Radio, despite being the world's most ubiquitous means of mass communication, exists as an unremarkable feature of everyday life—a product of its near-invisible infrastructure. It remains highly influential, however—a conduit for intimacy, renowned for its capacity to traverse space. Radio builds communities in the air, globally and locally; it provides a context and medium for international governance; and it elicits a shared sense of domesticity. In the present day, the bounds of "radio" and its transmission get even muddier: the introduction of universally shared time—infinite liveness via constant streaming—has broadened what it means to be on the air, or "in-time," with one another.

I spoke with media scholar Tung-Hui Hu about radio and its oscillatory function in media history. We spoke about the territorial logic of radio, as well as more broadly on decentralized and mobile networks. Meandering from technical accounts of radio, to transgressive interference, to what it means to foster a public built on/emerging from a "what's in the air" model of accidental discovery, we discussed radio as a continuously evolving set of agencies, renegotiating its stake as a medium of mass communication. As our conversation shows, radio exists less as a distinct entity or category, and instead on a continuous spectrum of an evolving broadcast history.

Elizaveta Shneyderman (ES)*:* I want to start by thinking about the territorial logic of radio—of the "inside and outside" of its zones of logic. As a medium that has the capacity to disseminate/transmit and dematerialize to an unprecedented degree, it also marks a geographic specificity. The radio is a landscape that maps communities and their needs (rural tractor supply vs ads for personal injury lawyers), churches/holy sites, local languages spoken—even, perhaps, homogenous pop-song preferences. It's caught somewhere in between being wide-reaching and profoundly marking the local, though. There is an invisible boundary, as one can traverse a lot of distance beyond their specific locality, but not necessarily trespass into the bounds of the state or national territory (or transmission). Do you have any thoughts on this, the territory of radio and its triangulation of global/local; bounds/no-bounds; territory/territory-less? Or more broadly, radio and its transmission protocol as emblematic of power relations?

Tung-Hui Hu (THH): I am no historian of radio, but one of the phrases that I like from its early days is "DX fishing," which is the sport of making contact with a distant radio broadcaster (DX is shorthand for distant). As Jeffrey Sconce writes in his book *Haunted Media*, radio's wireless spectrum around the early twentieth-century was mostly empty, and so DX fishing imagined the

ether as a vast sea from which signals could be “fished” out. I love the idea of hooking and plucking a single voice out of the ocean that’s still live, thrashing. Because there were so few broadcasters, you had to go very far to find someone else, leading, as Sconce tells us, even Francophobic Americans to suddenly appreciate the transmissive potential of the Eiffel Tower. When the air eventually began to fill up with radio signals—when signals began to collide with each other—you had moments of interference and eventually government regulation. There’s a famous example of interference during the last hours of the *Titanic*, when its radio operator radioed back to a neighboring ship warning them of ice: “Keep out! Shut up! I am working.” The two spark gap transmitters on the nearby ships couldn’t broadcast simultaneously without interfering with each other. Or, as you put it, trespass on each other. For as the spectrum becomes crowded, it becomes regulated by the state. And so some of the interesting developments in radio and, eventually, broadcast history come out of attempting to test the boundaries between local and distant: the pirate television station Lanesville TV, [founded] by the Videofreex [collective], which broadcasted hyper-local video content from a small town in the Catskills, including a mockumentary about a UFO landing. Or the guy behind the pirate radio station Radio Essex that took over and broadcasted from an abandoned military platform in the North Sea, claiming to be outside of UK territorial waters; his family eventually turned it into a self-proclaimed kingdom, then a data haven.

I have made the argument before that much of the conflict and even violence over the future of the Internet is due to our imagination of it as a global, universal phenomenon. What might it mean, as an exercise, to imagine the Internet as a series of local occurrences? Not even the Chinese Internet vs the Western Internet, but the Internet of “rural tractor supply vs ads for personal injury lawyers . . . churches/holy sites, local languages spoken . . . homogenous pop-song preferences” . . .?

ES: I love that notion—like a model of progression through space that’s predicated on a mismatch, two operating languages on the same switchboard.

It’s interesting, too, how so much rhetoric about “The Internet” is staged as universal. I guess if we purge the particulars of one specific user’s interaction with the Internet, we can begin to see

all the ways in which it is constructed to hide its synthetic-ness, that is, as a model of merely one kind of navigability/progression through space.

I wonder how the shift from simultaneous broadcasting to interference—"Keep out! Shut up! I am working"—to government regulation has profoundly shaped our understanding of the radical visibility/invisibility of these newer vectors of communication. Like now, amidst global crisis (COVID-19), I long for a very specific kind of navigability: the accidentality normally available to me in daily encounters. A hallway encounter or a parking spot altercation is very different from the "accident" possibilities that virtuality offers (as a more "deliberate" form of navigation, in my mind).

THH: We've been taking walks through nearby neighborhoods as we wait out our stay-at-home period, and it's fascinating to see how different street life is in some front-facing neighborhoods (where everyone hangs out on the porch, etc.) vs back-facing neighborhoods (where everyone is in their backyards). I've had a bunch of delightful accidents meeting neighbors I'd never normally encounter. At the same time, the way those neighborhoods are designed (in some cases originally to maximize casual encounters, or to offer spaces for the "betterment" of working-class people) makes me realize that many accidents or separations in real life are designed, too. Parks in St. Louis, for example, were designed to informally segregate poor neighborhoods from rich ones. Similarly, it's interesting how the algorithms that feed users suggestions design "accident" into the equation, for they've realized that we would get a little creeped out if we knew exactly what the marketing algorithms "know" about us.

As for the visibility and invisibility of communication, we typically assume that technologies go from visible to invisible over time. But—and this speaks a bit to your next question below, about media forms coming in and out of visibility—what's interesting about the COVID-19 crisis is that this equation might have been reversed: like many others, I've spent a few hours researching toilet paper restocking and other mundane stations from within the Internet's supply chain. I'm tempted by the thought that this is more than the common "when things break, then you notice" theory. Thinking about slowdowns on the Internet due to a surge in use, or potholes in a road, or even the now-ubiquitous masks to prevent the spread of communicable diseases, I'm wondering if there's something about this moment that has made infrastructure and communication visible again. Two years ago, I was in Cape Town, when the city was a few weeks away from running out of water ("day zero"). Everyone, and I mean everyone in that city

of almost four million, had water pipes and reservoirs on their mind, whether because they were taking one-minute showers or because neighbors were hoarding water or because the water pressure simply was cut for parts of the day. Other cities—São Paulo, Mexico City—are close to running out of water, too. Maybe we are coming upon an era of scarcity, where some of the usual sleights of hand to make technologies invisible will feel like a twentieth-century phenomenon.

ES: I think you're onto something important with this notion of coming in/out of visibility of technologies. Especially in our present moment, with visuality being continually refashioned around televisuality, reminding one of the distant pleasure of making eye contact (another kind of technology.)

I'm also thinking about this in the context of analog/digital media more broadly—the retroactive nature of media forms coming in and out of visuality (that is, the materiality of an analog form is not felt until the emergence of its digital replacement)—but also in terms of actually embracing the possibilities of true diminished significance of media forms. The difference between obsolescence and a vanishing mediator.

THH: What you're pointing out is that visuality is itself a technology: imagine teenagers teaching each other on how to flirt—how to make eye contact, then look away; imagine the job coach instructing a jobseeker how to use eye contact with an interviewer. And, like any other technology, visuality has changed over time. That's the other half of media change, which typically just describes how a medium becomes invisible (or hypervisible) when it ages. We also need to pay attention to how we look and what we can see in each historical period.

In response to a question on obsolescence, the artist Tacita Dean once wrote: "Everything that excites me no longer functions in its own time . . . I court anachronism—things that were once futuristic but are now out of date." The same principle is what makes media history exciting to me. Bracket the literal workings of technology, which is easy to do when something becomes obsolete, and you get the social formations that underpin them—the utopian (or dystopian) futurism, the hopes and attachments that the public projects onto a form. For example, we get, in the name of networking technology Ethernet, the alchemist's fantasy of a universal medium ("ether") that supports all communications. Embracing anachronism allows for a different and stranger set of terms than just new/old, history/present.

Ether, by the way, still sometimes gets used to describe TV and radio transmissions, which are sent, metaphorically, “through the ether waves.” And that imagination of us all surrounded by an invisible ocean of ether can be dystopian, as in the conspiracy theorists that are blowing up 5G cell towers because they think that those radio masts transmit the COVID-19 virus. But it can be strangely comforting, too. When I was a kid, I used to imagine early radio broadcasts from the turn of the twentieth-century propagating out into space, mingling with each other. Someone on the other side of the ether listening to Handel’s aria “Largo,” which, I’ve just discovered, was the first song ever broadcast.

ES: Radio is a format in which it remains possible to tune in by accident. It is underwritten by a faith in, or at least a hope for, the potential of public experience.

What do you make of this accidentality and the public experiences it makes possible? I can think of few forms of sociality that have this same relation to time and intentionality (the opposite of this is the premeditated podcast, which one can elect to listen to). I’m also thinking about Laura Mulvey’s suggestion that the ability to control (specifically to pause with precision) both the image and story afforded by newer media technologies, such as DVD players, fundamentally transformed our experience of film. Does direct control over the previously linear viewership that digital technologies make possible pose a challenge to more ludic temporalities?

THH: Yes, radio as an accident: I have fond memories of going on road trips in foreign countries, and stumbling across radio stations that I’d never expect, or talk radio in languages I’d never comprehend. At the same time, I am realistic in that most radio stations (in the US, at least) are controlled by conglomerates, meaning that, for example, 91percent of talk radio is politically conservative—the same stuff syndicated over and over. And just as digital video has a peculiar temporality, radio has its own temporality, too, that also involves control: the “breaking news” that spurs the feel of an event unfolding; the thirty-second advertising spot; the codes of address, such as the fireside chat, that evolved to make you feel like you are part of a public. Perhaps radio feels just old enough as a medium that we no longer feel compelled to follow those formerly rigid ideological codes, or perhaps it is just ambient and non-interactive enough that it can be placed in the background and now, as Finn Brunton puts it in his book on spam, does not “demand a look but waits” for its listener to find it.

Scientists and artists have spent a lot of time thinking of ways to promote a similarly ludic experience of discovery with digital media. At NC State, in Raleigh, their main library is

completely automated: the stacks are sealed behind a glass wall, and acrobatic robots retrieve your material for you. Their way of giving you a sense of browsing in the stacks is a program called Virtual Shelf that allows you to see the books next to your call number. It's not ideal, but it's better than nothing—and of course we're corresponding right now when physical libraries are closed, so sometimes there's no other option.

But I'd also like to think more about your idea that radio is "underwritten by a faith in, or at least hope for, the potential of public experience." I like the hopefulness of that idea: a faith that someone is out there listening. I was browsing some old web pages from the late 1990s and early 2000s recently and they have that characteristic, too; they are almost delightfully amateur, naively confessional but in a way that predates the confessional genre of the online essay of today. Elisa Giardina Papa's artwork "need ideas!?!PLZ!!" (2011) collects similarly amateur YouTube vloggers who ask a largely imaginary audience to give them ideas for vlogs. We believe in a public, even if the idea of the public has changed to the point of unrecognizability.

So the larger question is what we mean by public today, and what the temporal codes are that signify publicness. If it's not copresence or simultaneity, and if we are skeptical of the ways that digital capitalism attempts to substitute a demographic marketing category for a public, what else is it? One idea is to return to the ambient model that radio hints at: the public is "what is in the air," for better or for worse, an affect that occasionally coalesces as accidental discovery.

ES: The "what's in the air" version/model of a public seems to come with the possibility of its overwhelming vanishing into omnipresence, so much so that it becomes impossible to see anymore—public as the ground for everything else to unfold. I wonder what these additional "ambient" models of a public could be. I like the idea of a public "hidden in plain sight," like-minded and spread across small footholds on the air. Of course, there's a spooky aspect to that, too; I'm thinking about the rise of fringe political groups, the far-right ethnic nationalist politics that are bound to talk radio as a platform.

Maybe we can broaden this to the role of distribution more generally, and the supposed liberty it offers. It's no accident that these ideological footholds have taken residence on a platform predicated on commuting, that is, consumed on the way to and from work or home. What are

your thoughts on building community as specifically linked to these dematerialized and mobile networks?

THH: I am troubled by the rise of the far right, but they are, of course, a community too. Critics typically put forth community as an antidote to the social problems of today, but what they really mean is that they want the “good” form of community. Rather than sticking blindly to that term, we might begin to recognize that community can be as oppressive (or as beneficial) as any other concept of the collective, such as “social”; such words simultaneously marginalize some groups (for example, labelling queers as “anti-social”) even as they speak to what binds people together. Community, for me, is implicitly opposed to the public; community is “a group of people with common interests” (as the dictionary puts it) and a public is a group of people with no particular, or even competing, interests. Indeed, Jean-Luc Nancy points out that community is often driven by nostalgia for a past: "the natural family, the first Christian community, corporations, brotherhood . . ." and by extension the Paris Commune (for the left), Make America Great Again (for the right), etc.

What about the role of distribution? I think one of the bitter facts to realize about the Internet is that one of the great hopes of the counterculture of the 1960s and 1970s—that by changing the design of the network (for instance by creating a two-way “feedback” network for citizens), you would change the design of politics—is only partially true. We see power concentrated more than ever, and often this is accompanied by calls to decentralize the network even further and, by implication, to weight individuals over the center. There’s a resurgence of interest in blockchain/crypto-powered “smart contracts” that might decentralize government and automate freedom, thus building the network that the Internet never was. But as David Golumbia points out in a recent book, *The Politics of Bitcoin*, these ideals are not only fundamentally libertarian, but even right-wing. What is lost in all these maps and theories is that the public (or the much-maligned “center”) is an old-fashioned, boring, even monolithic thing: highways, sewers, virus testing . . . It is the ground on which community can then be built.

You asked about mobile networks, and I haven’t answered your question directly. I see something interesting in the idea of a commute as something that explicitly takes you out of your (literal) residential community—granted, probably to another corporate community/office park, but it’s the temporary journey in between that counts. Corporations know this already; this “drive

time," in the radio industry, is the most profitable part of the day. The question is if there are ways of getting to know the temporary community that happens on the road (or subway or train). Perhaps we could take inspiration from CB radio, which gives you a sense of who's near you on the freeway, but, due to limited bandwidth on its shared channels, only lets one person talk at a time. CB is useful in a specific place and a specific moment. Maybe it's the limitations of CB radio, rather than the plenitude of smartphone radios, that makes and made it unique.

ES: I just read an article by scholar Art M. Blake about CB radio as a form of technologically mediated community, specifically with regard to black CB radio in the postwar period and the development of a shared, audible racial identity. It was a good reminder that "community" need not be moored in direct contact, that the creation of a cultural identity can happen in an aural sphere—in this case, a preexisting black aural-oral sphere rooted in black-interest radio, jive talk, and jazz.

I was interested in this way that CB radio was developed to counteract the immobilities produced by the racist and segregated status quo, drowning out the noise. The shift from sound to noise as Michel Serres points out: "Noise destroys and horrifies. But order and flat repetition are in the vicinity of death. Noise nourishes a new order."

I am cautiously optimistic about our new order, this proverbial "noise." On the one hand, these self-sufficient and community-building models rail against that old-fashioned sense of public-via-infrastructure. Noise which eludes capture and control . . .

THH: I worry that noise doesn't always evade capture; big data, for instance, is very good at sniffing out patterns from the noise that we throw off. What's interesting about noise is that it's rarely recorded—it's much easier to throw it out—so the question for me is how one writes a history of noise, as Blake has done. This is where imagination comes in and where noise can be recuperative: where, to think of that amazing book of poetry *Zong*, M. NourbeSe Philip uses a moment when her printer jammed and overprinted lines of verse on top of itself as the book's last chapter, much like the forcibly suppressed sounds of those who were murdered on the ship *Zong* might have echoed and resounded through the ocean.

The question of shared space makes me think about how we so often have models of being together that take place in opposition to something larger, something normative: subculture vs normative culture, counterpublics vs publics. This is how noise maps so readily onto a model of community: punk, techno, etc. But what happens in a moment of COVID-19, where many of us teachers, artists, writers, etc., are trying to build solidarity, not just in opposition to something, but in all the everyday, ordinary, even mass-market spaces, such as a classroom or an exhibition or a blog? What becomes "shared" when these disembodied spaces widen exponentially and we have less and less in common? How do we still inflect virtual spaces with markers of presence? This is where radio might continue to teach us. I think of that scene in the postapocalyptic novel/film *On the Beach*, where the Morse code transmission of a distant survivor from across the ocean is revealed to be simply a telegraph machine connected to an open window shade blowing in the wind: noise is (mis)read as signal, and accordingly, as hope.

ES: One of the latent themes of this conversation has been the transformative potential of misreadings, of misregistration ("Keep out! Shut up! I am working"), of jamming, of interference. So, the role of contingency.

The theological origin/meaning of "contingency" accounts for anything that depends upon something else for its existence—that is, which relies upon its point of contact to be supported, to exist, and to be seen. I am thinking about this in relation to the production of new forms of solidarity, which, as we've discussed, often gesture to the retroactively conceived, falsified, and mutely signifying conventions underwriting them—or as you put it, a solidarity that is not born out of being in opposition to something.

A lot left to learn indeed!