

Pandora's Signal Boxes

Shannon Mattern, Jamie Allen



(Swiss Rail Signal Box, Herzog+DeMeuron. [Image source.](#))

Included here, dear reader, is a discussion that took place between media and design author and scholar [Shannon Mattern](#) and perennial continent. probationer [Jamie Allen](#). The conversation occurred on a rather rainy and cold day, on a walk that Shannon and Jamie took through Basel, Switzerland, toward the [Central Signal Box](#) building. Shannon Mattern had come to Switzerland at Jamie's invitation, as part of a lecture series called "[Medialogue](#)", held jointly by the [Critical Media Lab Basel](#) and the [Medienwissenschaft](#) group at Universität Basel. The Signal Box is an infrastructural landmark that delimits a transition between residential and (formerly) industrial zones in Kanton Basel-Stadt. The building was designed by locals, stalwart innovators and 'starchitects' [Herzog and Herzog & de Meuron](#), whose numerous offices and archives in Basel are all but a few minutes' tram-ride away.

When first designed and built, the Central Signal Box structure was an architectural-scale protective housing for the switching and control systems for Swiss Federal Railway (Die Schweizerischen Bundesbahnen, or SBB) electric trains in the area. This meant that the contents of the Signal Box needed to be electrically isolated from the higher-power electric source lines that power most intercity trains in this part of the world. The speculative design duo Dunne & Raby wrote about the building in their highly prescient 2008 book "[Hertzian Tales](#)"^[1], in which they write about Signal

Box as an “example of how sensual material responses to immaterial electromagnetic fields can lead to new aesthetic possibilities for architecture situated within hertzian space” (p. 116). For Dunne & Raby the building is paradigmatic of a shift, wherein the radio-frequency, communicational and mediatic properties of materials and architectures take precedence over and guide their formal properties. Signal Box in Basel is now largely evacuated of the original switching technology it once housed, now serving as a storage and general purpose maintenance edifice for SBB.

The conversation transcribed below is itself a veritable switching station between topics and themes related to infrastructures of thinking and writing, infrastructures of media and technology and infrastructures of sound and electromagnetism. Touching on Shannon’s own scholarly practice and her current role as an opener of ‘black boxes’ through her writing in academic, online and popular press, links are drawn up between the potential generosity of ‘infrastructural thinking’ and feminist scholarship and the resonances are noted between built architectures, human behaviour and the radio waves that pervade and modulate our interfaces and experiences of data, media, sound and modern life.

— Jamie Allen



continent.’s Jamie Allen: In thinking about our understanding of technology, it seems we are perennially locked into this notion of ‘the reveal’. As if opening and understanding ‘the hardware’ is somehow essentially necessary or fundamentally

revealing. The problem with this is that when you ‘know’ the technical, material explanation of a system that supposedly affords the ‘immateriality’ of media and telecommunications, you often don’t know anything ‘more’, you just know something else. And ‘complete knowledge’ doesn’t come from some kind of sum-total of all possible ‘elses’. I’m always curious in your work how you navigate this kind of totalising epistemology. Are the infrastructural art projects, tour and field-guide projects you write about for you interesting because they are revealing of the techno-scientific worldview? Is it about getting closer to “how something works” in terms of signals and materials, energies and matter? Is it a fascination with the ‘raw thing’ of technical entities?

Shannon Mattern: Well, that’s one motivation, and that’s where a lot of the Wolfgang Ernst school of media archeology comes in, for example. It is this desire to get at the base technical level, the atomic level of technical operations or process. And I think for other people, this ‘reveal’ has different motivations. Some “revelationists” want to call attention to behind-the-scenes, under-appreciated labour; or to show all the “stuff” behind our seemingly immaterial systems; or to uncover our technical networks’ political economic foundations.

continent.: Each of these camps occupies some ground of the claim, “This is how it really works”?

SM: Yes, I think we’ve witnessed the rise of a new-realism, in some sense a neo-positivism, which rests on the assumption that “opening black boxes” and “tracing wires” and “mapping nodes” and “diagramming algorithms” are the antidote to all the magic, obfuscation, and fetishism surrounding inscrutable networks. I quite like the fact that Finn Brunton and Helen Nissenbaum have proposed battling obfuscation with obfuscation — or, rather, battling surveillance and ubiquitous data-fiction and documentation with a little tricksterism.

I’ve engaged in my own “making visible the invisible” and “making sonic the inaudible” projects, primarily with my students, over the past decade or so. But after wondering what it all adds up to — what’s the big voilà when we strip away the veil? — I shifted my focus to the larger “field” of operations: all these infrastructural literacy projects. I started scanning across these countless “looking at / listening to / touring / mapping”

infrastructure projects to figure out what these various artists' and activists' motivations might be — and what different methodologies and pedagogical techniques they've chosen to use. I'm curious to know what their end-goals are, too: there's so much commitment to "awareness-raising," but I'm curious to know what we then do with the "awareness." Particularly because a lot of these projects are public-oriented: there's thus a presumption that their purpose extends beyond the "purely" intellectual.

continent.: So something like a meta-study... is that what you're after?

SM: I write often for Places Journal, and my editors have occasionally told me that one of my strengths (and I hope they're right!) is synthesising a whole bunch of seemingly disparate projects and finding out if there's something in the zeitgeist that explains why this constellation of things is happening.

continent.: Your writing and work is incredibly generous, and yes, inclusive in that everything is laid out for your reader or audience. You also publish through really accessible online channels. It seems that something we often forget these days amongst scholars is to just appreciate these 'navigational' aspects of scholarship. It is still nice, despite all of our reservations about categorisation and reductionist labelling and organising, to read or see projects by people who go out of their way to collate things, arrange them; people who are generous in their the inclusion of examples, objects and projects so that others can both make up their own minds, and get it. There's a particular generosity or openness to this kind of direct reference. It's almost the inverse of someone like Kittler, where most people have to go back through his work and make notes, in order to look up every other thing he's writing about. Instead, your style is to be both straightforward about what you're talking about, and clear about what inspires you. Maybe this is a kind of 'archeological generosity', where you dutifully label everything you're unearthing with the right little 'pin' for the next person who comes along?

SM: Well, you might attach this somewhat to the idea of a feminist epistemology. I don't think feminists have an exclusive purchase on generosity, of course, but the whole concept of situated

knowledges (for which we owe much to Donna Haraway) involves contextualizing our own limitations and agency in knowing things, and it alludes to the communities within which knowledge is produced. One way I have chosen to "operationalize" this model is by making a concerted effort to recognize, and credit, the inspiration I've drawn from other folks — from theorists to practitioners, skilled laborers, and students. We might even say that these "referential ecologies" — these networks of credit and appreciation — are another kind of "acoustic infrastructure": through acknowledgment and expressions of gratitude we can help to amplify the other voices that have informed and inspired us. It's a social acoustic ecology. Acknowledgments and citations — which we often reduce to boring bibliographic conventions — are, for me, an opportunity for ethical action. An opportunity to amplify the voices of those who have have informed my own.

Unfortunately, academia often runs on an economy of exclusive ownership and intellectual property. I've been criticized for over-citing. It's a tough balance to strike — for me, at least: to trust your own voice, to claim your own insights, and, at the same time, to give props and be intellectually generous.

continent.: 'Archeological generosity' might be a way of thinking of ways that critical theory — Frankfurt School, Foucault, all that kind of deep humanities stuff that can seem a bit like an echo-chamber — might relate to design and art and media practices. These attempts to reveal, to unearth, to witness are in a way are what, broadly, post-structuralism was trying to do, but now we can expand our methods to include people, hardware, geology, etc.

SM: A lot of the infrastructure work that gets the most attention, and a lot of the artwork, is focused on material and technological infrastructures, but there are also intellectual infrastructures — things like classification systems and administrative protocols.

continent.: These become ways of thinking, positions of thought, where am I sitting and how I talk about this other thing. Writing in a generous way, understanding knowledge as indeed situated, and revealing the sources of your inspiration might

also be an 'infrastructural' way of writing or researching: "Here's all the scaffolding I'm about to bring into play", and the building that may or may not be inside this scaffolding might even be kind of secondary.

SM: At various academic events over the years I've been struck by what seems to me a really odd disjunction between the supposedly generous, enlightened philosophies that we were ostensibly discussing, and the old-school, insular, prestige-based systems that framed that discourse. I started to wonder what would happen if we applied the same kind of actor-network or assemblage critique, or infrastructural critique, to our own work as critical practitioners or scholars. What protocols and conventions and make it possible, or impossible, for us to talk to one another, to work together — or to eschew collaboration? (And I say this as someone who gets "burnt out" out on collaboration sometimes.) I also wondered about the power, particularly the seductive power, of the "Capital-T" Theoretical voice — the Big Voices in the academic market (it's as if everyone's obligated to cite Simondon and Flusser these days). Ultimately, I wondered how often we reflect on whether or not we're living in accordance with an ethic, a politics, that we'd willingly espouse in our writing and artwork and other forms of public presentation? Does the way we "perform" our work as scholars, artists, etc., match up with the ethics and politics that we profess in our work?

continent.: What could we put out there in the stead of the classical, modernist bravado, that tired voice of 1920s-vintage truth-spouting philosophers?

SM: Yeah, the neologising, the theoretical "versioning," the branding. Of course there's value to new theoretical approaches and methodologies, and sometimes we do need new terminology to capture new ways of thinking. But sometimes that novelty is driven by the same political-economic forces of innovation that drive Silicon Valley. The higher-ed industry has certainly embraced "innovation" as inherently good; there's plenty of incentive for novelty, which sometimes promotes strategic amnesia or myopia.

continent.: I wonder about this as a repercussion of media-thinking, or media studies interests in the recombination of "meaning" and "message".

There's a lot of criticism in media work, sound studies, etc., that kind of boils down to a demand that people "walk the walk." It's challenging, because it's also the kind of an argument that can shut down your ability to do anything that's not prefigurative, to get any kind of distance from a topic. So, if I write in a mode or in description of ontological generosity do I have to be ontologically generous myself, as a writer, or as a person? If you're going to write about feminism, you have to write feminism? If you're going to write about the agencies of different actors or beings and their various voices, is it always problematic that some one person must stand to speak for them?

SM: When we're "revealing" infrastructure, we need to think about our chosen means of revelation, whether they're field trips or sound walks, as their own kinds of intellectual infrastructure. Our methods of revelation reflect particular pedagogical strategies, epistemologies, politics of access, and so forth. Ideally, we'd all be reflexive about our forms of discourse and ensure that they adequately give expression to our politics — that the form matches the argument or sentiment. If we're arguing for a queer consciousness or a Marxist sensibility, for instance, or if we're advocating for a sensitivity to the politics of sound and touch, we might want to think about whether our mode of expression actually embodies those politics. Are you giving a commanding lecture in an exclusive venue — to which you've flown halfway around the world — before a room full of rapt devotees? Does this mode of address fit your message? Or are you facilitating a workshop at the local public library? Are you incorporating universally accessible pedagogical materials, allowing for different modes of engagement? It's a lot of work — double or triple the effort of just "writing a talk" — to consider whether the form of that "talk," your mode of address, really does justice to your argument.

continent.: It's a certain kind of poetry when that happens, that's for sure — like when film speaks to its own means of representation by breaking some internal convention or technical contrivance. For example, this idea of you writing about infrastructure in an infrastructural way is really exciting, poetic, satisfying. But it's a question of whether we need to demand that of everybody doing anything all the time, or can we at least feign a kind of objectivity every now and again?

SM: I don't know that we need to demand that of everybody. But I think we should offer more opportunities for people to explore alternative modes of conversing and sharing their work, and valuing those other formats. Do we all need to fill our cv's with conference panels?

continent.: Yeah. That was a stupid question — we shouldn't demand anything of everybody doing anything all the time.

We've arrived at this Signal Box building Herzog & de Meuron, built in 1995 after they won a competition for the building a couple of years earlier. It was the SBB railway's switching building for the region. The reason it's interesting to designers and media people, or at least how I know of its interest coming out of these communities, is that it was mentioned in a book by Tony Dunne and Fiona Raby called "Hertzian Tales". In that book they talk about the entire building as a "radiophonic object." The notion is similar to a number of subsequent new materialist, open-ontology discussions, but also quite a long time before those discussions really took off, I think. It seems like art, technology and design practices and discussions are yet another place, along with feminist and indigenous thinking, which serve as often-unacknowledged handmaidens to fancy philosophies of "new" ontologies and proliferate agencies. Artists and designers have also talked about the subtle import and cultural, political and social resonance of materials and objects for quite a long time.

SM: Architects have reflected on this for a long time, too.

continent.: The way that Dunne and Raby talk about this building is in how it 'comes out of' our resonant, electromagnetic world. We are awash in radio, magnetic fields and electrical fields, electromagnetic radiation in general. So in an age when our harnessing of these fields becomes centrally important, the buildings we make start having to respond and protect — they have to be made in way that is sensitively to — these fields. Radio waves inform the materiality and form of these structures and then becomes resonant with it.

SM: Early wired and wireless telecommunications were informing architecture and urban planning

from the late 19th century. Think about the canopy of cables over city streets, the rise of the radio tower — often the tallest structure in town. The Russian avant-garde was particularly fascinated with all these almost-gossamer radio towers; they, and the medium they made possible, represented a set of ideas, and a constructivist aesthetic, that resonated with the tastes and values of the time. [phone rings...] ... That's me. Sorry.

continent.: If you need to get that, that's cool.

SM: I lost my point.

continent.: This Signal Box building, built in the 1990s, had to show a concern for the 'electromagnetic imaginary', which I think is Eric Davis's term. The Eiffel tower is an example where the architecture precluded 'radio tower' functionality. It was built a viewing tower that seemed to prefigure what radio towers needed to be.

SM: Cultural historians have long commented that the tallest, grandest buildings in a city tell us a lot about what that city values. Think about church steeples or minarets, or the ornamented capital of a late-19th-century commercial "skyscraper," and then the radio towers arrived. We have this continuing competition to build the world's tallest building; it's interesting that, even to this day, the engineering feature that still pushes some buildings over the edge, helps them clinch the title, is having this massive telecom tower at the top. Acoustic infrastructures still grant architectural supremacy to certain buildings.

continent.: There's an obligatory Simondon line about how the aesthetics of the water tower is a central architectural problem, and how they dominate everything else as they have to be put on a the highest location in every region.^[2] They express a kind of infrastructural power.

SM: For radio towers this is because "line of sight" — it's interesting to use this ocularcentric metaphor — still determines the physics by which so many of our communications technologies work. You need to be on the highest point in the terrain because physical architectures obstruct the process by which high-frequency radio operates.

continent.: The reason that this Signal Box building

is here is that this seems to be the thickest, most dense parts of the incoming train system to Basel from and to Zurich. These electrical switching systems are on something like 11 kilovolts at 16 Hz. That's partly why they often spark. This building contained control systems, so it needed to be protected from higher voltages and currents, just as it also needed to be close to these rail power lines. I imagine there's also a certain amount of sound isolation as well as electrical isolation. It's really loud:

SM: Herzog and de Meuron had been known for their stylized facades, so it's interesting to think about what the facade is actually communicating here. These vents make this boxy building look a bit like a radio, with the vents serving a speaker. There's an allusion to a resonant, sonic, or even respiratory function here.

continent.: In a certain way, this kind of Faraday cage is precisely supposed to 'disappear' electromagnetically, like a blackhole in the electromagnetic spectrum.

SM: I have a chapter in my new book about how radio — how wired and wireless communications, including radio, have informed architecture and urban planning. There are two other recent books that examine the relationships between radio, design, and place. Mark Wigley writes about Buckminster Fuller's fascination with radio, and how the "aura" of radio profoundly impacted his understanding of spatial ontologies and his design practice. And Danielle Shapiro wrote the first biography of John Vassos, who was an industrial designer for RCA, designing their radio sets and radio stations. There's an interesting homology between acoustic infrastructures at these two scales; we find a consistent form and aesthetic in the radio object and the radio building (which produced the sounds that were then broadcast through those radio-objects).

"Buckminster Fuller, who regularly celebrated his own biographical connections with radio (he worked aboard a naval ship where de Forest established the first successful radio communication between a ship and a plane), also sought to reimagine shelter for the radio age – to open space up to electromagnetic waves. As architectural historian Mark Wigley describes,

"Fuller's lifelong project was to thin buildings down to minimize the difference between the object and the space of radiation." His buildings – geodesic domes, plastic structures, radome antenna shelters for the U.S. Marine Corps – "became transceivers" suited for this age of "global mobility." While these architectures and networks of dissolution seemed to pursue and celebrate the "collapse" of geography, as many theories of telecommunications history posit, geography and architecture also provided convenient metaphors for making sense of the newly-charged ether. This atmospheric geography could still be colonized, owned, auctioned, and controlled through regulation; as many have noted, the 1927 Radio Act transformed the electromagnetic spectrum into real estate parcels ripe for development and ownership."

("This passage is drawn from Shannon's forthcoming *Ether Ore: Archaeologies of Cities and Media*, University of Minnesota Press, 2017)

continent.: There's a line you wrote about how the human voice and the city are interrelated.^[3] This idea that the city is designed in terms of the distance that a voice can travel. The idea of "acoustic infrastructure" is a lot about the systems that were designed for the extension of voice. Madison Square Garden in New York, for example, has a huge acoustic radius around it, so they can speak to the crowds that might be there for whatever reason. If you're out of Justin Bieber tickets, or whatever, you have to be able to you have to be able to tell people to go home. Magnavox was the first American company that built a somewhat commercially available public address system, and it was first used by lower Manhattan financial traders to make announcements, open markets and the like. Then the technology was quickly picked up for use in political rallies, in a way allowing people to gather meaningfully and be address as larger and larger crowds.

SM: This goes back to Aristotle and Plato and early conceptions of the ideal city, for which the radius would be no longer than the distance that a voice can carry. So the ideal sized city kind of encapsulates or encompasses a community in which everybody can hear somebody broadcasting something from the center of town. And once you have artificial or electrical means of amplifying that

sonic signal, you can potentially extend that radius.

continent.: So could you say something like, public address systems, electrical amplification of that kind, “ruins” the demos? That is, it ruins the possibility of a certain kind of dialogic community? What happens if you are not accessibly present to take responsibility for the effects of your voice on a crowd? At any point in most cities, you can always be addressed. When you walking through Gorky park in Moscow, you realise they are, pretty much everywhere, playing this pretty terrible pop-techno everywhere. This terribleness isn’t just an effect of the music, but also the age and acoustic of the speakers, which were installed by Stalin in the 1950s. The idea wasn’t just that a lot of people could hear what he was saying, it was more that when Stalin gave a speech, these infrastructures insured that there would be would be very few places in Moscow you could go to avoid hearing him.

SM: Do you know Caroline Birdsall's work, *Nazi Soundscapes*? She talks not only about stationary speakers but speakers that were placed in vans, that drove around, broadcasting the “hegemonic” voice to places that were otherwise outside the reach of a static acoustic amplifying infrastructure.

continent.: In Athens, in certain neighborhoods, there's a fairly regular noise coming from guys in trucks, and it seems at first that these are associated with some kind of political messaging. Greek communists, maybe? Those tinny, bullhorn speakers and their acoustic signature are associated with the golden days of communism in a weird way. As it happens, a lot of these Athenian trucks are just roaming the city in order to collect refrigerator parts, or to sharpen your knives, or what have you. But because of the acoustics, it's not hard to leap to the idea that they must be talking, rallying, they must be explicitly addressing a political issue.

“In 1932, the Nazis’ use of media distribution channels took another turn, with the decision to use *Lautsprecherwagen*, which were purpose-built vans with loudspeakers attached to the outside. These Siemens & Halske vans were rented out during election campaigns, as a means for attracting the attention of citizens with Nazi speeches, songs and party slogans. This represents

an expansion of the principle of acoustic presence and resonance, since it enabled a significant intensification of sounds in support of the party. These loudspeaker vans opened up the possibility for penetrating public and private spaces with amplified sounds. Loudspeaker vans also intensified urban forms of “acoustic conflict,” since the vans provided the party with the opportunity to achieve a mediated acoustic dominance in the city, with the potential to drown out the sounds of political opponents.” (from Caroline Birdsall, *Nazi Soundscapes*^[4])

SM: There's also a certain stentorian grain of the voice or a certain aesthetics of projection that we might associate with a political application. Brian Larkin does a lot of work on the call to prayer and the ways that different religious and secular communities use loudspeakers in a form of sonic agonism — constantly out-shouting, one-upping one another through their broadcast hymns, sermons, or calls-to-prayer. They also consider how to use the material city itself as a resonance chamber, and acoustic infrastructure — how, for instance, to situate speakers in contained alleyways to maximize resonance.



[1] Dunne, A. (2008). *Hertzian tales: Electronic products, aesthetic experience, and critical design*.

[2] Simondon, G. (2012). *On techno-aesthetics*. *Parrhesia*, 14(1), 1-8.

[3] In "Deep Mapping the Media City"
(Minneapolis: University of Minnesota Press, 2015).

[4] Birdsall, C. (2012). Nazi soundscapes: sound,
technology and urban space in Germany,
1933-1945 (p. 272). Amsterdam University Press.