

Duncan Marshall believes radios are a successful machine life form, their evolutionary prowess demonstrated by their ever-increasing ubiquity within the domestic landscape

RADIOBIOLOGY

We are now so familiar with the mass medium of radio that we no longer marvel at its ability to conjure voices and music out of the ether as if by magic. However for those who listened to it, early broadcast radio represented a strange new state of disembodiment, separating sounds from their sources by previously impossible distances.

The first radio broadcast of speech and music went out on Christmas Eve, 1906. Reginald Aubrey Fessenden, an American physicist and electrical engineer, used the National Electrical Signaling Company's radio station in Bryant Rock, Massachusetts to broadcast a rendition of the tune 'O Holy Night' by a violin player, along with verses from Luke's gospel and a Christmas greeting delivered by himself. The broadcast was received by ships that were fitted with a radio receiver and happened to be within 100 miles of Bryant Rock.

About 15 years later, the first commercial radio station, KDKA, began broadcasting from the premises of Westinghouse Electric in Pittsburgh, Pennsylvania. The startup date was 2 November 1920, the day of the presidential election that put Republican Warren G Harding in the White House. Beginning at 8pm, KDKA's first broadcast continued until midnight and consisted of election reports based on results telephoned from the Pittsburgh Post, interspersed by phonograph recordings and music from a banjo player. The audience for this broadcast consisted of the Pittsburgh amateur radio community. Earlier that year, Westinghouse engineer and radio enthusiast Frank Conrad had achieved local fame with his broadcasts of Saturday night radio 'concerts' from his own garage-based studio. These featured recordings borrowed from the Hamilton Music Store store, whose name he would mention on air in return. Conrad was probably the first disc jockey.

There were no ready-to-use radio sets on sale to the general public in 1920. When they did become commercially available, the fiddly, erratic crystal radio sets of the time required headphones or an acoustic horn to

amplify the broadcast signal. In 1926, it became possible to listen to the Radiola 104, a receiver available with a loudspeaker that was connected to a one-watt amplifier. With the new mass technology of vacuum tubes and loudspeakers there arose new mass entertainment and information services, and new service providers. Through the 1920s more and more radio stations began spiriting voices and music across ever greater distances, bouncing signals off the ionosphere rather than relying on local transmitters. By collapsing the distance between the mouth of the speaker and the ear of the listener electronically, a new virtual community was created. What is more, this virtual community rapidly fragmented in strange new

ways – with multi-wavelength broadcasting, people in rooms of the same house could listen to different programmes, while people in different cities could now all listen to the same thing with a shared sense of intimacy.

The speech and music heard from a distance on the very earliest radios was of necessity broadcast live – every song heard was a song performed at that moment, but in another place. Through the phonograph and then the tape recorder (A BASF device was used on German radio in 1939) sound attained a further stage of disembodiment. Previously there had been degrees of spatial separation – now, sound could be separated in time from its source where previously the two had been as inseparable as an object and its shadow. In this way, broadcast sound would come to include the voices and tunes of the dead as well as the merely distant. An event such as a music concert that would at one time have been enjoyed only by those attending the concert hall on that evening could now be enjoyed by an audience of tens of thousands over and over again, long after the performers had retired or passed on.



Jill photos: MFL, M&S

Radio must have seemed an ethereal medium, although early sets were still rooted to the earth by their power cables and their weight. These heavy wooden and brass boxes full of glass tubes spoke to listeners from fixed locations where people would gather round together and listen. Before TV, radio was the first electronic campfire, and by 1934 half of all American homes owned a radio set.

The earliest attempted departure from this set-up for listeners in Britain was the Burndept Ethophone V Portable of 1923. Although portable, its size can be imagined from the fact that it was designed to look like a suitcase. Truly portable radios arrived with the development of the transistor radio in the 1960s, when sound attained a third stage of disembodiment. A device that had been relatively large, static and expensive mutated into something unfeasibly small, light and cheap. In 1969, 35 years on from 1934 and 49 years after KDKA, the number of radio sets in America was around the same as the number of people, 268m.

With a small battery-powered radio anyone anywhere, indoors or out, still or in motion, could walk about immersed in sound. This led to another kind of fragmentation, a split between external and internal space. The ubiquity of radio as an external, environmental medium is lovingly portrayed in the nostalgic movie *American Graffiti*, where a group of babyboom teenagers drift around town immersed in a sea of music issuing from speakers that seem to be everywhere. Written and directed (surprisingly, bearing in mind the bombast of his subsequent output) by George Lucas, the movie was released in 1973 but was set in 1962. Similarly, a member of the Comets has recalled in a TV interview how he, Bill Haley and the band were driving one night, pushing the channel changer buttons on the car radio and it seemed *Rock Around the Clock* was playing on every station. The immersive radio-like effect of continuous pop songs also featured in an altogether darker environment, as the pre-MTV, pre-video soundtrack for Kenneth Anger's short black-mass-homoerotic-speedfreakbiker home movie from hell, *Scorpio Rising* (1963).

Through this soundscaping effect, music acquired a role in the movies as participant, a part of the scenery, as commentary, part of the editing process, or even, in the case of star vehicles for the likes of Elvis, as subject matter. The symbiotic relationship between performers, broadcasters and disc jockeys/promoters evolved from this time, and the social consequences were revolutionary, not just in terms of servicing a huge new audience of teenagers but also in terms of breaking down social and racial boundaries that divided particular towns and regions, but on air were meaningless.

The use of a radio set in a given place imposes the will and taste of the listener on everyone within hearing range, dramatically extending the distance over which



an individual could mark out territory and include, exclude or annoy others. The effect becomes increasingly babel-like as the listeners of more and more stations compete for dominance in a given location. This is the colonising of external, public space, but equally profound are the changes to internal space. While portable radios moved the power to dominate the outdoors further, potentially filling the whole world, yet another radio mutation also arose, one that referred back to the earliest radios as well as forward to the Walkman. This was the earpiece, by which listeners could exclude or withdraw from the world at will. Walking or sitting alone, even in a crowd, with sound actually generated inside the ear, each listener could conjure up a totally private soundspace, an acoustic room (or womb) of one's own. Sound had first separated from its source in space, then in time. Now it seemed to escape from the world of objects altogether and exist only in the listener's head, or as a presence floating in the air like perfume or smoke.

Since the transistor radio other mutations have also occurred, as an internet search through online electronics retailers will confirm. Clicking through the seemingly endless radio sets pictured onscreen, it begins to seem as if the radio is in fact a type of electronic life form, highly successful, with dozens of genera and hundreds of species. Enjoying benign conditions with no apparent threat from natural selection, it has shown a remarkable ability to breed and mutate. An early mutation was the Radiola, combining the radio receiver with the amplifier and the loudspeaker. Since then, sets have become smaller and smaller, the size of a cigarette packet, a credit card or even an earpiece. Sets have spread by combining with other devices, evolving into a component of hi-fi systems, hybridising with cassette recorders, CD players, minidisc players, personal computers, clocks and mobile phones. Sets have colonised various niches – indoor, outdoor, in-car, in-shower, in-toilet (two toilet-roll holder radios at the time of looking) and, with