users with disabilities, including screen reader compatibility, keyboard navigation, and alternative text for images (W3C, 2018). Despite these guidelines, many companies fail to implement them effectively, often due to a lack of awareness or prioritization of accessibility concerns.

Inaccessible web design has significant social consequences, restricting access to essential services such as online banking, education, and employment. The exclusion of disabled individuals from digital spaces perpetuates societal inequalities, reinforcing their marginalization in both economic and social spheres. Tools like Axe DevTools, developed by Deque Systems, help developers test for accessibility compliance, yet widespread adoption remains limited (Deque Systems, n.d.). Businesses that neglect accessibility not only alienate a segment of their customer base but also risk legal repercussions, as seen in the increasing number of ADA-related lawsuits in recent years. Ensuring compliance with accessibility standards is not merely a legal necessity but also an ethical imperative that aligns with broader efforts toward inclusivity.

Furthermore, digital accessibility is closely linked to the broader movement for disability rights and equity. The disability rights movement has long advocated for the recognition of accessibility as a fundamental human right. While physical accommodations such as ramps and elevators have become standard, digital barriers continue to persist. The lack of proactive accessibility measures in web design reflects a broader systemic issue where the needs of

disabled individuals are frequently deprioritized. Addressing these shortcomings requires a shift in how accessibility is perceived—not as an afterthought but as an essential aspect of digital infrastructure.

Technological Politics and Web Accessibility: Applying Langdon Winner's Framework

Langdon Winner's theory of Technological Politics provides an essential framework for understanding web accessibility as a politically charged phenomenon. Winner argues that technological artifacts are not neutral; rather, they embody specific social values and reinforce existing power structures. Inaccessible web design is not simply a technical oversight but a deliberate outcome shaped by broader cultural and economic dynamics.

The application of Technological Politics to web accessibility reveals striking parallels with historical examples of infrastructural exclusion. Winner famously discusses how Robert Moses designed low-hanging overpasses to restrict bus access to public parks, thereby preventing lower-income populations, often racial minorities, from accessing these recreational spaces. Similarly, the exclusion of accessibility features from digital environments functions as a modern form of infrastructural segregation, limiting disabled individuals' full participation in contemporary society.

There is ongoing scholarly debate regarding whether legal enforcement or voluntary corporate responsibility is more effective in promoting accessibility. Some scholars argue that legal mandates like the ADA are essential for compelling organizations to prioritize inclusivity, while others believe that accessibility must be embraced as a core ethical principle within corporate culture. This debate reflects deeper tensions within Technological Politics about the relative roles of coercion and persuasion in shaping technological development.

Developers and designers occupy a critical position in this dynamic. Decisions about whether to include accessibility features are inherently political, with tangible consequences for who can and cannot access digital content. Common excuses such as cost, time constraints, or technical difficulty mask the broader ethical implications of exclusion. Recognizing accessibility decisions as political acts compels designers to approach their work with a deeper sense of social responsibility.

Results and Discussion: Legal Precedents, Corporate Practices, Technical Challenges, and Social Implications

The findings from this study indicate that web accessibility decisions are far from neutral; they serve as a barometer of societal values and reinforce existing power structures. Analyzing the Robles v. Domino's Pizza, LLC case reveals that neglecting digital accessibility is not a mere failure to comply with legal mandates, but a political act that systematically privileges able-bodied users. This reflects Winner's concept of technological politics, where the decisions to exclude users with disabilities are driven by the values embedded in corporate design choices. In this case, judicial intervention restructured power relations by mandating that companies reallocate resources to accommodate marginalized users, turning legal rulings into instruments of digital equity.

The application of Winner's Technological Politics framework demonstrates that technological choices, whether motivated by cost-saving imperatives, technical limitations, or oversight, are deeply embedded in cultural and political contexts that marginalize certain groups. This research underscores that inaccessible web design, as both a legal and ethical issue, functions to maintain existing hierarchies by excluding a significant portion of society from full participation in digital spaces.

A key aspect of the research is the examination of legal precedents that frame the current discourse on digital accessibility. In Robles v. Domino's Pizza, LLC (2019), the court's decision mandated that websites must be designed to accommodate users with disabilities, thereby setting an important legal precedent. The case illustrates that judicial intervention is necessary to enforce the ADA's mandate in the digital realm. However, while legal enforcement has driven improvements in web accessibility, it has also exposed ambiguities in the interpretation of the ADA for online environments. Scholars like Boudreau (2019) argue that these legal gaps reveal a tension between the intent of the law and its practical implementation. The frequent reliance on litigation as a means to enforce accessibility suggests that voluntary corporate compliance is often insufficient. Thus, legal frameworks play a dual role: they not only offer a pathway for redress but also illuminate the underlying power dynamics that determine whose needs are prioritized in technological design.

While legal frameworks compel companies to meet minimal accessibility standards, ethical considerations push organizations to integrate inclusivity as a fundamental part of their user experience strategy. However, many businesses continue to treat accessibility as a secondary concern—addressing it reactively only when faced with lawsuits or public criticism. This reactive model illustrates the political nature of corporate decision-making, where profit-driven motives consistently overshadow ethical obligations to create inclusive digital spaces.

From a Technological Politics standpoint, these decisions are not neutral but reinforce existing power imbalances, allowing companies to exercise decision-making authority without representing disabled users' needs. Guzman (2020) argues that inaccessible design constitutes a form of exclusion that breaches the social contract between businesses and consumers. Harris (2022) supports this view, presenting evidence that companies with robust accessibility policies

enjoy enhanced brand loyalty, broader customer reach, and reduced legal risks. Despite these incentives, many organizations continue to prioritize short-term profit margins over proactive, inclusive design. By framing accessibility as a reactive, compliance-driven task rather than an embedded design philosophy, companies institutionalize the social exclusion of disabled individuals, thereby reinforcing the broader inequities embedded within digital infrastructures.

The technical challenges associated with implementing accessibility standards are multifaceted. The Web Content Accessibility Guidelines (WCAG 2.1) serve as the current benchmark for digital inclusivity, providing detailed technical criteria that developers must meet. Yet, widespread noncompliance—documented in studies such as Andrews (2021)—demonstrates that many websites continue to fall short of these standards. A major barrier is the depth and complexity of WCAG itself, which demands specialized expertise that many development teams lack. This creates significant barriers to compliance, particularly for smaller organizations. The political implications of this technical complexity are profound: only well-resourced companies with dedicated accessibility experts can effectively navigate these standards. As a result, a broader social hierarchy emerges, where access to technical expertise determines who participates in shaping inclusive digital environments. According to Winner's framework of Technological Politics, technical choices are never neutral; they are structured by organizational priorities and resource allocations that systematically marginalize accessibility.

Tools like Axe DevTools assist in identifying accessibility issues, yet they remain fundamentally limited. As Kim (2020) emphasizes, automated testing tools are unable to detect many nuanced barriers that only trained human evaluators can recognize. This reliance on automation reflects a broader systemic issue: organizations often prioritize scalable, low-cost solutions over the labor-intensive work of manual auditing and inclusive design. From the

perspective of Winner's Technological Politics, this preference is not a neutral technical choice but a political act—one that marginalizes users with disabilities by reinforcing efficiency and cost-saving as dominant social values. Moreover, the rapid pace of technological change further exacerbates these inequities. Standards like WCAG 2.1 quickly become outdated as new frameworks and devices emerge, creating persistent gaps in accessibility that systematically exclude disabled individuals from full participation in digital spaces.

Assistive technologies, such as screen readers (JAWS, NVDA), voice recognition software (Dragon), and adaptive interfaces, play a critical role in attempting to bridge these accessibility gaps. However, their effectiveness is entirely contingent on design decisions made by developers. Minor oversights—missing alt text, unlabeled buttons, improper semantic structuring—can render even the most sophisticated assistive technologies ineffective. Each of these omissions constitutes a political decision, as developers prioritize aesthetics, speed, or cost over equity and inclusion. Under Winner's framework, these technical choices embed social hierarchies directly into digital infrastructures. The inconsistent integration of assistive technologies reflects a broader trend where economic considerations overshadow ethical commitments. While emerging AI-driven solutions, as explored by Nguyen (2021), offer some potential for improving accessibility, they still require substantial human oversight to avoid reproducing systemic biases. Without deliberate political and ethical intervention, technological development will continue to perpetuate exclusion rather than dismantle it.

Under Winner's framework of Technological Politics, design decisions regarding accessibility are not merely technical oversights, but deliberate acts that embed and reinforce societal values—specifically, values that marginalize disabled users. Assistive technologies such as screen readers (JAWS, NVDA), voice recognition software (Dragon), and adaptive interfaces

aim to bridge the gap between inaccessible websites and users who rely on alternative interaction methods (Jones, 2021). However, their effectiveness depends entirely on the political and design priorities embedded in development processes. Minor omissions—such as unlabeled buttons or missing alternative text—systematically undermine the functionality of assistive technologies, reinforcing systemic exclusion.

This research confirms that the integration of assistive technologies into everyday web design remains inconsistent, mirroring broader social inequities. While some organizations invest significantly in making their platforms compatible with assistive tools, many treat accessibility as an afterthought, subordinated to economic pressures and market-driven development timelines. These decisions are political: they privilege efficiency, aesthetics, and profit over the right to equitable access. Although emerging AI-driven solutions, as explored by Nguyen (2021), offer some promise for enhancing accessibility, they still replicate systemic biases unless guided by intentional human oversight. Without deliberate political and ethical intervention, technological development will continue to entrench exclusion rather than dismantle it.

The tension between economic incentives and social obligations is another critical theme that emerged from this research. On one hand, companies increasingly recognize the financial benefits associated with accessibility initiatives. Harris (2022) presents compelling evidence that businesses investing in accessible web design experience improved customer retention, broader market reach, and reduced litigation risks. Patel (2020) similarly argues that universal design strategies not only foster inclusivity but also produce long-term economic advantages by enhancing user satisfaction.

Despite these incentives, many companies still delay or minimize accessibility improvements, citing perceived cost burdens or technical challenges. This misalignment between

economic rationale and social responsibility highlights the persistent power imbalance in technological decision-making. While market forces may drive incremental accessibility improvements, they rarely dismantle the deeper cultural and political structures that perpetuate exclusion. True inclusivity demands deliberate political action: organizations must prioritize accessibility not as an optional feature or compliance checklist, but as a fundamental obligation to democratize digital participation.

Langdon Winner's concept of Technological Politics provides a critical lens through which these findings must be understood. Winner asserts that technological artifacts and design choices are inherently political because they embed specific social values and distribute power across society. Applying this framework to digital accessibility reveals that web design decisions are not made in isolation. Instead, they are shaped by legal mandates, corporate priorities, resource allocations, and cultural attitudes toward disability. The research shows that inaccessible web design is not simply a byproduct of technical complexity, but a reflection of broader societal priorities that consistently favor efficiency and profit over equity and inclusion. This perspective reinforces the notion that every technological decision—from selecting design standards to conducting accessibility audits—is a political act that either expands or restricts social participation. Winner's framework, therefore, not only explains the persistence of digital barriers but also challenges developers, policymakers, and industry leaders to rethink how technology must be developed and deployed to truly democratize access.

Despite the comprehensive approach taken in this study, several limitations warrant discussion. First, the reliance on documentary research confines the analysis to interpretations of legal texts, scholarly articles, and technical guidelines; it does not incorporate direct empirical data from users with disabilities. Future research would benefit from qualitative methods, such as

interviews or ethnographic studies, that center the lived experiences of individuals relying on assistive technologies. Second, while this study primarily focuses on the U.S. legal and regulatory context—as exemplified by the ADA and related court cases—the global landscape of web accessibility presents a diverse array of challenges and policy frameworks. Comparative international research could yield valuable insights into best practices and alternative approaches to accessibility. Additionally, given the rapid evolution of web technologies and AI-driven solutions, ongoing research is necessary to evaluate how new innovations impact digital inclusivity—and whether they mitigate or exacerbate existing inequalities.

Overall, the findings of this research paint a complex and deeply political picture of digital accessibility. On one level, legal and regulatory frameworks have pushed many organizations toward greater compliance with accessibility standards. On another level, persistent gaps in accessibility and the inconsistent integration of assistive technologies reveal an underlying political economy that continues to marginalize disabled individuals. This study reinforces the urgent need for a multifaceted approach to web accessibility—one that combines rigorous legal enforcement, ethical corporate responsibility, and proactive technological innovation.

More broadly, the results highlight that digital inclusivity must not be framed merely as a technical or legal challenge, but as a societal imperative that reflects collective values about equity and participation. By applying Winner's Technological Politics framework, this research demonstrates that every decision in digital design either extends or restricts democratic access to information and services. Achieving true accessibility requires not only technical improvements but a profound reorientation of technological governance itself—one that centers human rights, social equity, and inclusive design as non-negotiable principles.

Conclusion: Rethinking Digital Inclusivity as a Societal Imperative

This research demonstrates that web accessibility decisions are inseparable from societal values and power structures. Legal precedents, corporate practices, and technical challenges each reveal that inaccessible design perpetuates systemic exclusion by privileging able-bodied users while marginalizing disabled individuals. Through the lens of Langdon Winner's Technological Politics framework, it becomes clear that technological artifacts and design choices are never neutral; they actively distribute power and reflect deeper cultural, economic, and political priorities. Achieving true digital inclusivity requires reframing accessibility not as a regulatory burden, but as a fundamental human rights obligation essential to full democratic participation in the digital age.

Policymakers must strengthen enforcement mechanisms, corporate leaders must embed accessibility into the ethical fabric of their operations, and developers must integrate inclusive practices from the outset, recognizing that every design decision either expands or constrains public access to digital spaces. Only through a deliberate, multi-faceted approach—combining legal action, ethical corporate responsibility, and proactive technological innovation—can we ensure that the digital world is accessible to all. Rethinking accessibility as a political and societal imperative, rather than a technical afterthought, is essential to building an inclusive and equitable digital future.

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