From Vibration to Volts.
Sonic media and sonic cultures on the edge of the electro magnetic.

Jon Pigott
MeAT Research: Dept. Creative Communications.
Cardiff School of Art & Design: UWIC
Cardiff, Wales

Abstract

The paper uses established models of communication and media theory as a framework to draw a line of techno-cultural progression between physical and oral sound culture through to sonic activities of a more mechanical and electro magnetic nature. The aim here is to characterise the different media that sound can use as its carrier, and to identify the effects of those different media on sonic culture. This is approached by studying various sonic, artistic and cultural responses to sound technologies that highlight either a physical, mechanical or electrical sensibility in sound and sonic practice.

The electrification of Afro American folk music is aligned to the sonic activities of the Italian Futurists. Early cultural responses to electricity as the ‘quintessential fire’ containing ‘animal magnetism’ are considered. The impact of mechanical technologies on the musical activities of oral culture is indentified through a study of the work song. The sound poetry of Filippo Marinetti and the graphic scores of Luigi Russolo and John Cage are shown to reflect an electrical sensibility of a technology of instant relationships and acoustic impact.

Introduction - identifying sonic media.

This paper takes the theoretical discourse of ‘medium and message’ or ‘substance and form’ and explores how effectively it may be applied to music, sound and sonic culture. It is common to apply this theoretical framework to areas of communication theory and of visual culture; we may consider that a particular artist has an excellent command of oil paint or bronze casting as their chosen ‘medium’ or ‘substance’ and the form or shape of their painting or sculpture is born from that. We are familiar with the notion that a story told to us on the television may have a very different pace or dynamic shape to the same story received from a book or from someone speaking to us directly through oral means. The different media of television, print or spoken word can be considered as the different substances used to carry the form of the story. This lead Marshall McLuhan to declare that the ‘medium is the message’ [8]; the substance of communication is inherent to the meaning. This paper explores the application of these theoretical models to sound and sonic culture, and aims to characterise different sonic media by studying associated cultural activities.

In his essay, ‘Sonic Dominance and the Reggae Sound System Session’, Julian Henriques highlights the physicality of sound as material in contrast to the ethereal nature of music as form, structure and pattern. When describing the experience of a full scale Reggae sound system with extended bass amplification, he concludes the following:

‘You feel both the air as a gaseous liquid medium that ‘carries’ the sound and hear the waveform of the shape of the sound. This is sound as both content and form, acoustic energy and sign wave information, both substance and code, particle and pattern’ [5]

Here, Henriques clearly identifies a sonic medium and a sonic message. It may be useful to briefly consider the following quote by psychologist Jonathon Müller: ‘Without the organ of hearing… there would be no such thing as sound in the world, but merely vibrations’ [10]. This helps to identify Henriques’ sonic substance of vibration and the movement of air particles. This is the physical realm of sound, which this paper aims to show can be aligned to the sonic practices
of oral culture. The paper will also look at how those practices changed with modernisation. Both these areas are addressed in the section titled *oral sound cultures and modernity*.

There exists also a written culture of sound embodied by the musical score and music notation. This, Henriques argues, tends to pursue more the ethereal and disembodied aspect of sound to the detriment of the physical aspect ‘just as written culture tends to disregard – and disrespect – the qualities of oral culture it supersedes’ [5]. In the section *written sound cultures and modernity* this paper will show how established written sonic culture came under attack from certain modernist tendencies such as Futurism and the graphic score.

Finally we can consider an electric medium for sound. This can be defined as the realm of the electro magnetic, where early pioneers such as Tesla, Faraday, Edison and Bell operated to bring us the technologies of sonic modernity such as the telegraph, telephone and gramophone. There is not the scope in this paper to fully cover the notion of electrical ‘substance’ and associated cultural tendencies, however a brief exploration of it here will provide a meaningful context to the sections on oral and written sonic practice and their modernisation.

A Brief Context of the Electromagnetic medium

Erik Davis identifies an ‘electro magnetic imaginary’ [4] which informed an understanding of the world long before electrical technologies worked in any practical way. In the seventeenth century, characters such as the physician Jan Baptist van Helmont worked on the borderline between natural magic and modern chemistry and informed the early view of electricity as the ‘ethereal’ or ‘quintessential fire’. Davis identifies other seventeenth and eighteenth century notions of an electro magnetic ‘fluid’ connecting the magnetic, vibrating, and musical cosmos to the human body by way of its animal magnetism. But it was Michael Faraday’s discovery of electromagnetic induction that, in 1830, ‘was the tincture that catalyzed the final transmutation of matter into spirit, a tough minded alchemy that revealed the physical universe to be an enormous vibrating mantra of potent nothings’ [4]. Here are the roots of Marshall McLuhan’s ‘electric implosion’ [8] of media such as the gramophone and the radio where, he observes, ‘the world of sound is essentially a unified field of instant relationships (that) lends it a near resemblance to the world of electromagnetic waves’ [8]. A recurring theme in Davis’ writing is that electricity would carry certain aspects of the alchemical imagination into the modern world. These aspects included ‘the desire to spiritualise material form’ and ‘the fascination with the vitality of bodies’ [4]. This reflects aspects McLuhan’s claim that electric media heralded a return to ‘oral and tribal ear culture’ [8].

Oral Sound Cultures and Modernity

The oral culture most useful for us to consider is that of the rural American and African Americans of the early twentieth century. It is useful because these people existed at a time and place where traditional and ancient sonic practice was to be met head on by the hotbed of scientific invention and experimentation in the United States that led to the electrification of sound and sound recording. Simon Frith asserts that it was this meeting of culture and technology that ‘enabled Afro American music to replace European art and folk music at the heart of western popular culture’ [2]. Alan Lomax, the sonic anthropologist and folk song collector, was working with the people of the rural southern states from the 1930’s onwards. He offers the following description of the culture he aimed to preserve on record:

‘Old African habits survived endowing every situation in a web of sociability, where banter, laughter, song and often synchronised movement involved everyone present. This rich outcaste culture continued to expand invisibly, passed on orally and along nonverbal channels as pervasive as blood and air’ [7]

Perhaps the best illustration of the physical nature of sound and music in this culture is the work song. Work songs were ubiquitous with the hard physical labour of the people singing them. They served to maintain focus, keep up spirits and co-ordinate and synchronise tasks being carried
out. When describing the work songs that emerged from the building of the railways in the
nineteenth century, Lomax speaks of ‘chants for tie toting, for dealing steel, for buckling, for
spiking down’ [7]. These were all coordinated by the ‘track caller’ who was a kind of DJ of this oral
world, directing the musical pace of the work as well as providing banter to keep spirits up. The
musician, Lead Belly (1888-1949), offers the following description of the work song:

A work song is when you sing, that give you a feeling that keep you
from getting tired. And when you get hungry, if you sing you forget
about getting hungry. And when you sing, you swing as you sing and
that what you call a work song [11].

Here is music and performance as work, as a source of energy, a source of nourishment, a
means of focus. Acoustic energy integrated into a larger web of energetic activity, and sonic form
as a part of this activity. A famous work song that has remained a part of modern musical culture
is that of John Henry, originally sung by American labourers building the railways through the
rural outbacks of the southern states. John Henry himself is also one of these men; a folk hero, a
mighty ‘steel driving man’ pounding steel spikes into the terrain through which the railway is
winding. He was the strongest, fastest, hardest working man on the ‘C and O’ line. And he sang
to the rhythm of his work:

‘John Henry said to his shaker
Shaker why don’t you sing
I’m swinging twelve pounds form my hips on down
Just listen to the cold steel ring

John Henry said to his shaker
Shaker why don’t you pray
Cause if I miss this little piece of steel
Tomorrow be your burying day’ [7]

The shaker was the unfortunate man holding the steel in place before the full force of the hammer
bore down on it. He was well advised to keep rhythm with the job at hand, articulated by the
ringing steel, a sound borne of the physical and material world. The reference to the sound of
‘cold steel ringing’ implies a causal mode of listening that refers the listener directly back to the
material and the physical act making the sound. It is causal listening that tells us whether an
object is hollow or solid, or wooden or metal, when we tap it. It is this mode of listening that may
tell us there is a bird in a tree nearby. Causal listening tells us it is time to move out of the way of
a twelve-pound hammer. Failure to adhere to the rhythm of the cold steel, according to John
Henry, will result in nothing less than death for the shaker.

But the modern world is taking shape around John Henry, and one day his captain announces
that he is going to use a steam drill ‘to whip that steel on down’, replacing man with machine,
human work song with industrial noise and mechanical rhythm.

John Henry told his captain
Lord a man isn’t nothing but a man
But before I’d let your steam drill beat me down
I’d die with a hammer in my hand [7]

If John Henry’s life (and death) was spent building a faster, more mechanised world with the
railway then it is interesting to note in this verse that he is opposed to replacing himself with the
mechanical steam drill. A competition is arranged that pitches John Henry's might against the
machine and the folk hero wins;

Now the man that invented the steam drill
He thought he was mighty fine
But John Henry drove fifteen feet
The steam drill only made nine [7]

But if there exists in the themes of John Henry a sentiment of holding on to a pre-mechanized world where physical work and song occupy a more powerful space than machine, then that world is already under threat by the very context of the song itself. As the railway, spurred on by the telegraph, wound its way through the mountains and vast open spaces of America, time and space shrank as the potential speed of life for the rural populous increased. ‘The engines equipped with musical whistles sang of escape routes to a wonderful free world somewhere else’ [7] and as people took a ride to this world they rode the chugging train rhythms that inspired a faster, more urban version of Afro American music that can be heard in the ‘boogie-woogie’ piano style and in the ‘honking, gasping, chugging railroad music’ of the harmonica [7]. Here, the physical work that is outsourced to machinery begins to allow the sonic form of the machine to enter the musical psyche.

**Written Sound Cultures and Modernity**

The origins of the written musical score are generally credited to Guido d’Arezzo (995-1050) who developed the system in the first half of the eleventh century ostensibly as an aid to help choirboys remember huge volumes of Gregorian chant. This development is often viewed as establishing a clear divide between the rationalised and organised music of the church and the ‘free ranging irrational basis of sociologically primitive music’ [12]. Chanan asserts that ‘at the route of this separation was the great fear on the part of the church of the free expression of the popular sensibility’ [12]. Moreover, establishing the written code allowed people, for the first time, to talk and conceive of music separately from performing or hearing it. The coding technology of the musical score made music possible as a conceptual art form, separate from its performance or its physical presence. Here is sonic form without vibrational substance, musical information without acoustic energy.

The system of musical notation, buoyed by technologies such as the printing press, remained central to Western Art Music until the twentieth century, when it came under attack from such modern tendencies as the Futurist movement. Filippo Tomasso Marinetti, considered to be the founder of the movement used parole in liberta (words-in-freedom), a kind of onomatopoeic form of poetry and performance, to describe his experiences at the siege of Adrianople (1912) in the Turko-Italian war. Here, he witnessed the first use of aeroplanes in modern warfare [6] and it was the ‘whirling propeller of an airplane that had “taught” him the destruction of syntax’ [6]. Marinetti considered his war poetry a kind of vibrational reportage from the battlefield that could ‘telegraphically transmit the analogical foundation of life with the same economical speed that a telegraph imposes’ [6]. From this quote we can see how he considered his poetry to be reporting the events of mechanical warfare, akin to the new technologies of electrical communication.

Luigi Russolo (1885-1947) quoted the ‘flick flack zing zing shaaack’ and ‘ZANG-TUMB-TUUUMB’ of Marinetti’s poetry in his Futurist manifesto *The Art Of Noises* that appeared in 1913. The thrust of the manifesto was that the traditional sound palette of the orchestra with its ‘mewling violins’ and other ‘anaemic sounds’ [9] was no longer up to the task of making music which was relevant to the modern industrialised world, and it was time to bring the whole sonic world of any sound and all noise into the musical arena:

> We will delight in distinguishing the eddying of water, of air or gas in metal pipes, the muttering of motors that breath with an indisputable animility, the throbbing of valves, the bustle of pistons, the shrieks of mechanical saws, the starting of trams on the tracks, the cracking of whips, the flapping of awnings, the din of rolling shop shutters, the varied hubbub of train stations, iron works, thread mills, printing presses, electrical plants, and subways… [9]

The realisation and orchestration of these sounds was by way of Russolo’s famed intonarumori (“noise-intoners”); large mechanical machines with, cranks, levers, stretched membranes, air
bellows, rattles and megaphone attachments among other devices [13]. Russolo scored various works for his machines with titles such as *Meeting of Cars and Airplanes and Awaking of Capitol* consisting of verbal and graphic instructions ‘foreshadowing the use of graphical scores by electronic music composers decades in the future’ [13]. Russolo’s graphical scores became a fixture of electronic music, particularly with John Cage, as the genre eroded the use of the traditional stave of music notation. This is equivalent to Marinetti’s poetry having had the syntax eroded by the mechanical propeller, such that he could compete in the electrical arena of the telegraph. In this sense The Futurists were demonstrating Marshall McLuhan’s claim that the ‘electric implosion’ prompted an end to the dominance of literacy in the west (the traditional musical stave, correct poetic syntax) and heralded a return of ‘oral and tribal ear culture’ [8].

Conclusion

This paper has shown a possible way that we may explore sonic culture by using the model of communication theory that establishes medium and message as distinct entities that enjoy a complex relationship. The sonic media of the oral, the written and the electro magnetic have been indentified, and the former two of these have been characterised by briefly considering cultural activities from a time prior to the implosion of electric media, when the impact of mechanisation and electrification can be identified. This, in turn, has helped to begin a characterisation of the electro magnetic medium. It has been suggested that a full investigation into the sonic implications of the electric implosion would be a useful study, but one beyond the scope of this paper.

References
