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WHAT DOES THE INTERNET SOUND LIKE?

Aparajita Bhandari
Cornell University

Sara Bimo
York University

Rebecca Noone
University College London

Chelsea P. Butkowski
University of Pennsylvania

When it comes to the study of digital phenomena, the *visual* constitutes a privileged mode of analysis, as seen by the ample and storied scholarship on visual media and visually based methods. This hegemony of the visual is an issue that has been raised by sound studies scholars, who have called for an increase in multi-sensory modes of inquiry in order to disrupt the dominance of vision-based ways of knowing. While there is a growing body of scholarship focused on the analysis of sonic media, there remains relatively little meaningful collaboration between internet studies and sound studies.

This panel aims to utilize method as an entry point through which to bring together sound studies and internet studies. The goal is not to investigate sound in of itself; rather it is to think about reorienting internet studies questions around sound as a way to develop more robust, less hierarchical, and more embodied research methodologies for the analysis of wider internet phenomena.

The papers within this panel are organized around a deceptively simple provocation which was posed to each of the contributing authors: how can sound be used methodologically in order to expand and deepen our understanding of the internet? The panelists each address this question through a variety of different approaches. In their analysis of sound and their incorporation of sound in their methods for studying internet phenomena, each of the papers illuminate the emancipatory and revolutionary potential

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of sound as a methodology while reflexively engaging with the connections between sound and larger patterns of hegemonic power.

The first paper in this panel, entitled "*Voice from Nowhere: Deep Listening to Data*," introduces the concept of deep listening as a feminist analytical method for "tuning-in" to the persistent hegemonic structures that underly digitally mapping technology. By building upon the question "what does data sound like?" the author explores the potential for sound to unveil the deeply embedded racist, classist, and colonial data structures that underlie maps data; structures that, when experienced only visually, go unnoticed and un-interrogated.

In a similar vein, the second paper, "*The 'Sonic Interface': Sound as a Mediator of Internet Experience*" deploys sound-based epistemologies as a way to break free from the often hierarchical power-dynamics introduced by vision-based ways of knowing and being. This paper puts forth the concept of "the sonic interface" as a means to conceptualize the role that sound plays in mediating everyday internet experience, and argues that understanding the internet as a sonic, rather than purely visual experience allows for a more embodied and affective relationship between humans and machines.

Drawing from work on alternative text practices and critical disability studies, the third paper in this panel, entitled "*Utilizing Participatory Arts-Based Research to Understand Online Experiences through Screen Readers and Alt-Text*," proposes the use of participatory arts based methods as a reflexive and critical framework through which researchers can begin to "listen" to alternative internet narratives while centering the voices of communities rather than researchers.

The final paper of this panel, entitled "*What a Memory Sounds Like: Studying the Sonic and Silent Memory Work of TikTok Sounds*," probes the intersection between memory and sound on TikTok. Through an examination of three configurations of collective sounds and silences on the platform, this paper posits methodological considerations through which sound and memory can be examined on TikTok, and demonstrates the importance of incorporating sound-based methods in the study of social media phenomena.

Through interrogations of sound (and silence) as a method through which to examine the contours of the internet this panel makes both theoretical and empirical contributions to the fields of sound studies, critical internet studies and digital research methodologies. Rather than proposing a singular methodology for dealing with and incorporating sound in internet studies, this panel instead seeks to draw from sound studies in order to supplement, extend, and reinvigorate existing approaches to internet phenomena. The varied entry points through which each of the panelists chose to delve into entanglements of the sonic and the digital highlight the rich and generative imaginative potential of centering sound and the sonic within our interrogations of the online and the digital.

VOICE FROM NOWHERE: DEEP LISTENING TO DATA

Rebecca Noone
University College London

Introduction

What does data sound like? At times, data can seem quiet and invisible (Parks, 2015; Starosielski, 2015)— nested into cloud databases or discreetly stitched in algorithms. At other times, data is loud, with data centres emitting grating whirs and incessant hums (Garber, 2014; Hogan, 2015). Devices such as Amazon’s Alexa and Google Home make quiet data audible. These everyday technologies of data sonification represent and communicate data through sounds (Thulin, 2018)— a verbal language as well as blips and bings that signify ‘listening’ and ‘thinking’. In this paper, I narrow in on a similar technology: Google Maps’ voice navigation software. The software activates spoken turn-by-turn instructions of how to get from Point A to Point B. Google Maps’ auditory direction-giving enunciates ordinary cues and commands rendered through Project Ground Truth— the name Google gives to its global mapping project (Graham & Dittus, 2022). I argue that the sonification of Google Maps data reveals discriminatory logics that might not otherwise be perceptible in the Maps’ visual and textual forms. In this paper, I introduce the concept of deep listening as a feminist analytical method of tuning-in to the map’s persistent hegemonic structures. I present a framework for deep listening and showcase examples and provocations of deep listening in practice.

Framework

The critique of map data has often focussed on the maps’ regimes of visibility, reflected in Haraway’s (1988) critique of maps as a “a conquering gaze from nowhere”. Haraway argues that the gaze enforced through the map, cloaked in an allure of objectivity, “signifies the unmarked positions of Man and White” (p.581). Consequently, the technology of the map fails to address the subjective and situated experiences of space, amplifying entitled masculinity and whiteness as a dominant paradigm for seeing and being in the world. The sonification of map data, rendered through Google Maps’ voice navigation software, translates Haraway’s “gaze from nowhere” to what I am calling “the voice from nowhere” while enforcing the same hegemonic paradigm. Deep listening is a means to critically analyze Google Map’s spatial regimes presented through the sonification of its data.

I situate a deep listening to “the voice from nowhere” as an affective and sensorial method of critique. Deep listening has historically been a practice tied to mindful pedagogy (Berila, 2015) that pairs personal reflection with compassion discussion. In the context of a feminist media studies practice, I situate deep listening in conversation transfeminist queer methods of heavy processing (Lapp, 2020; Rault & Cowan, 2020). Rault and Cowan situate heavy processing as a means to reckon with the messiness and dirtiness of data, giving you “the information you need to see what is wrong with the questions you were asking to being with.” Deep listening to Google Maps is not an act of compassion for Google Maps’ audible data but rather a means to listen beyond the

map's database to the structures and systems these spatial commands enunciate and reinforce.

Deep Listening in Practice

To help animate the deep listening method, I turn to an example that inspires this approach. In *Race After Technology*, Benjamin (2019) points to a tweet by Princeton scholar Allison Bland, in which Bland calls out Google Maps' voice navigation system. According to her tweet, the navigation system instructed Bland to "turn right on Malcolm Ten Boulevard" instead of "turn right on Malcolm X Boulevard" – an interpretation of the X in Malcolm X to be the roman numeral ten instead the name of a Black Liberation leader. The rest of the tweet reads: "and I knew there were no Black engineers working there." Google Maps' spatial command replaces a historical figure, displaces the significance of the x in Malcolm X, and erases the territory where Malcom X is situated. It reveals the pervasive whiteness encoded in Google Maps' claims to accurate geographic information. Benjamin argues that this error is more than just a fleeting moment but reflective of racist harms that are "an enduring and constitutive feature of social life" (p. 80). Google's data processes are revealed in Google's sonification of data, what might otherwise have been lost in a textual reading of the directional data. From this example, I build on practices of deep listening to the masculinists narrations of space rendered through Google's Map Maker Tool and the colonial pronouncements of Google Maps' Plus Codes program.

Contributions

Approaching data through sound harnesses the affective, embodied and sensorial processes of data criticism. The paper offers deep listening as a feminist method of analysis in critical internet studies as a means to tune into data's discriminatory logics woven into everyday information encounters and find new forms of evidence of discriminatory design.

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THE “SONIC INTERFACE”: SOUND AS A MEDIATOR OF INTERNET EXPERIENCE

Sara Bimo
York University

Introduction

Through what modes do we experience the internet? What are the elements that structure and guide our online experiences? As evidenced by the breadth of scholarly work on graphic interface design and by the focus on image and text in the fields of media studies and internet studies (Kittler, 2010), it is apparent that visual content is widely considered the building block of the digital interface, and as such is seen as the primary medium through which users may become entangled with the entity that we call the World Wide Web.

The privileged position of the visual mode all too often goes unquestioned in scholarship that analyzes internet phenomena, which, through the deployment of largely visually-oriented methods such as content analysis, often struggles to rigorously incorporate other forms of sensory experience (Pearce et al., 2018). In this project, I provide an intervention into this “hegemony of the visual” through an exploratory conceptualization of what I term “the sonic interface,” a concept which aims to re-orient scholarly analyses of interface in order to specifically focus on the sonic elements that mediate and shape user entanglements with the Web.

Such elements include the sounds that are intentionally created by designers to enhance screen-based interaction, such as ear-cons (abstract sounds that accompany certain events, such as the beeping of a text alert) and auditory icons (common sounds associated with certain computer interactions, such as the crushing of paper when moving files to the recycling bin) (Franinovic & Serafin, 2013). However, the sonic interface also extends beyond these intentionally designed sounds in order to account for the myriad of sonic elements that otherwise mediate internet usage, such as the click of keyboard keys, the whirring of computer fans, the noises of dial-up, the grumbling stomach sounds of a desk-bound student working late into the night, or even the absolute silence of a well-insulated office.

In this project, I address three central research questions. Firstly, what are the components of the sonic interface, and how might they vary across contexts and times? Secondly, how does sound mediate, guide, and structure user experience online? Thirdly, how can the concept of the sonic interface be employed methodologically in order to study wider internet phenomena?

Background

The impetus behind this project emerges from scholarship that unpacks the violence implicit in the Western preoccupation with vision as the central mode of perception (Jay, 2008). As pointed out by past work in visual culture, decolonial studies, and feminist

studies, the philosophical underpinnings of Western vision-based ways of knowing and being propagate a type of distancing and objectifying violence through the assertion of a binary hierarchical divide between the viewer and the object being viewed (Hooks, 2010; Jay, 2008). In addition, this ocularcentrism introduces the presumption that, through the act of seeing, knowledge may be fully apprehended and appropriated by those dominant groups who have the “power to look” (Hooks, 2010; Jay, 2008). The harmful impact of the visual mode is expanded upon in work on the violence of colonial representation which examines how representations of the self and the other have been weaponized to empower certain classes, genders, nations, or races, and subjugate others (Armstrong & Tennenhouse, 2015).

Extended to the study of graphical user interface, such work on the hegemony of exclusively visual epistemologies reminds us that the common signs and symbols that mediate our everyday experiences of the internet are far from neutral signifiers; rather, they encode and reproduce normative (and at times, harmful) beliefs, practices, identities, and behaviors. In addition, a purely visual apprehension of the web produces a distinct ontological difference between human and machine, and contributes to the obfuscation of machinic processes by seeing them as distinctly removed from the humans whose lives they intimately affect.

Scholarship in decolonial studies has pointed to the potential of sound as a tool that unsettles dominant epistemologies (Robinson, 2020). Sound, as a physiological experience of vibrational energy, is co-constructed by the listened-to and the listener; as such, it presents a model of knowing based on reciprocity and the collapse of self/other boundaries (Goffe, 2020). Drawing from this body of scholarship, I put forth the concept of “the sonic interface” as a tool to examine and interpret everyday internet experience that reveals a more embodied, relational, and situated way of understanding human-machine interactions. By moving away from strictly semiotic modes of communication, sound allows us to better embrace affective, communal modes of knowing. Ultimately, I argue that this reorientation toward sound as a mediator of internet experience allows us to move away from binary divisions between humans and technics, and toward an concept of entangled human/non-human assemblages which is ultimately a more accurate depiction of the human-computer relationships that characterize our modern moment.

Methods & Contributions

In order to address the central questions guiding this paper, I employ a variety of methods. Firstly, I undertake a historical literature review of primary literature related to the development of the internet in order to illustrate the ways that sounds have historically mediated online experience. I present an alternate history of the “sonic internet” which reveals the ways that the sonic mediators of the web have changed over time (e.g. the sound of dial-up, once the gateway into the cyberworld, has been largely replaced with the silence of broadband).

Secondly, I present the findings of a “sonic auto-ethnography.” Over the course of a week-long period in January 2022, I recorded the sounds that mediated my daily internet use. I present this depiction of my own sonic interface in the form of a

soundscape, and accompany it with a written reflection on how the intentional consideration of sound components influenced my usage patterns and experiences online.

Lastly, I undertake a literature review of commonly used digital methods, and provide potential extensions and reimaginings that incorporate sound as a methodological tool. I present the concept of “the sonic affordance” as a tool for elucidating understudied aspects of everyday internet usage.

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LISTENING TO A MEME: UTILISING PARTICIPATORY ARTS-BASED RESEARCH TO UNDERSTAND ONLINE EXPERIENCES THROUGH SCREEN READERS

Aparajita Bhandari
Cornell University

Introduction

The internet is rife with images and videos. For people who are blind or have low vision (BLV) this image dominated landscape can be difficult to navigate. In order to consume such content many who are BLV utilize image descriptions, called alternative text (alt text), in conjunction with screen readers (Hanley et al., 2019). Alt text is read aloud by screen reader software when an image is encountered online. However, there has been a rapid increase in user-generated content online which is often non-textual and unable to be parsed by screen readers (Stangl et al., 2021). For example, only 0.1% of images posted on Twitter in 2019 had alt text (Gleason et., 2019).

While there is some research on the ways that alternative text practices can be improved (Bennett et al., 2021; Hanley et al., 2019) and online experiences can be made more accessible to people who are BLV (Stangl et al., 2021), this research often still approaches these problems from a visual framework. Questions such as how to best replicate visual ideas into text, or whether alt text should include identity based descriptive labels such as race dominate this area of literature. However, there is little examination into the lived sonic dimension of screen readers and few researchers question the imperative to replicate the visual. Bennett et al. (2021) state, “Conflation of vision with power to know has led [to]..downplay the role of nonvisual sensemaking of race, gender, disability...while overstating the validity of visual perception as definite and confirmatory” (p. 3).

Additionally, while issues of access and participation are important, some researchers have noted that framing disability only as an issue of participation can reinforce the maintenance of current socio-structural systems rather than promoting the imagination of new ones (Hoffmann et al., 2020). It can also reify the position of non-disabled people as gatekeepers of this access to current systems.

Thus, in this paper I seek to move away from questions of access to instead exploring contours of lived online experiences. I approach the study of alternative text from a critical disability studies framework, ultimately arguing for an interrogation of alt text practices that moves away from visual practices of sensemaking, an argument will be co-constructed alongside people who utilize screen readers and alt-text to experience the internet.

Critical Disability Studies and Technology

Researchers have noted that the default user of technology is implicitly able-bodied and taken as the basis for interaction with technological systems. I argue that while it is

necessary to move beyond an able-bodied imagined or default user of the internet it is also necessary to expand our understanding of digital experiences beyond the default able-bodied modes of sensemaking. We must come to understand the sonic as a valid form of experiencing of digital phenomena, without seeking to translate these experiences back into the terms of the dominating visual paradigm.

I also want to note that disability is not a binary and there is a range of experiences of vision impairment. I avoid imposing my own expectations of the sensorial mode through which BLV may choose to experience the internet. For example, Szpiro et al. (2016) found that some people who have low vision, preferred to access digital information visually rather than aurally, highlighting how those with low vision have differing digital needs and preferences compared to people who are blind. Critical disability approaches remind researchers to always center the contextualized and lived experiences of disabled people over their own expectations (Hofmann et al., 2020). The goal of this paper is not to assume a preference of the sonic mode for people who are BLV or to privilege sound over vision. Rather I investigate the ways that people who do experience the internet primarily through sound, which has been understudied, feel and think about their online experiences.

Proposed Methods

In this paper I will draw from a series of participatory arts-based research sessions with internet users who are blind or have low vision. These sessions will be aimed at capturing their personal experiences of the Internet, and participants will be guided to reflect through prompts such as: “How has the sound of the internet changed over time or “What does your favorite meme/online joke/ video sound like?”

When choosing my methodological approach, I first considered what it meant to research the experiences of a community that I am not part of. In particular I was guided by Tuck and Yang’s (2014) critique of the tendency to extract and repackage the pain and stories of communities as academic research. Similarly, critical disability scholars encourage researchers center the point of view, history and context of disabled people when examining questions of disability (Spiel et al., 2020). Thus, in order to center the experiences of people who are BLV in this paper I chose to utilize participatory arts-based research methods. Participatory arts-based research can be broadly defined as a research approach in which scholars collaborate with people in ‘art making as a way of knowing’ (Leavy, 2018, p.4). It combines participatory action research, which approaches research through a non-hierarchical frame, and arts-based research, in which art forms are employed as methodological tools (Leavy, 2018).

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“WHAT A MEMORY SOUNDS LIKE”: STUDYING THE SONIC AND SILENT MEMORY WORK OF TIKTOK SOUNDS

Chelsea P. Butkowski
University of Pennsylvania

Memories sound like tinkling piano melodies, acoustic guitar chords, and echoing voices, that is, according to the latest TikTok microtrend. The trend encourages users to attach videos of their “core memories”—cutting birthday cake with wine glasses, dancing in the street—to a shared series of atmospheric audio files. The effect is dreamlike and nostalgic, and the videos are overlaid with the caption, “here’s what a memory sounds like.” This is just one of many ways that memories are manifest on TikTok, a short-form video platform structured through image, text, and audio.

Although memories and sound often overlap on TikTok and across many other media contexts, the mnemonic role of sound is often minimized in research on media memory, which tends to focus on visuals and text instead (Kuhn, 2010). Sound is also fundamental to TikTok itself, a network driven through discursive ties (i.e., hashtags, visual effects, audio) rather than purely social ones (i.e., following, friends). Sound serves as a key pillar of the platform infrastructure and a creative social tool (Vizcaíno-Verdú & Abidin, 2022). While users can record original sounds for their own videos, they can also reuse and remix audio clips from other users, interconnecting networks of different videos set to the same soundtrack on shared sound-based feeds (Serrano et al., 2020). Despite the centrality of sound on TikTok, researchers have much to learn about its situated social functions and methodological potentials. Sounds are deeply intertwined with the platform’s sociality, and they also intersect with practices of memory making in various ways—from silence to resounding noise.

Therefore, in this paper, I center configurations of sound and memory on TikTok as an in-road to building memory studies and social media scholarship. I explore the potential of sound as a site for connective memory work, or the process of actively reconstructing and reinterpreting the past in the present using digital and networked technologies (Smit, 2020). Ultimately, I challenge researchers to explore sound and memory on social media by probing three different configurations of sound and memory as they overlap on TikTok. My paper suggests implications for social media sound as a site of memory work and a methodological tool on TikTok and beyond.

Configuring Sonic and Silent Memory Work on TikTok

Social media platforms are important sites of memory work (Humphreys, 2018), but the unique primacy of sound on TikTok introduces formalized junctures of auditory platform logics, memory, and sociality. I study these junctures by asking the following research question: How do TikTok sounds facilitate and disrupt connective memory work? To answer this question, I outline three cases that represent different configurations of memory work and sound on TikTok. These configurations emerged from an ongoing

discourse analysis of TikTok sounds and are intended to be illustrative but not exhaustive of the possibilities of studying sonic and silent memory work on the platform.

First, sound can serve as a *representation* of memory work on TikTok by recoloring a visual or textual trace as a memory. This is evident in the “core memory” microtrend described above where certain songs or types of sounds (e.g., echoes) contribute to the sense that an event or image is memorable or worthy of remembrance. This sense of “memory-ness” becomes symbolically attached to particular audio files and songs within the TikTok landscape. The performance of memorability or nostalgia through visual and auditory elements draws from long traditions of representation forged through movies, television, and literature. However, TikTok provides the representational tools of background music and auditory filters for users to explicitly recast their own media traces as mediated memories.

Second, sound can be incrementally *forgotten and reimagined* through the memory work of decontextualizing, reusing, layering, or remixing audio files for new purposes. TikTok enables users to directly import audio from other TikTok videos into their own. However, the constant recycling of TikTok sounds can also obscure important details about their original contexts and creators (Kaye et al., 2021). TikTok memeifies sounds by design and, in doing so, diminishes or alters users’ collective memories of what they signify (Zulli & Zulli, 2020).

Third, strategic and imposed silences executed through the intended absence or forced removal of TikTok sounds can *disconnect or destabilize* memory work completed through platform archives. Although TikTok is known for proliferating dance videos set to top-charting pop songs, it is also rife with pockets of quiet and silence. Through algorithmic governance, the platform regularly mutes videos that contain copyrighted sounds, such as music or movie clips. Sounds serve as cataloging mechanisms on TikTok (Vizcaíno-Verdú & Abidin, 2022). Muted videos might still remain in circulation, but without their sound, their meanings change and their connection to sound archives is diminished. To avoid copyright strikes, TikTok users sometimes deliberately create silent videos, hiding copyrighted sounds through audio workarounds.

Conclusion: Social Media Sound, Memory, and Method Beyond TikTok

Although TikTok presents unique configurations of sound and memory work, sonic and silent memories are worthy of investigation in other social media contexts. Sound plays important roles in YouTube videos, livestreaming, and audio messaging, for example. Digital platforms record and store mediated memories, and sound plays an important yet underexamined part in this process.

Additionally, these case studies are also suggestive of methodological approaches for studying sound on TikTok and on social media more broadly. Because TikTok structures its recommendations and archives around trending and user-created sounds, sound can readily serve as a sampling frame for assembling TikTok videos. Sounds also invite users to examine sonic discourses through interrelated or iterated versions of the same audio. More importantly, studying sound calls for an important and translatable methodological skill that is often overlooked in studies centered primarily on text and discursive analysis. Across platforms and configurations of sonic and silent

memory work, sound requires researchers to place listening at the forefront of their social media research.

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