

democratización de los contenidos, edited by M. A. Ortiz-Sobrino and N. López-Vidales, 41–66. Madrid: Fragua.

Revillo, C. 2012. "Redes Sociales e interactividad en la programación radiofónica. La experiencia de UPV Ràdio, Universitat Politècnica de València." In *Las radios universitarias, más allá de la radio. Las TIC como recursos de interacción radiofónica*, edited by C. Espino and D. Martín-Pena, 261–76. Barcelona: UOC.

Vázquez, M. 2010. *Jóvenes y Radio Universitaria: un intercambio a las estrategias formativas de dos países. Resultados de la encuesta; La participación juvenil en radiodifusoras universitarias de México y España*. II Congreso Internacional de la Asociación Española de Investigadores de la Comunicación (AE-IC), Málaga.

Warkentin, G. 2013. *Radio y redes sociales: la comunicación que viene*. <http://radiomexicointernacional.imer.gob.mx/radio-y-redes-sociales-la-comunicacion-que-viene/>

CHAPTER ELEVEN

IT'S ON YOUR HEAD, IT'S IN YOUR HEAD: THE ARTISTIC EXPLORATION OF RADIO AS MATERIAL REFLECTIONS ON POST-DIGITAL PRACTICE

MAGZ HALL

It is not known whether Urban was inspired by the radio hat invented by Victor T. Hoefflich in 1949, who founded the American novelty Merri-Lei Corporation of Brooklyn NY. The radio hat was a valve AM radio built into a pith helmet and available in eight colours: "Lipstick Red, Tangerine, Flamingo, Canary Yellow, Chartreuse, Blush Pink, Rose Pink and Tan" (Radio Electronics). It was clearly targeted at women; alas, if the wearer moved their head it would affect the reception. Since then, a vast array of novelty radios have been commercially made; however, production in this area is in decline. As mass production has moved to small digital devices it is getting harder to find new forms as found objects for art projects.

In recent years, artists have jumped onto the production side of radio, as technology has been unmasked as simple electronics following in the footsteps of the enclave of primarily male ham and electronic enthusiasts reflected by ongoing archive of amateur electronic magazines.

Dan Lander ran RADIA, an artist station from the Walter Phillips Gallery in Banff, Canada in 1992. He saw radio's potential to "offer an unlimited space in which an art of radio could proliferate" (Lander 1990, 13), clearly demonstrating the interlinking of the forms but seeing the scope of a new art form of expanded radio art.¹

Artist "maker" and "hacker" culture offers a remake and remix attitude to analogue and digital technology and informed my PhD radio art

¹ "Unless access to radio is gained, we may never imagine, experimentation and chance taking could occur, the numerous possibilities that the medium may hold might begin to bear fruit" (Lander 1990, 13–14).

practice. This is most notable in *Spiritual Radio* (Hall, 2014), a bespoke “book-radio” that transmits the words of this early radio text in an eternal loop. The book cannot be conventionally read; rather, the listener must tune to the right frequency in order to hear its content. The work developed after running FM transmitter and AM and FM receiver workshops and drew on my research on the history of radio art and current practice. The starting point was Tetsuo Kogawa’s copper plate circuit, which I adapted for a pin board that I found more visually arresting and that allowed me to make it part of objects such as books and trees. The original text itself, *Spiritual Radio* (1925), sets out Archbishop F. H. Du Vernet’s vision of the nascent technology as a spiritually-charged electrical force capable of mediating human sensibilities and the transcendent will of God in a text that is by turns visionary and often absurd in the bathetic disjuncture between spiritual promise and quotidian reality. In contrast, *The Crystal Line* by Julian Oliver (2015) offers us a more sinister reading of radio’s military use. Oliver had a WWI crystal set especially built for his installation to broadcast transmissions of current military news and warfare culled from defence blogs translated from text to speech by web crawlers, then voiced via software for a live AM broadcast.²

Irene Posch and Ebru Kurbak, also inspired by Tetsuo Kogawa’s copper plated micro transmitter circuit, produced Knitted Radio (2014) and Drapery FM (2012), making transmitting fabrics using his scheme as part of an ongoing investigation towards using traditional textile crafting techniques to create electronic components and devices from scratch. Here the technology is hidden and embedded, whereas in my own works I want the audience to see the circuit.

This is also the case with *Tube Map Radio* (2012) by Yuri Sazuki, which is based on an original drawing by Harry Beck, the designer of the London Underground Tube map, reimagined as a radio receiver circuit. This work, commissioned by the London Design Museum, was inspired by a spoof diagram, which shows the lines and stations as an annotated electrical circuit. Iconic landmarks on this map are represented by components relating to their functions, including a speaker where Speaker’s Corner sits and a battery representing Battersea Power Station.

Sazuki wanted to make components visible to consumers so they could “understand the complexity of the workings behind the exterior of today’s electronic devices”. Sazuki’s tube narrative, though, does little to explain how the electronics actually work, and it is unlikely that this radio would encourage people to understand broken devices, as it is impressive yet

daunting. The complexity of the set is something one looks at in awe. It looks manufactured by a machine; the human side of the making process is concealed, as it looks like a printed circuit.

This is in direct contrast with my own handmade pin transmitter circuits, which highlight the simplicity of the FM transmitter circuit in a direct visual form, which has been likened to a cave painting. UK laws surrounding piracy have limited the artistic exploration of transmitters; however deregulation on low-power FM devices, such as car transmitters and baby monitors, have made them exempt from licensing, offering artists an artistic opportunity in the blurring of these boundaries.

Artist Nam June Paik predicted a radical and exciting future for artists and technology back in 1965: “Someday artists will work with capacitors, resistors and semi-conductors as they work today with brushes, violins and junk.” This is certainly the case with *Tree Radio* (2015), which enabled me to fully refine the FM transmitter circuit, which I had started in *Spiritual Radio* (2014). This is the point at which I started “painting”, in Nam June Paik’s terms, with electronics, presenting the FM transmitter in its most basic and functional form, as simple geometry. I had moved from merely mastering it to being able to adapt it into a functional aesthetic form; my basic electronic knowledge was now expressed as a kind of universal key to transmission, one that could be easily understood and read on a book or tree.

I produced *Tree Radio* (2015) as a mixed-media installation, during a research residency at the Yorkshire Sculpture Park (YSP) transforming an oak tree at the Sculpture Park into a micro radio station. A transmitter I built was embedded into the tree and relays as fluctuating sound the tree’s reactions to light via sensors on the tree. Probes in the tree relay its water levels as electronic tones. Visitors at YSP can pick up the tree’s transmissions on their personal FM devices (such as phones with FM) if they are standing next to or in the vicinity of the tree.

This work addresses issues surrounding the rate at which new digital technology often becomes out-of-date, as it uses 100-year-old tried and tested wireless technology. I have been working at the intersection between art and technology, and this project takes forward my current interests. I wanted to make people think about trees and the root of all wireless technology: radio, and how simple and green it can be to use. Wireless, free and solar powered, the tree transmitter reveals the hidden facets of organic tree life using simple FM wireless technology.

This work also draws on early radio history as inspiration. General George Owen Squire, the US Army’s Chief Signal Officer—and, incidentally, the inventor of Muzak, back in 1919—described how “[all]

² <http://julianoliver.com/output/the-crystal-line>

trees, of all kinds and all heights, growing anywhere—are nature's own wireless towers and antenna combined". He called this "talking through the trees." He used trees as antennas to pick up radio signals for the Army; I wanted to do the reverse—use trees to send out a signal as radio—and I loved the idea of actually hearing the trees talk. This project allows one to hear the tree responding to light and water as sound.

New digital wireless communication today is often disguised as trees, and this work was a playful way of getting people to think about trees as transmitters and radios in early military history. The other aim of the project was to connect people with radio technology and simple electronics. The project was kickstarted by an Art for the Environment residency awarded by University of the Arts London (UAL), where I completed my PhD on radio art. For me, this is just phase one of this research project, which I plan to develop further and refine.

The tree enables its own sonification. It is not trying to conform to the musical techniques charged by Nye as being "emotionally loaded by virtue" of sounding "mythical and spiritual" (Nye 1994, 5) and what Supper calls an "auditory sublime". Instead, the *Tree Radio*'s raw electronic tones, which are produced by hand-built oscillators using the same type of components I have used to make the transmitter, are not subject to the conventions of musicality, which can lead some environmentally generative works to resemble a form of anthropocentric "Muzak". The analogue electronics have their own intrinsic instability: the tonalities and broadcast frequency subject to the contingency of the surrounding environment.

I wanted to share skills and get people to make to make their own transmitting objects and have taken a hands-on approach (via workshops) for enabling the general public to make book radios. *Dream Vessels* (2015) was a participatory work made during a public workshop at the Turner Contemporary Gallery.

The idea for the transmitted dreams was sparked by early French surrealist radio inspired by Paul Deharme's *Proposition for a Radiophonic Art* (1928), which cast new light on later Surrealists' radio practice and counters Douglas Kahn's discussion as to "why was there no Surrealist sound practice of any type" (Khan 1990, 314). This shift in perspective gives a concrete demonstration of how radio arts history is still very much a work-in-progress, with new documents still coming to light. As Weiss has claimed:

Multiple (and contradictory) histories of radiophony could be constituted, depending both upon the historical paradigms chosen to guide the research and the theoretical phantasms behind investigation. (1995, 3)

Such understated and buried histories are something I have incorporated into the narrative of my radio works. After his death in 1932, Deharme's partner, Robert Desnos, carried on the Phroniric production company, producing experimental radio productions echoing Deharme's surrealist radio philosophy. In August 1937, he produced *La Clef des Songes* (The Key of Dreams), cited by Conley as being his "most successful experiment with interactive radio" (Conley 2003, 107). Running from February 1938 to June 1939, the programme invited listeners to submit their dreams for interpretation and dramatisation, encouraging highly poetic responses from this interaction. The participants of the *Dream Vessels* (2015) installation worked with me to build FM transmitters circuits on bespoke ceramic pots made for me by ceramicist Maggie Williams. I then asked them to record their dreams for transmission from the pots to FM radios in the Gallery: a fitting maker response to this earlier history.

I have enjoyed running such soldering workshops with women. For many there is an initial leap, but before long we all felt very comfortable. For one of my older participants, in her 80s, this was something she had done in the past as a job. Women have been working making radios on production lines since the 1920s. A photo at the Chicago History Museum shows women soldering radio chassis at Belmont Radio, 1922. A labour shortage during WWI required many American women to perform jobs traditionally handled by men, as they did during the WWII in the UK. American bosses in the 1940s were sent posters to show them how women workers were an asset. One of them portrays a woman soldering with the tag line "Women are patient".

A photo from the same museum shows women assembling radios at a factory in Malawi, 1974; however, I have not been able to locate more recent pictures of women radio workers. In the underdeveloped world, such work activity seems to be hidden from the Internet. I was reminded of this by artist Cao Fei's film *W/hose Utopia*, set in a Chinese Osram lightbulb factory in Guangzhou and showing Chinese workers making lightbulbs. The film gives a Western audience an insight into the hands-on production lines, many of which I imagine are now automated because they are not documented, and highlights an area for my own future research activity.

Women have been fully accepted in production line work, yet historical studies show that artistic "inkering"—or "hacking", as most now call this activity—with audio hardware and, specifically, with radio technology, has become gendered as a "masculine" activity (Supper 2012; Douglas 1987, 1999; Haring 2007). This has been supported by my own field research in the UK, whilst attending a host of electronic amateur

radio and ham events whilst digging for radios. Also, more progressive groups like Bristol Hackspace and Digibury in Canterbury are predominantly male.

Supper sees such gender roles as difficult to change and points to Dunbar-Hester's ethnographic study of contemporary radio activism, which shows that despite technical enthusiasts and groups "founded on, and genuinely committed to, equality and diversity" (Dunbar-Hester 2008, 212, in Supper 2012), "hardware tinkering tends to remain a predominantly masculine activity" (Supper 2012, 164). "Women studied by Dunbar-Hester possessed significant technical skills, especially when it came to computer programming or radio production, generally lacked the skills or the confidence to tinker with hardware. Their male peers had acquired these skills "in high school or earlier" (ibid.).

I recall wanting to tinker with radios at a young age; however, at school I was pushed into a science or arts mindset, so I did not pursue sciences at all. Wachelder, a science historian, notes that types childhood play resonate in later research (Wachelder 2007, 165). My own father was an engineer and architectural technician, and these projects have allowed me to reconnect with early memories of being in his university workshop and watching projects take place at a young age.

Having mastered simple transmitter building and adapting it to fit my own aesthetic considerations for my projects, I did not have the time, knowledge or confidence to make my sound sensors from scratch, so I asked sound artist Anthony Everett to collaborate with me. It was something he had not made before, either so. We shared skills: he learned how to make transmitters and I learned how simple it was to put them together. We can now share these skills in future projects and workshops with the public.

To summarise, making, hacking and tinkering are things I have embraced in my recent expanded radio art projects, and they have allowed me to collaborate and move forward with my own hybrid form of post-digital radio practice, giving objects a transmitted voice. For Christian Ulrik and other "post-digital" artists, there is no distinction between "old" and "new" media, nor any:

[...] ideological affirmation of the one or the other. It merges 'old' and 'new' often applying network cultural experimentation to analog technologies which it re-investigates and re-uses. It tends to focus on the experiential rather than the conceptual. It looks for DIY agency outside totalitarian innovation ideology, and for networking off big data capitalism. At the same time, it already has become commercialized. (Christian Ulrik et al. 2014)

Florian Cramer sees that it offers:

a perspective on digital information technology which no longer focuses on technical innovation or improvement.' ...Consequently, 'post-digital' eradicates the distinction between 'old' and 'new' media, in theory as well as in practice. (Cramer 2014, 11)

Cramer writes of "DIY vs. corporate media", rather than "new vs. old media". Hacker-style and community-centric working methods are no longer specific to "digital culture". He argues that there is a "post-digital hacker attitude of taking systems apart and using them in ways which subvert the original intention of the design" (ibid.). He holds that since the late 1990s the assumption that "old" mass media, such as radio and TV, are corporate, has been turned on its head, as "new media" websites are no longer DIY "now that user-generated content has been co-opted into corporate social media and mobile apps" (Cramer 2014, 13).

For Cramer, the younger generation now largely associates the Internet with corporate, registration-only services. This "flipping" means that older technologies are being rediscovered for their DIY use, the familiar process by which a technology's intrinsic aesthetic properties and potential become apparent as its utilitarian function recedes. Within my practice I have recognised a re-emergence of interest in DIY analogue media and digital production and networking practices I have been immersed in.

Leading workshops, building transmitters and editing soundscapes for public performance has not only shared skills and encouraged the proliferation of DIY media, but I feel that I have got "under the casing" of radio itself, not merely setting more content adrift in the digital ocean but also intervening in and demystifying the technologies of transmission. I have sought, through this practice, to operate between digital and analogue media, allowing the grit and serendipity of analogue, localised media to disrupt the "smooth spaces" of the digital devices and networks upon which my practice depends at every stage, from production to networking, and conversely to mitigate against any latent analogue romanticism. This intermeshing of communicative media is most reflected in my *Spiritual Radio* work, which recombines that most established of media devices, the book, with the prosthesis of an FM radio transmitter, to create an uncanny intermedia object.

References

- Augaitis, D., and D. Lander. 1994. *Radio Rethink: Art, Sound and Transmission*. Banff: Walter Phillips Gallery.
- Bull, H. 1993. "Radio Art in a Gallery?" *The Drama Review* 37, no. 1, (Spring): 161–66.
- Cramer, F. 2014. "What is Post-digital?" *APRJA*. <http://www.aprja.net/?p=1318>
- Conley, K. 2003. *Robert Desnos, Surrealism and the Marvelous in Everyday Life*. Lincoln: University of Nebraska Press.
- Deharme, P. 1928. "Proposition for a Radiophonic Art." Translated by A. Birkenmeyer. *Modernism/Modernity* 16 (2): 357–74.
- . 1930. *Pour un Art Radiophonique*. Paris: Le Rouge et le Noir.
- Dunbar-Hester, C. 2008. "Geeks, Meta-Geeks, and Gender Trouble: Activism, Identity, and Lowpower FM Radio. *Social Studies of Science* 38 (2): 201–32.
- Hall, M. 2014. *Spiritual Radio*. <http://unbindingthebook.com/blog/category/magz-hall/>.
- . 2015. *Radio After Radio: Redefining radio art in the light of new media technology through expanded practice*. PhD thesis, UAL, London.
- Kogawa, T. 1994. "Toward Polymorphous Radio." In *Radio Rethink: Art, Sound and Transmission*, edited by D. Augaitis and D. Lander, 287–99. Banff: The Banff Centre for the Arts, Walter Phillips Gallery.
- . 2005. "Mini FM, Chapter 8." In *At A Distance: Precursors to Art and Activism on the Internet*, edited by A. Chandler and N. Neumark, 191–209. Cambridge: MIT Press.
- Lander, D. 1994. "Radiocasting: Musings on Radio and Art." In *Radio Rethink, art, sound and transmission*, edited by D. Augaitis and D. Lander, 11–13. Banff: The Banff Centre for the Arts, Walter Phillips Gallery.
- Lander, D., and M. Lexier, eds. 1990. *Sound By Artists*. Toronto: Art Metropole and Walter Phillips Gallery.
- Nye, D. E. 1994. *American Technological Sublime*. Cambridge: MIT Press.
- Oliver, J. 2015. *The Crystal Line*. Project, published March 1, 2015. <http://julianoliver.com/output/the-crystal-line>.
- Paik N. J. 1965. *Exhibition Catalogue, Nam June Paik*. New York: Electronic Art, Galeria Bonino.
- Supper, A. 2012. *Lobbying for the Ear The Public Fascination with and Academic Legitimacy of the Sonification of Scientific Data*. PhD thesis, Universitaire Pers Maastricht.
- Ulrik, C., G. Cox, and G. Papadopoulos, eds. 2014. "Post-digital Research." *APRJA* (February 2014): Editorial. http://www.aprja.net/?page_id=1327.
- Williams, R. J. 2004. *The Anxious City: English urbanism in the late twentieth century*. London: Routledge.
- Wachelder, J. 2007. "Toys as Mediators." *Icon: Journal of the International Committee for the History of Technology* 13:134–69.