SoundEffects

An Interdisciplinary Journal of Sound and Sound Experience

Radiolab

– three different approaches

Foreword/abstract

The three papers in this 'suite' have a special background and context. At the 2010 conference SoundActs in Aarhus the three panellists were each given the task to provide a paper with an analysis of the same sound object, thus exhibiting and contrasting different scholarly approaches to sound studies. The object was selected by Torben Sangild, who was familiar with the chosen context: the signature of the US radio programme and podcast Radiolab. The two other participants did not know the context and chose to analyse the sound object without further contextual investigation.

This object was chosen for several reasons. First of all, it is brief (less than 17 seconds), which meant that it was possible to make a detailed analysis; at the same time, though, it is relatively complex, which means that it can accommodate three different analyses. It is a sound object with a global audience, taken from one of the most popular podcasts worldwide, accessible on the internet. Finally, it is a piece of functional sound design, rather than a work of art, which raises the question of context more clearly.

The result is three rather different approaches: 1) a process analysis, observing analytical listening strategies towards the constructed object, 2) a vocal analysis, regarding the sound object as a polyphony of voices, and 3) a contextual analysis, framing the sound object as a radio signature.

Ola Stockfelt analyses the sound object as something that is constructed via his own repeated listening process – as a scholarly-analytical analysis of the subjective act of creating meaning. He draws on presumptions and prejudices, demonstrating the impossibility of a purely structural listening. The analysis relates these hermeneutical reflections to formal musicological observations of harmony, timbre, space and rhythm in some detail.

Ansa Lønstrup's paper analyses the sound object as a polyphony of voices. Her analysis is inspired by two phenomenologists: Don Ihde, whose notion of 'voice' is understood in a more general sense as the voices of all things, and Lawrence Ferrara, who methodologically operates within tree levels of investigation: 1) the syntax, 2) the semantic and 3) the ontology level. Accordingly, this analysis is conducted, as if the sound object was performed by a vocal ensemble oscillating 'between a musical and a speech act'.

Torben Sangild's paper focuses on the concrete function of the sound object as a radio signature. This prompts a generic analysis and a semantic model of radio signatures in general, eclectically employing formal, indexical, gestural, discursive and contextual levels of meaning. The analysis of the Radiolab signature focuses on the overall gesture of tension and release as well as the semantic elements in a constellation with the content and style of the radio programme.

After the three individual contributions, a brief summary and conclusion will follow, answering any questions that may arise in the process.

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A sound …

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I received this sound in the format of an mp3 file. It was thus already an 'object', a thing that could be detached from different contexts as a separate entity, and a 'work', something that could be copied, transported, remediated, utilised and reutilised, possibly labelled, sold and bought, stored, protected. I knew very little about the origin of this sound. I was careful *not* to discover anything about it in terms of contextual information that could confirm or refute the hypotheses I would form while listening to the sound.

Listening to a sound as 'an object of research' is basically different from all other forms of listening, and the relevance of the results of that kind of listening can and should always be questioned. Are you actually listening to and describing the sound, or are you using the sound for example to provide cues for different themes of verbal discourse? The act of listening is always formed in relation to the purpose of listening (Stockfelt, 1988 [especially chapters one and seven], 1991, pp. 17ff.).

My first immediate impression of this particular sound was rather general and vague: A lot of things were happening very fast, and then it was over. The first consciously reflexive relation I got to the sound was thus formed not to the sounding sound, but to the memory of the sound, just after it stopped – I created a 'gestalt' in retrospect, trying to grasp what I had just heard, trying to relate it to various types of 'meaning' that I could apply in order to create some sort of order in my relation to the sound. This influenced all my further dealings with the sound – no matter how professional and/or technical I aspire to be in the process of listening. When I then listened more closely to the sound, again and again, I listened for confirmations, discrepancies and differentiations with regard to my first impression. I even discovered rather late in the process that my expectations, formed during the first listening, had led me to clearly perceive details in the sound that in fact could not be heard upon closer listening.

My first impression was that it sounded very much like 'radio', 'logo' and 'technical'. It sounded 'youngish' rather than 'young', and it sounded a bit 'slick'. It also sounded slightly 'pretentious' and actually rather 'conventional'.

All these qualities of sound are contextual. The intentionality of listening unavoidably contains a process of determining the relevance of a number of cultural contexts and of placing the sound within these contexts. That is a basic part of the process of forming a gestalt. Thus, this sound might indeed be what it appeared to be: a signature for a radio programme, probably, but not necessarily from an English-speaking country. It might be the introduction to a film in which a radio programme, or people connected to the environment at a radio station, would play a central part – the kind of sound montage common in the beginning of a film, often on a black screen, before or during the titles. Or it might be some kind of intertextual 'sound art' intended to sound, as if it was a signature for a radio programme

or the introduction to a film on radio. In this paper I will only discuss the sound 'as such' and 'as a radio sound'.

The sound 'as such'

Listening to the sound 'as such' is impossible per se. Sounds have no independent existence 'as such'. Sounds are mental concepts created by a subject (Stockfelt, 1994, pp. 19ff.). The act of listening does often have, but does not need to have, a relation to external auditory stimuli, to measurable acoustic events. My head is full of sounds, always – some of them have a relation to the acoustical processes in this room and some do not. When I listen to a sound with an obvious external source, I still can only hear it as subsumed into the mix of sounds within my head – of sound relations and expectations, past, present and potential. And focusing on listening to a sound 'as such', as 'a sound', and not as the sound *of* something, is merely to construct a very specialised form of meaning, not to abstain from creating meaning while hearing the sound as it is 'in itself'(Cf. how Heidegger touches upon, without following through, this discussion in Heidegger (1962 [1927], pp. 207ff.); his discussion is in effect not very different from Hanslick (1891, pp. 9ff.)).

The first part of the sound I immediately recognised as a voice, and voices kept being the prime focus of my attention during the first round of listening. I heard characters, I identified male and female voices with different types of affect, and I related these characters and affects to the potential situations proposed by my listening to the rest of the sounds. In short: I heard (a recording of) a group of people preparing to record and then doing the actual recording.

The first part consisted of a dialogue of a sound check and of a noise connected to electric machinery, possibly malfunctioning. The second part was a montage of several different voices with different affects, from different earlier recordings, pasted together to form a single verbal enunciation, and with a backdrop of computer-generated sounds and noise from the sphere of broadcasting. (At a later closer listening, though, this turned out to be at odds with the actual acoustic content.)

The non-vocal sounds contributed to my understanding, both by situating the voices in a technical environment of recording and/or broadcasting and a historical-cultural environment of sound montage, and by providing a temporal structure consistent with rather traditional conventions of narrative form. I heard coherence between the vocal sounds as focus for the gestalt, and the non-vocal sounds as a description of the context/situation.

The first time, I did not really listen to the actual words, and the second time I discovered that the words confirmed my first impression – but, of course, the semantic content did in some way influence the way I conceptualised the sound, including the first time I heard it. Every affordance is always also a constraint. Once

I recognise a sound as a verbal expression, it is impossible for me to un-hear the verbal qualities. Once I have recognised the verbal content of a sound, I cannot act as if the recognition never happened.

Some sound details, a very rough overview:
The first sound is a male voice. This is a prime category. The first time, I did not hear a sound, which I then identified as a voice and finally judged to be male; although I might have done so, had the sound been just slightly ambiguous. But it is not. It is a typical male voice. It says, 'Wait, wait, you're … hhh...' And a female voice which replies, 'K' (that is, 'key'; actually it is 'okay', although the initial 'o' is so weak that I did not hear it the first time around).

The male voice is close-up, without any discernible room acoustics. Normally, the shape of the acoustic room of a sound is the very first thing we tend to hear and conceptualise, although we are (I think) rarely aware of the fact. But this voice lacks ambience. It is close to us, almost intimate, without spatial dimensions and distances. Melodically, it stays on an A, with a slight tendency towards a B flat. Rhythmically it is as regular as you reasonably can be in such a short period of time: ♪♪♪

With the entrance of the female voice, a multidimensional room is created in which the male voice is put in place.

- The female voice is slightly to the right of the male voice. It thus creates a horizontal dimension in the acoustic room, placing the male voice to the left or possibly in the centre. Thus, the male voice no longer constitutes and encompasses the room, but is placed within a room. The female voice also appears to be slightly 'up', which might have to do with the actual placement in the acoustic room or with the difference in frequency (almost precisely one fourth 'up'). The experience of an 'up' shift articulates a vertical dimension in the acoustic room.
- It completes the rhythmical figure. The 'K' of the female voice is metrically close enough to articulate a start of a new 'measure', in 4/4 time, to confirm the potential rhythm presented by the male voice. It also creates a slight delay (this might seem paradoxical, but it is not), a slight fermata on the 'hhh', with the very soft 'o' as an upbeat to a new measure in the rhythm.
- It creates a social room with a dialogue, the male voice thus addressing not us, but the female counterpart in the same acoustical sphere, in the same social room.
- The 'K' of the female voice enters on a 'd' – thus articulating a tonal relationship between the 'notes' of the male voice and the 'note' of the female voice, which supports the long 'upbeat' character of both the female voice (D→T) and the whole introduction so far: DDDD→T.

This last point is further supported by the fact that the tone that the female speaker hits is immediately confirmed and enforced a couple of octaves down by the introduction of the first non-verbal and non-human sound: an electric drone in a rather low register.

This drone also conforms to, and confirms, both the spatial dimensions and the temporal orientation. It is placed 'down to the left', while the female voice is placed 'up to the right', thus keeping the initial male voice in the centre. And it strengthens the impression of a preamble: of something you might want to cut out from the acoustic documentation of a live recording of a performance, rather than a part of the thing you intend to record – like the tuning of the orchestra before a live broadcast.

The sound thus tells us that it is really *not* the sound we should listen to, but that the sound we should listen to – the real thing – will follow shortly. This is completely in accordance with the semantic content of the male voice. The female voice voices our acceptance of the waiting, which makes it our voice as well.

The electric D-drone swells to a rather dominant sound (around 02.76), then recedes a bit and finally (at 06.04) starts to grow towards a climax (at 06.80), where it abruptly stops. In form and shape it is not unlike the intro of The Beatles' 'I Feel Fine' – where an electric drone on A functions as a prolonged up-beat to the 'real' start of the tune with a medium-fast guitar figure starting in D major and, finally, landing the tune firmly in G major. At 02.64 a second male voice enters the composition. It is extremely close-up, even compared to the initial male voice. It thus stresses the presence of a depth dimension in the acoustic environment, in hindsight distancing the first male voice and expanding the acoustic room towards us. What we thought was really close, was in fact not that close. It might be the same male voice, speaking closer to the microphone, or it might be another male voice, placed closer to us in the acoustic room. It is also in a lower register – an interval of a fifth down from the first male voice. Frequency-wise it corresponds with the drone, thus further enforcing the tonal focus on D. It says something that sounds like 'kind'. It is at this point that the drone starts to swell, thus drawing attention hereto.

At 02.92 the female voice repeats the ''K' from 01.72. It sounds just like the first time, and it might very well be a copy of the same recording. This questions the context of 'liveness'– what appeared to be a live preamble to something might in fact be a montage. Maybe we are not really waiting to hear something; maybe we are already hearing it?

Meanwhile, the drone has receded a bit in volume, establishing a 'normality' of presence. It functions as a stable tonal base for the totality of the sound event. When the second male voice returns again at 05.24 with exactly the same rendition of 'kind', the pretence of a live broadcast weakens further, especially because the rhythmical structure is so regular. This now appears to be no preamble of a broadcast; this is a sound montage, possibly composed to give the impression of a live

broadcast, but it is quite 'musical' with a stable tonality in a very traditional sense. The pendulum movement between the female and male voices, in quite a strict 4/4 beat in about 96 bpm, functions as a countdown to whatever it is we are asked to wait for. Against this pulse, some of the realised sounds (and especially the 'resolution') are slightly delayed, thus forcing us to wait, which in turn might be seen as an enactment of the verbal content of the initial phrase.

It is also due to this pulse that we can experience the renewed 'swelling' of the drone base between 06.04 and 06.80 as a rather long crescendo-ritardando, not a break in the rhythm – an agogic cliffhanger reinforcement. The male cough at 05.76 also supports the enunciation of an 'upbeat': a gesture that is common to preparations just before the start. It contributes to the articulation of 'live', without negating the character of montage.

'The real thing' starts at 06.80 with three sudden simultaneous radical changes or events: (1) the sharp cut-off of the drone sound, at the climax of the crescendo-ritardando, (2) the entrance of a female voice, addressing the microphone at full voice – as opposed to the two subdued or ironical 'Ks' before, and (3) the appearance of a series of short synthesised electric piano sounds 'behind' the voices.

The range of these notes is from d to c$^\#$, within an octave with the C$^\#$ on top. (The notes of this kind in the octave below, clearly audible at close listening, were not prominent in the first round of listening – the clarity of these also depends very much on the playback equipment.) The notes are short, the phrases are short, and the c$^\#$ is always left unresolved on top as the endnote of a phrase, which is arguably the main reason why it sounds as if it was slightly non-tonal and chaotic, when in fact it is firmly rooted and supports the tonality already established by the voices and the base drone. If you write out the most prominent notes, it is obvious that the melodic and harmonic content closely corresponds with a D major tonality, dominated by dominant gestures on A$_7$ with the major third on top, landing three times on a firm tonal D (ending with a full cadenza: G A$_7$ D).

This, though, is definitely *not* what I heard the first time I listened. My ears are not that quick to react. I heard something that, at the same time, mixed and blended well with the overall sound profile and differed significantly from the rest of the sounds, primarily by the timbre, gestures and ambience. It was a bit too fast for me to be heard as consequently harmonic, and the top c$^\#$ stood out in a way that was obviously dissonant with the earlier drone. The gestures were somewhere in-between somebody just fussing about in the descant area of an electric keyboard and the kind of fast descant sounds that are sometimes used to infer the transfer of computer information, providing a somewhat 'technical' context.

The sudden presence of actual, articulated 'tones', note values with easily recognisable positions on a traditional musical scale, as opposed to the patently 'unmusical' speaking voices and the drone, contributed to making this section stand

out against the preceding sounds and to confirming the less obviously implied tonal basis of the preceding sounds. This confirmation of 'tonality' is also what makes relevant the apparent 'lack of tonality' in the melodic gestures (which would appear to be totally irrelevant in relation to a soundscape consisting exclusively of speaking voices and non-musical machinery).

These 'tones' also differ by adding an acoustic ambience, a room outside the virtual room constructed by the varying distances between speakers and microphones, and the panning of the voices within the mix. Either through the envelope profile of the individual sounds or by the global adding of a digital reverb to that part of the mix, the 'tones' create and enact a room with quite a lot of reverb and possibly some weak delays. The lack of strong delays renders it virtually impossible to determine the dimensions, apart from just that: it is rather large and indeterminate, possibly a simile of a cave or an empty hall with hard walls. This room spills over into the experience of the voices as well, although these do *not* sound within the same ambiance – the dimensions of the quite intimate room of the voices are contained within a larger room which is empty, indeterminate and possibly technical, with an ambiguous relation to tonal fundaments. Thus, this both moves the voices – and the memory of the preceding voices – relatively closer to the listener, and it creates a wider space for the up-coming presentation of voices – a space that can and will be used in the mix.

The voices in the part starting at 06.80 are, on the one hand, addressing 'us', as opposed to the voices in the 'preamble part' that address each other. The direct address brings these vocal sounds closer to us. On the other hand, they are even more obviously something that has been assembled from different recordings, not something that is happening in 'real-time' (as the preamble has led us to expect), which creates a distance between the sounds and us and implies 'a hidden speaker', who is using these voices to address us, who is acting 'between' these voices and us, but who is hidden and unheard.

The basic principle of this montage is pretty standard. Combining changing visual and verbal presentation of a single semantic and/or musical line is rather common in the sphere of i.e. television commercials, and seems to be especially popular for creating the effect of having many different individuals or groups expressing a single view, and/or being parts of a common greater whole, a strong differentiated community (cf. e.g. Gandini, 2003; Jackson, 1991; OWL, n.d.; Swedish Coop commercial, n.d.; Stockfelt, 1988, pp. 30ff.).

The voices (possibly the same as in the preamble) flow upon the pulse stated in the preamble, and the whole presentation fits nicely within two equal 'bars' on that pulse, but they do not in themselves confirm or conform to this pulse. They thus stand out as 'verbal', spoken, rather than musical or poetic. But the verbal flow as such is contained within the timeframe and temporal regularity constituted by the whole.

The first voice, a female voice, addresses us (at 06.80) and says, 'you're list ...' – and is cut off by a male voice (at 07.48) that repeats and completes the word 'listening'. If he is correcting her, filling in, because she has lost the thread, taking over the acoustic space or just echoing and confirming her views is indeterminate, and whether he is doing this 'live' or it is an effect created as part of a montage, so far remains impossible to determine. The ambivalent relationship between the two voices, the possible, but not confirmed struggle for dominance apparent already in the preamble, is sustained and kept unresolved.

The same female voice continues (at 07.88) the sentence with 'to Radiolab', and the word 'lab' (at 09.16) echoes, slightly weaker and further away – thus expanding the verbal room within the larger sphere created by the reverb of the 'synthesised tones' discussed earlier, subverting the image of direct address, although this is, of course, an effect that can be and often has been used in live situations. The male voice then repeats the word 'radio' (at 09.64) and thus creates a clear break with the verbal linearity of the sentence. The retrograde repetition of 'Radiolab' ('lab', 'radio') stresses these two words, this concept.

The female voice continues (at 09.96) with the word 'from'. After this there is a 'fermata' in the flow, filled by a mix of rather weak sounds, among which an unidentifiable female voice pronounces something unintelligible that sounds a bit like 'uili' (at 10.48), which stands out together with an isolated $c^\#$ from the flow of synthesiser sounds (at 10.60 – which possibly could be heard as the leading note to the tonic, enhancing the dominant character of waiting for something to come). This, thus, is a delay, priming us for what is to come by enhancing the tension. The verbal content also supports this gesture – stopping mid-sentence with the word 'from' is a rather traditional cliffhanger trick used to enhance the tension and expectation of what is to come (like 'the winner ... iiiiiisssss...').

At 11.04 the male voice starts to declare the name of the agency of the 'from', but just like the female voice was interrupted earlier by the male voice on the letter 's', this time the male voice is interrupted after stating, 'W, M, I, sss ...' by a female voice – placed in a markedly different place in the acoustic room and with a contrasting affective expression, pronouncing what sounds like the word 'six' (at 12.28). This is the same type of conflict as before, but with reversed polarities.

After the appearance of this perhaps second female voice (if it is the same woman, it is at least taken from a different recording and mixed into a different place in the acoustic room – so it is definitely a new 'voice'), a third female voice appears some distance away and up in the acoustic room, with a very clearly pronounced and mixed presentation of a verbal sound that I was completely unable to grasp (possibly the whole thing changed from English to French?). This expression is closely and dominantly surrounded by the 'tonal' synthesiser sounds, and it is, both in spa-

tial placing, timbre and affective gesture, clearly separated from the surrounding verbal discourse.

The final verbal phrase is delivered by the first female voice, who with a concluding verbal gestural intonation delivers the last acronymic message: 'Ench N P R'. Three sound bursts – gradually weaker and with lessening bandwidth – confirm that the sound is drawing to a close: a receding gesture, a composed fade out or gestalt of a 'band echo', a series of delays – not connected to the room acoustics, but placing it in the associative sphere of recording history, just like the 'echo' of the first female voice's pronunciation of the word 'lab' at 09.16.

Obviously, this rough description of the sound is just as much a description of the subjective performance of listening. Sounds are mental concepts, created through the act of listening, as I noted in the beginning of this paper. Even the mode of listening with a marked technical acoustic focus, listening for acoustic occurrences, is basically embedded in the process of subjective conceptualisation (Stockfelt, 1994, pp. 19ff.). I was patently unable to hear the sound 'as such' via some form of 'reduced listening', although technical listening enabled me to separate and denote the composite parts of different sound bites, thus unravelling the relations between what was technically present in the acoustic content and the hypotheses, interpretations and inter-discursive network connections I used the first time and all the following times I heard the sound, in order to unravel or create various levels of 'meaning' in my relation to the sound.

The 'radio noise' that I clearly perceived, when I listened to the sound as a whole, before going onto listening for details, turned out to be missing from the soundtrack upon very close listening. There are absolutely no AM or FM sounds, though there are indeed various forms of sonic 'chaos' in the places that are often filled with these sounds in 'traditional' radio-related sound montages. I heard them clearly, but they are not there. Did I add them in the act of listening, as a form of culturally-historically informed/tainted process of meaning production? Did the affordance of creating that kind of historical-cultural perceptual reference constrain me from hearing the sound 'as it is'? Of course it did. And this is really not a problem, but rather a crucial analytical point. This, in turn, led to hypotheses concerning the creator of the sound. Who would create a sound like this, for what purpose, and what does it have to do with me?

A radio sound

One very obvious possibility is that the sound was created to be aired, or cabled, on the radio. As a radio sound, as something encountered in a broadcast, it became a quite different sound – although in some respects akin to the sound as an acoustic object. In the context of radio this sound has to be heard as profiled against a flow

of radio programming. Since this programming is only implied, we have to listen for possible and probable frames of programming in the character of the sound itself. If I turned on the radio and heard this sound, I would first and foremost listen for orientation. I would wish to know, which station I was listening to, what kind of programme was on, and what was to come *after* this sound – whether I should keep listening or go on to find something more relevant to my situation.

Thus, the first part of the sound can be heard as the beginning of a live recording, 'real' or designed, a piece of radio theatre or possibly 'just' one of the 'spontaneous' parts of any number of morning or afternoon shows, although the too regular character of the composition renders this unlikely. In either case, we are given the opportunity to experience a specific room and a specific social setting – to *hear* these things, rather than hear the sounds 'themselves'. The room is a recording and/or broadcasting studio, populated by at least two people, a man and a woman. The focus is more on the broadcasting situation and the technicalities of broadcasting, than on whatever content is to be broadcasted. This, I suppose, is what will follow after the 'wait'.

What follows after the three radical changes at 06.80 is even more easily identified as a signature, an acoustic logo for the broadcast – the kind of characterising signature of a radio show that is supposed to be in line with the overall profile of the station and, possibly, the market identity of the company as a whole. Hence, the logo also positions me, as a listener. If it is in line with my preferences and basic values, I can be expected to want to keep listening. If not, I could either switch to another station or keep listening – but if I chose to keep listening, implicitly, I would be accepting that I would be listening as an outsider, as somebody who was kindly allowed a peek, and if I did not like what I heard that would be my problem.

If I chose to listen to the sound as a start-up address or commercial for a radio show, the characteristics of the sound as discussed above would comprise a statement, informing the listener of the intended characteristics of the show, as compared to other contemporary broadcast profiles. I would thus expect this show to contain 'professional' and 'experimental' uses of the radio medium, intended for a rather small, but actively interested group of listeners searching for identification in a more 'cultural' and 'conscious' identity than that of the 'passive' mainstream listener, not listening to the radio 'in the background', but with an 'active', exploring attitude, searching for the patently 'new' and 'unexpected', rather than for confirmation and a repetition of the main body of broadcasts and/or popular music. I would expect this to be a programme that focused on development of the very format of radio presentations, rather than using established formats for promoting traditionally profiled contents. And I would expect this to be contained within a rather traditional and 'safe' set-up – not really challenging, but providing the gestures of challenge, while at the same time keeping the risk of breakdown and failure

at a safe distance. The voices could come across as the voices of my own peers – I would be able to identify with the social sphere of the broadcast studio and imagine myself among them, having fun. Provided that by listening to this sound I chose to identify myself as such a listener. And in spite of this being guesswork, basically, no matter how well-informed I am, this would still have been (and was) what I heard 'first' (as Heidegger would have put it), rather than the sound 'as such'.

Explicitly asked to guess where this sound originated from, I considered it very possible that this is indeed the signature and acoustic profile of a show on a 'serious' public radio station, not a commercial radio show. This show would be 'young', modern and professional in a time of commercial dominance over technical standards and ethical values, and, at the same time, it is also meant to be artistic, creative, slightly but not too 'avant-garde', and with a fair, but not too large amount of 'cultural perspectives'. It wants to appear as if it is leading the way, rather than following the stream, in spite of the fact that the means to assert this are really dated, and it wants to appear to be youngish, slightly intellectual and exciting. It wants to appear to be highly competent, in control. Finally, it wants to have a suitable distance to its owns claims, laughing at itself a bit, showing off the type of handsome self-reflexivity that might be a justification for the kind of irony that prohibits critique and questioning of its own position. Judging from the kind of harmonic tension that is articulated, it might be British, but the accents of the voices and the name of the station imply that it is in fact American. In a commercial context, it might be the 'cultural' or 'modern edge' alibi that serves to profile the station against more blatantly populist stations.

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Ansa Lønstrup

Listening to voice and polyphony in Radiolab

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In what follows I will unfold and argue for a way to listen to this Radiolab sound artefact that focuses on the analysis of the construction of voices and polyphony. Polyphony as a concept originates in nineteenth-century musicology and is used as a characteristic of the musical renaissance (approximately 1400-1600). It is considered one of the most important compositional principles in the European musical style during that period, and it is characterised by several independent voices operating at the same time, each with a different melody and identity and without the fixed hierarchy which is thought to be characteristic of the opposite principle of musical homophony. The polyphonic compositional principle[1] is still used after the renaissance and can be found in neoclassic and contemporary music and sound art as well. What this principle indicates for listening is first and foremost an urge to listen both 'horizontally', following the individual lines of the different voices, and vertically, focusing on the sum or total auditory field of the voices.

Furthermore, I will include the concepts of linguistic polyphony, double voiced discourse and the dialogical voice and speech act, first introduced at the end of the 1920s by the Russian linguist Mikhail Bakhtin[2] and later developed in new linguistic and literary theory[3] and used for analysing the dialectics, polysemantics and diversities of language. This 'unfinalised' understanding of the speaking voice (and the author's voice) means that all utterances are semantically open to more than one interpretation and meaning, as there is always a dialogue going on inside the voice act, referring to other voices. This double polyphonic listening strategy has its parallel in Radiolab's oscillation between a speaking and a musicking[4] mode – between language and music articulation and communication – which will be demonstrated during my listening.

As it will appear from the analysis, there are several open elements and features in the speech acts of our analytical object; it is simply very difficult to define *what* is uttered, because of the ambiguous voice articulation of the uttered. After the analysis I will put into perspective the main principles in my use of Don Ihde's phenomenology based on his theory of voice and listening. Finally, I will conclude with some overall perspectives on our three different acts of listening and analyses and the possible negotiations of three different interpretations of the sound object in question.

Listening and voice

My listening methodology is based on a combination of two phenomenological inspirations: the philosopher Don Ihde and the musicologist Lawrence Ferrara. Don Ihde's book *Listening and Voice. Phenomenologies of Sound* was first published in 1976 and reedited in 2007. In this book Ihde does not deal with the sounding *human* voice primarily. More generally, he deals with our specific auditory attention towards

voice and with an understanding of listening and voice as entities: before the act of listening, there is always a 'voice', so to speak. In this way Ihde's concept of voice is not restricted to the human voice, but includes the voices of all things that give or produce sound in our listening activities.

> Listening to the voices of the World, listening to the "inner" sounds of the imaginative mode, spans a wide range of auditory phenomena. Yet all sounds are in a broad sense "voices" of things, of others, of the gods, and of myself. In this broad sense one may speak of the voices of significant sounds as the "voices of language." At least this broad sense may be suggestive in contrast to those philosophies and forms of thought that seek to reduce sounds to bare sounds or to mere acoustic tokens of an abstract listening that fails to hear the *otherness* revealed by voice. A phenomenology of sound moves in the opposite direction, toward full significance, toward a listening to the *voiced* character of the sounds of the World. (Ihde, 2007, p. 147)

Phenomenology as a tool for musical analysis

In his article, 'Phenomenology as a Tool for Musical Analysis', in *The Musical Quarterly* (1986) Lawrence Ferrara analyses 'Poeme Electronique', composed by Edgar Varese (1953). This work of 'musique concrete' is a montage of collected and recorded sounds: church bells, honking horns, electronic sounds, female and male voices, elevators, percussion instruments, airplanes, ticking and more.

Ferrara's methodological-analytical article is based on the phenomenology of Gadamer, on the scientist-philosopher Michael Polanyi, on Martin Heidegger and on the general phenomenological notion that the sound (and music) work is not an object that we as analysing subjects may scrutinise; on the contrary, music and sound work are subjects – a voice which questions the listening analyst and to which she may respond or act. In so doing, Ferrara starts out with a number of 'open listenings', and subsequently he performs his listening analysis through three levels or three strata, each level followed by 'reflections'. Specifically, his third level is inspired by Heidegger and his phenomenology of existence in time and history as developed in *Sein und Zeit* (Heidegger, 1962). The three levels of his analysing investigation are:

1. The syntax level: the sound material, components or the sound grammar and syntax.
2. The semantic level, which is concerned with signification, references and sources of the sound – that is, the sound of things.
3. The ontology level: following Heidegger on onto-historical existence, historicity of sound, and how it might bear witness to human *being* in time and space.

These three levels will structure my listening to Radiolab in the following. Still, there might be some overlap and intertwining between the three strata.

Listening to Radiolab

The syntax level

I recommend the reader to consult both the Radiolab sound file and the attached and graphical 'score' or registrant while reading the following. The indication of time in the registrant is not an exact representation or registration, as I have worked it out by ear and without any technological programme at my disposal. But since its purpose here first and foremost is to illustrate the principles of polyphonic material and texture and the montage of the construction, I find it helpful to look at while reading the following account and review of the sound material and its components – its so-called syntax.

We hear a number of human voices: two male solo voices, one female solo voice and a 'choir' of sopranos, maybe two or more. Furthermore, there are some 'instrumental' voices: one drone, two fill voices and a radio noise voice. In the registrant I have listed a total of eight voices. This is, of course, my listening construction of components, since – by very close listening – you may hear more sound features and material, for example a weak 'tick tack' and other (noisy) sounds, especially at the end of the piece. As it is shown in the registrant, the voices are distributed and hardly ever coincide or mingle – that goes primarily for the human voices, though. The drone, the fills and other sounds are partly simultaneous and combined in a montage with the human voice group. The main instrumental voice – the drone or D-keynote – could be heard as a kind of steady pedal point to the human voices or simply as a (tonic) centre and thus a musical-aesthetical framing of the sound composition.

The semantic level

On this level we hear a lot of different voices – this is a poly-voiced and polyphonic sound artefact. The texture is rather open and dialogic, which is heard in the many question-answer or call-response constructions, in the speech intonation and in the shift from one voice to another. One might draw imaginary lines between the voices which communicate. These are certainly recorded voices assembled in a montage of voices. A few times there are short voice overlaps, but overall we hear an open and transparent texture. The enunciation is prioritised; it concerns *how* and, to a lesser extent, *what* the voices articulate. Much of the speech act is strongly reduced, since the pronunciation is shortened to a minimum of sound, very much like an everyday spoken language at a rather high speed in an oral, casual and minimal articulation – what Roman Jacobson calls the 'phatic' function or stratum of

language which serves 'contact' and 'interaction': a kind of 'the channel is open' chat function (Jacobson, 1960).

The very first articulation is a meta-comment on tempo: 'hey wait' – which in the high-speed articulation is reduced to [ei-wai]. Also the ping pong and call-response between voices are in a fairly high tempo, and there are a lot of repetitions, some echo effects too which, aesthetically, reinforce the experience of listening to a dialogue. All kinds of human voice articulations are represented: exclamation, laughter, coughing, speech defects – for instance, the word 'and' is pronounced [andge] before the last 'NPR' – stutter and paralysis of the tongue of a female voice on [rl] before 'WNY-C', this acronym being thoroughly articulated as if outspoken with capital letters: W N Y – C.

The different voices are placed in different parts of the auditory field. Close to the centre we hear the two prime voices, mezzo and baritone, and slightly off (left/right, above/below, back/front) of the centre we hear the bass, and on the fringe of the auditory field space the treble soprano girls. The non-human instrumental voices are generally placed to the far left or far right of the centre and with a stereo effect. Listening, I use a lot of energy trying to identify and differentiate the voices from each other by their timbre, voice type, gender, articulation, rhythm and diction, their character (role) and position in the auditory field.

The second articulation, 'You're listening', is a meta-comment on my act of listening, but (still) it does not address me as a listener; instead, it rather tentatively constructs the first voice as an enunciator. Later on the words 'you are listening' is repeated by the most professional voice, the mezzo, and subsequently the baritone and the bass repeat her words. So, this time we could say that this 'You are listening' is a marked utterance, pointing at and addressing me as a listening listener.

Also between voices a dialogue takes place, between for instance the mezzo's 'OK?' [kei] and the basso's 'all right' [aw rai], which is repeated twice. Simultaneously with their dialogue, the first non-human voice is activated: a drone (D-Tonic), which is continuous and crescending (including a very small decrescendo) until the beginning of the mezzo's 'You're listening to Radiolab', where the drone stops. Soon after it returns at a much weaker level and from then onwards it functions as a pulsating D-tonal centre (keynote) for the rest of the piece. In the last part the girlish soprano voices articulate the letter 'C' (in WNY-C) together with the baritone, and subsequently the mezzo repeats the 'C', but at this time articulated as if it means 'You see?' or maybe the Spanish confirmation 'Si?', indicated by the way she intonates the letter/word. The response to this question comes from the baritone: 'Yeah' – not 'yes', but a groovy, musical 'yeah'. The last language articulation 'and NPR' is strangely articulated [andge NPR] by the mezzo: a kind of controlled, playful creativity, the speech sound uttered by the most professional of the voices, though.

In the second half of the sound course and alongside the voices there are some musical fragments or 'fills' in the form of two instrumental voices. They are set off by the crescending drone and articulated in a left-right call-response construction with an ornate or scrolled texture, to and fro. In the end, and together with the very weak tonal 'D', they constitute the cadenza after the mezzo's last speech articulation. The cadenza just disappears into the horizon and finishes lightly, followed by an airy, radio wave-like, non-periodic sound.

Altogether, this sound artefact seems to almost condensate time into space with the extreme phonetic reductions and high-speed articulations. Furthermore, within the shortest possible time it establishes an auditory field – a sound set-up – with a clear visual imaginative effect too. Listening to it, I imagine both a space and a place – a radio sound studio – where different voices perform in a dialogic action and interplay, moving in and out of my listening focus; each voice is placed in different parts of the studio, and they seem as if mixed and put together ('conducted'), presumably by one of the interacting voices. On the other hand, the non-human voices and the overt edited and mixed character reveal that this is not a live studio session, but a montage of voices, composed on polyphonic principles which, in this case, are close to a 'democratic' staging and dramatising of different articulating voices. Every voice is heard; everyone 'gets a voice', no matter how professionally or aesthetically smooth they perform, and I might, as listener and a potential active voice, easily join them. Some voices are professional, some are shaky, staggering and coughing amateurs to begin with and, after a short 'warm up' end up as clear voices, while the professional voice begins to play with her voice and its (linguistically) polyphonic signification production: 'C' = see?/si?

I experience Radiolab and its double polyphonic performance as aesthetically oscillating between a musical and a speech act. According to my listening intentionality and when changing or combining focuses, it is possible to listen in both ways.

The ontology level

If we were to find and listen to this polyphonic sound montage in a remote future – say in 2110 – I suggest that in this short sound piece we might hear articulated how, for human voice sound production in the time around 2010, there were some general media and mediatised conditions in which time and tempo were compressed and under pressure, demanding that sounding voices could take up the competition from a huge polyphonic context: music, sound, media sound, noise, many other voices articulated almost at the exact same time. This mediated oral culture around 2010 was still performed by human voices articulating some kind of dialogue, but in a digital, musicking, aesthetic and compressed format – produced and listened to through digital media technology. We might also find that in the years around 2000

the old question, 'who says, signifies or means what?' which was so important in the age of the Enlightenment (1650-1850) and its aftermath, up to the millennial change, in 2010 seemed to be replaced by the questions: 'Is anybody listening?' 'Will anyone listen?' 'How do we listen?' 'What happens when we are listening and when we are not?' 'What is communication?'

In a way, this example of an intended aesthetic 'listening radio' tried its best in establishing a staged, sensuous and appealing act of listening, and maybe it started a new third period or renaissance of a listening voice media culture, in fact, demonstrated by a public broadcast radio programme and podcast radio like Radiolab. However, if a voice, who was not familiar with this 'listening radio' and this media, wanted to be listened to, it had to refine and compose its voice act by performing in a way which enabled it to appeal to and address the listener in a way that would make the listener continue to listen under those historical conditions: high-speed tempo, musical and aesthetic language reductions and a world of continuous and lively polyphonic sound production. In the words of Don Ihde, 'The auditory field, continuous and full, penetrating in its presence, is also *lively*. Sounds "move" in the rhythms of auditory presence [...]. The fullness of auditory presence is one of an "animated" liveliness' (Ihde, p. 82).

In his analysis of *Poeme Electronique* (1953), Lawrence Ferrara concludes:

> A listener hearing this work five hundred years from now might intuit a sense of our ontological existence that no history text could similarly articulate. Through the knowledge and sensitivity of the composer, our onto-historical existence is grounded in the work and may be "preserved" by the listener of the future. (Ferrara, p. 372)

On the subject of the 'knowledge and sensitivity of the composer' that he finds in his listening to *Poeme Electronique* (1953) he concludes:

> In this piece, the sounds of technology penetrate, permeate, and surround all other sounds. Human existence, presented by the men's voices and the woman soloist, is marked in this work by disorientation, alienation, and fear. The concept of "time" ticking away or a heartbeat stopping underscores the importance of temporality in human *being*. [...] Technology does surround most people, time marks our existence. (Ferrara, p. 370)

Likewise, and inspired by Ferrara, I have tried in my contribution to this suite of articles to understand not the nature of the knowledge and sensitivity of the composer of the Radiolab signature, but rather the nature of the compositional effects it engages and the way it addresses me as a potential and interactive listener. At that level, I also heard some inter-textural, though not necessarily intentional references to Edgar Varese's composition *Poeme Electronique*. In any case, it is interesting to re-listen to both of them (the work of art and the artefact) and compare how

different being and existence may sound in the historical time of the early 1950s and the present time, the 2010s, and still more importantly, how the historical and cultural separation and difference between producing (composing) voices and listening to voices since 1953 has been under hasty dissolution, resulting in today's interactive and mediated listening vocal sound practice.

Meanwhile – from the point of view of the year 2012 – I suggest that the questions, which the Radiolab signature called forth in my listening – 'Is anybody listening?' 'Will anyone listen?' 'How do we listen?' 'What happens when we are listening and when we are not?' 'What is communication?' – should continuously be subjected to scholarly scrutiny in theory, in listening methodology, and in analytical practice.

Perspectives of Don Ihde's listening methodology

Ihde's methodology is primarily based on Edmund Husserl and Martin Heidegger. The central concepts are the notions of 'epoché', 'phenomenological reductions', 'bracketing' or the reticence and modesty with which the so-called 'natural' attitude to the world should be met. Ihde understands those phenomenological methods as a way of gradually approximating a certain stratum of experience, 'a beginning which, through both the deconstruction of taken-for-granted beliefs and the reconstruction of a new language and perspective, becomes a prototype for a *science of experience*' (Ihde, 2007, p. 18).

If we want to practice listening phenomenology we have to deal with the problem of theoretical and philosophical language, which is generally dominated by visual metaphors. The question of finding a new language for our auditory experience is to Ihde first and foremost a question of avoiding visual metaphors, and here he draws on Martin Heidegger:

> This Heideggerian expansion from musical phenomena is one which in turn points back to that methodology. In the Heideggerian model, with its concepts of "call", "silence" and the "voice (of conscience)" the fundamental thing that occurs is a thinking with roots in auditory metaphor. And to follow the implications and pathways from that metaphor as a shift from the traditional visual metaphors of our philosophies may open a new direction for Western Thought. (ibid., p. 223)

To expand the act of listening beyond listening to a 'thing', as 'the-thing-in-itself' never occurs alone, Ihde establishes the ground for his listening phenomenology with the concept of the 'auditory field' where the thing never occurs alone, but within a field or situated context. Inside that field he talks about the distance that emerges in the auditory field between the 'centre' and the 'horizon' of experiences and things. This is comparable with Husserl's notion of 'intentionality' as the centre of attention and experience. According to Ihde, our experience is always

polyphonic: when we listen to an outer voice, there is also already an inner voice (of ourselves) as well as other sensory experiences (auditory, visual, tactile and more). The listening experience is multi-sensuous, multimodal and polyphonic. According to Husserl, the centre of attention and of our experience is intentionality – our choice of focus, or that essence of experience we are directed towards, 'aimed at' (ibid., p. 18). To Heidegger and Ihde, the 'horizon' (or border) of sound is silence, and the concentrated attention direction of listening is a 'Gesture toward *silence*'. Thus, gesturing towards silence enhances listening (ibid., p. 222).

Finally, I will mention Ihde's characterisation of the general 'field shape of sound' as being both 'directional' and 'surrounding': we hear (and maybe follow) the direction of sound and its source, and at the same time we are surrounded by the sound. 'The auditory field, continuous and full, penetrating in its presence, is also *lively*. Sounds "move" in the rhythms of auditory presence. [...] The fullness of auditory presence is one of an "animated" liveliness' (ibid., p. 82).

Summing up, phenomenology deals with our sensory experience of how phenomena and things appear to us – but to sense this, we need to make an 'epoché' or a withdrawal from the so-called natural attitude to experiencing and listening to things. We need to take a step back and study our 'intentionality', the centre of attention in our experience, our choice of focus, the essence of experience we are directed towards and 'aimed at'. Practicing a phenomenology of sound under the heading of listening and voice, it is possible to study the 'in and out of focus' in our listening to the voices of the world and to the polyphonic experience of voiced sounds. And since there is no universal, objective or privileged position from where to listen, the act of listening will always be a composition of choices of attention. When analysing, writing and talking about sound experiences we face a huge challenge in establishing a discourse that is not dominated by visual metaphors, but in accordance with the listening, polyphonic, dialogic and auditory character of that very experience.

Negotiating different listenings – concluding remarks

There is always a primary form of listening that precedes our own speech: I hear the voices of others, of things, of the world and of my own inner voices, long before I speak my own words. This becomes obvious when I reread and compare Ola Stockfelt's first version of his listening analysis with his final version, printed in this suite of articles, as his interpretations have come closer to my own listening in the course of the writing process, just as I have in turn been inspired by some of Torben Sangild's points. This is indeed interesting for the purpose and perspective of a listening methodology, since it points out that different understandings, based on different individual acts of listening to a complex voice act like Radiolab,

are not explained by the 'subjectivity' of the individual listeners, but rather by the polyphony and dialogism of listening as process – and of the sound artefact itself.

The point is that precisely by taking serious each act of listening and the reflective discourse surrounding each listening, we practice a specific way of approaching the sounding world and sound worlds, and perhaps more importantly: we practice a way of getting closer to the sound worlds of each other. This is done via the acceptance and study of dialogism, polyphony and poly-semiotic signification in sound and listening processes. We could call that 'musicking' too.
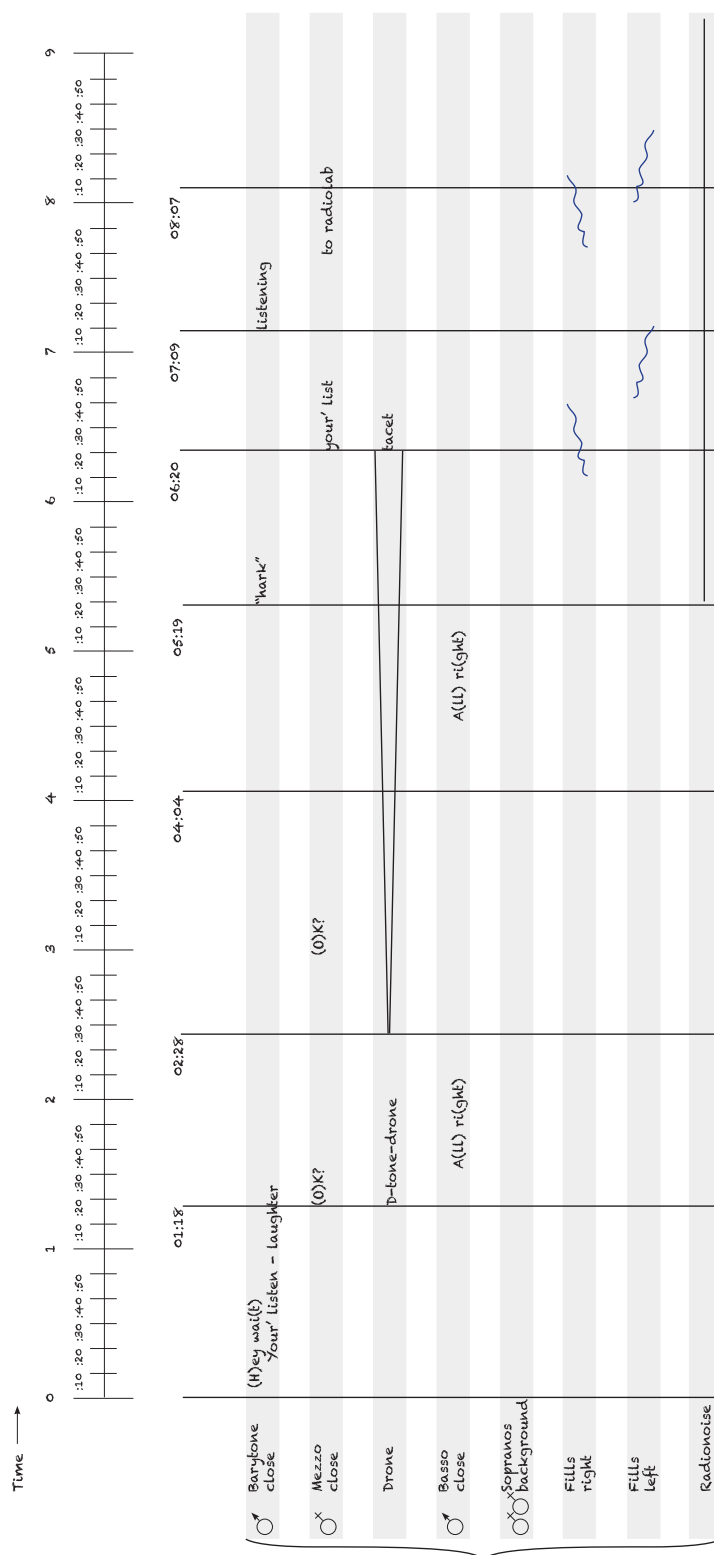
Notes

1. Palestrina's *Sicut Cervus* (1584) is an excellent example.
2. See Mikhail Bakhtin *Problems of Dostoevsky's Poetics* (1984) and *Speech Genres and other Late Essays* (1986).
3. See Therkelsen, R., Møller Andersen, N., & Nølke, H. (2007). *Linguistic Polyphony: Texts on Bakhtin & la ScaPoLine.* Aarhus: Aarhus University Press.
4. This neologism and concept was launched by Christopher Small in *Musicking: the Meanings of Performing and Listening* (1998). By launching this concept Small argues that music is not a thing, but rather an activity. In his theory of *musicking* he invents a verb that covers all musical activities from composing to performing to listening to singing in the shower and, I might add, voice acting.
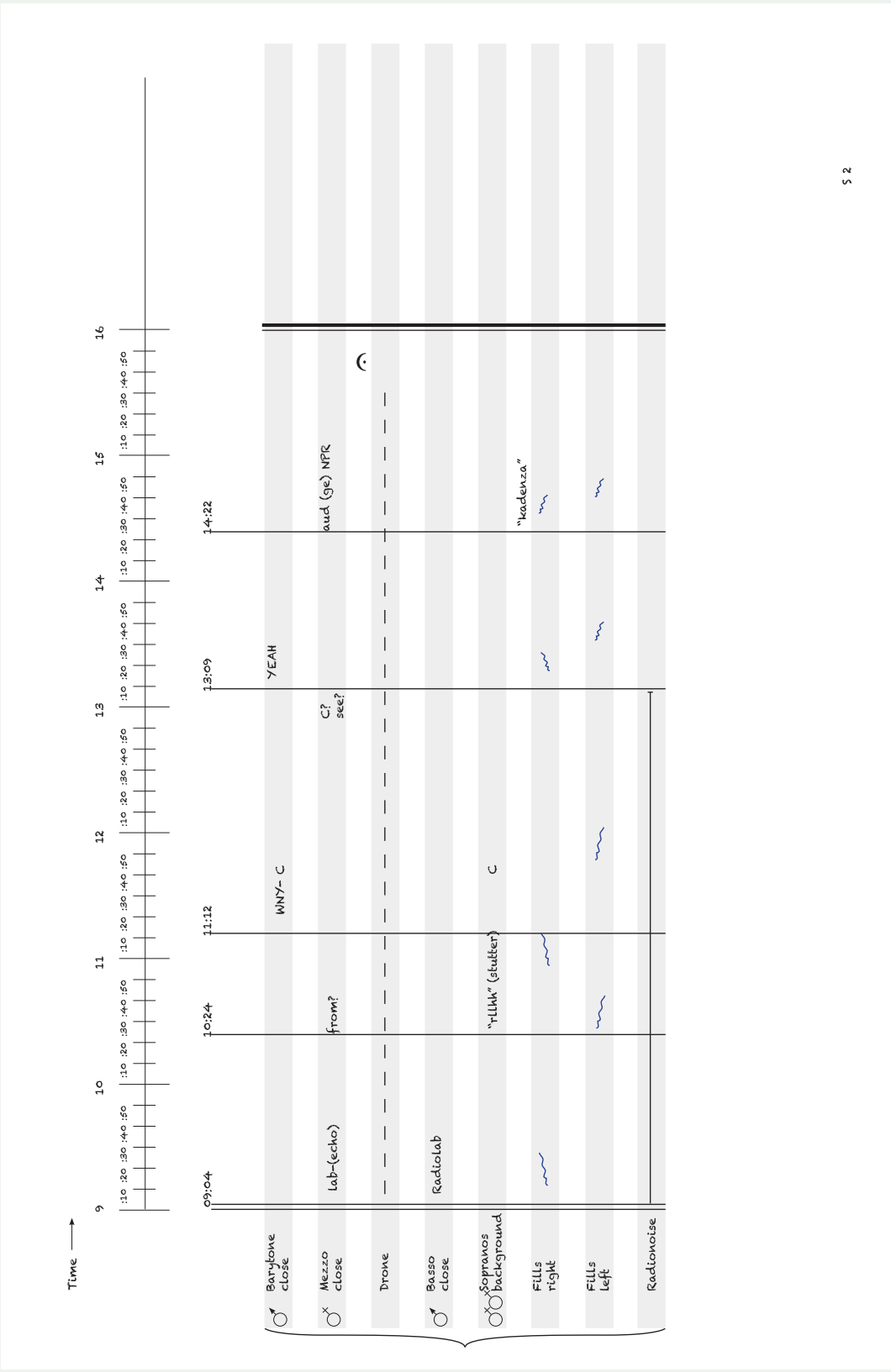
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The *Radiolab* signature. Accessed on: www.radiolab.org

Radiolab Graf Score

Torben Sangild

Radio signature analysis
– Radiolab

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'Hey wait, you're listen ... okay ... all right ... okay ... all right ... you're listening to Radiolab. From WNYC and NPR'. This sequence of words will be familiar to all listeners of the Radiolab podcast. It is the current intro signature of the programme, and even though the words themselves have an informative meaning, the sonic composition of this playful montage is arguably expressive of much more than what you, the listener, are listening to and the identification of the institutions behind. We hear many different voices as well as electronic tones and noises, we hear giggles and a clearing of a throat, we hear distortions and echoes, we hear rhythms and harmonies, and we perceive gestural movement of hesitation followed by a burst and an atmosphere of expectation followed by playfulness.

Radio signatures are a significant part the global sonic language of radio. Nevertheless, the field of signatures has been overlooked in academic contexts. It is not only minor, it is hitherto almost nonexistent.[1] Understanding the sonic mechanisms of radio involves a more systematic awareness of sound design. As a ubiquitous and integral part of radio aesthetics signatures thus deserve scholarly attention from both sound studies and radio studies.

In this paper I will briefly analyse the seventeen seconds of the Radiolab signature and draw some preliminary sketches to a general radio signature research approach. First, the paper presents a number of terminological, functional and typological considerations, before it proceeds with the analysis and, subsequently, a semantic model of the levels of expression and meaning in radio signatures.

Terminology

'Radio signature' will be used as a general term for 'the musical number or sound effect which regularly identifies a program'.[2] Radio signatures are sound bites attached to a recurring radio programme. The terms 'jingle', 'signature tune' (or 'sigtunes' or simply 'sig'), 'theme music' (or 'theme') and 'ident' have related and not clearly defined meanings in the terminology of radio production. The English terminology seems to vary according to region and type of broadcast.[3] In more systematic use of 'jingle' is reserved for commercials; 'theme music' is synonymous with 'signature tune', but it is primarily used for television series; and 'ident' or 'Station ID' is the tune or sound bite which relates to a radio station, rather than a programme.[4]

The word 'signature' is, of course, broader than 'signature tune', in that it can be a sound collage or a non-tonal sound bite. The signature is often identified with the intro, announcing the beginning of a programme. However, one should also include breakers (or 'bumpers') and outros, which are included in many programmes, and which are often variants of the intro. Breakers appear during the programme, affording a brief pause and sometimes announcing a particular section of the pro-

gramme. The outro, of course, marks the end of the programme. Together they create a sonic frame.

What radio signatures do

Radio signatures have several functions and roles. The most obvious and practical is that of announcing that a new programme is about to begin and which one. Additional information about the production company, the host(s), the guest(s) etc. can also be provided. This is the practical function, as a framing of or paratext to the programme.[5] Just as important is the role of a recognisable logo, a sonic identity. Like a visual logo, a sonic signature is immediately recognisable, even for the listeners who are not fully conscious of its existence. And third, the signature has an aesthetic role: It conveys an atmosphere; it expresses something through musical and sonic means. In constellation with the programme, the signature accentuates certain features of style and content. This third aspect will be the main focus of an auditory, semantic analysis.

There are generic differences between the signatures of news programmes, pop music programmes, personal interviews, children's programmes and programmes about philosophy, science or political debates. For instance, a typical contemporary news intro signature is brief and powerful, a fanfare ending on the highest note. It will often include brief, punctual notes, connoting Morse signals. Normally, the signature of a philosophy programme is slower, more mellow and meditative. Whereas news signatures fit a very narrow pattern, the scope of individual variations is large in other types of programmes.

Towards an anatomy of radio signatures

The following brief anatomy and typology of signatures is based on my current research in public radio signatures,[6] which differ from commercial radio. Programme signatures are more prominent and distinct in public radio, where content-related programmes with distinct features are normal, as opposed to the flow character of most commercial radio, where Station IDs are more frequent.

This section describes different variants of mainstream signatures. There are, of course, curious and interesting exceptions to them all, but for now it is important to formulate the norm which these deviate from.

The material is often a melody, which can be more or less 'singable'. A melody which is highly singable is not always an advantage in this context, since it will often be less durable than a more vague or complex melody. A few signatures have no tones at all; they are sound bites or concrete sound montages. At the other end of

the spectrum, a few signatures are actual songs, often rudimentary pop songs with prominent vocals.

Speech is often embedded into intro signatures, announcing the title of the programme, providing a catch phrase and/or addressing the listener. They are, however, just as often without speech; either as purely nonverbal sounds, or they are designed for the live voice of the host to enter in a break and/or as the signature music fades into the background. The part where the intro fades and forms a background for the voice of the host is called the 'bed'. A bed can be quite long, if the host gives a long introduction of the content of the programme. A bed is either made by a long intro signature or by looping a section of it. After the host announcement, the intro either increases in volume towards a distinct close or fades out.

There are two common types of breakers, which I will name 'pause breakers' and 'section breakers'. The pause breaker gives both the participants and the listeners a short pause without verbal information. It can also be used for more practical manoeuvres, such as letting guests in and out of the studio. The role of the section breaker is similar to that of the intro, announcing a recurring section of the programme.

The outro often begins as a bed, while the host concludes the programme, and it is faded up towards the end. Like the breakers, it is usually a variant of the intro. Some programmes only have an intro signature, no breakers or outro.

Radiolab: the programme

Radiolab is one of the most popular and critically acclaimed podcasts in the world. It is also a US broadcast radio programme, produced by the public radio station WNYC in New York and broadcasted to more than 300 US public radio stations. It is a popular science programme with a certain focus on biology and neurology.

The two hosts, Robert Krulwich and Jad Abumrad, interview leading scientists in an informal tone and subsequently talk in vivid dialogues about the content.[7] They never sound as if they are reading from a manuscript; the tone is improvised and strictly oral. The approach seems to be driven by curiosity. The scientists are interviewed in similarly informal ways, which encourages them to explain their research as a process and to give popular perspectives on their insights.

The most distinctive feature of the programme is the thorough and playful sound editing. Sound effects are added to illustrate the often abstract processes. Interview and studio comments are interweaved in intricate ways, in the tradition of the radio montages of Glenn Gould.[8]

The Radiolab signature

The signature analysed in the three contributions to this suite of articles is the intro of the podcast version of the episode 'Words' from August 2010 (season 8, episode 2). This is a variation of the original signature from the first season.[9] It usually enters after a brief standard statement. In this case, host Jad Abumrad points to the website and says 'thanks for listening'.

Radiolab only features an intro signature, no recurring breakers or outro. However, each regular programme ends with the participants (often researches) reading the Radiolab credits through the phone, probably to an answering machine. Even though it has some of the features of an outro signature, this is rather a recurring ritual, unique from programme to programme.[10]

In reference to the typology above, Radiolab is a 'homemade' signature, probably created by host Jad Abumrad, who is also a composer.[11] Even though it contains certain tones, these do not form a singable melody. It is a sound montage with harmonic effects, rather than an actual tune. The rhythmic and tonal composition of the voice samples, however, point in the direction of singing or recitation. The signature has no 'bed'; it is a closed sound entity.

The signature is 16.5 seconds long. It can be divided into two distinctive parts: the prelude (0-6.5") and an announcement (6.5"-16.6"). Figure 1 gives a graphic overview of the course of the signature and its elements.[12]

Prelude: expectation

The prelude has the role of tension, expectation and failed announcement. At 6.5" the tension built up by a slightly buzzing drone (the tone D with the significant presence of the overtone A) explodes into the scattered, glitch-like sounds that accompany the announcement. The drone does not grow in a single crescendo, but has a decrescendo at 4", after which it grows stronger than the first time, accumulating at 6.5" with an abrupt transformation into the announcement. It has the gestural movement of a hesitant, swelling ingression, followed by a more confident one. The atmosphere is one of increasing expectation and slight tension.

The most prominent elements in the prelude are, of course, the voices. The initial 'hey wait, you're listen [giggle]' appears to be a failed announcement, interrupted by laughter, just as so many outtakes.[13] It disappears and gives way to two other voices: a female 'OK' and a male 'all right'. The female voice has the optimistic tone of encouragement, whereas the male voice is more mumbling, expressive of a reluctant, lazy or tired acceptance. Both could be snippets from recordings immediately before an interview starts and, thus, answers to the question 'are you ready?' Something is about to begin.

The repeated voice samples form a regular rhythm and are harmonically related to the drone – the female voice with the keynote (D) and the male voice with the fifth (A). The rhythmic repetition creates a rudimentary beat, in relation to which the ensuing clearing of a throat has the role of an upbeat. Thus, even though the voices are sampled outtakes from different occasions they are structured in a way which makes them semi-musical, almost as if they are singing in a call-and-response manner. Yet they are awaiting something.

Announcement

The expecting gesture of the prelude ends in a sonic 'explosion' or release, where the continuous drone is scattered into a myriad of popping tones and grainy noise. The hesitation of the prelude voices is followed by the words of a traditional programme announcement, 'You're listening to Radiolab – from WNYC and NPR'.

This type of title/station announcement in public radio and podcast is traditionally pronounced by one clear, recorded voice with no noticeable distortions. It thus tends to be a more formal voice than the live speech of the host(s) and has a certain neutral authority. In the Radiolab signature, however, we hear about fifteen different voices, each pronouncing their bit of the announcement, some of them heavily distorted, some of them overlapping. The authoritative voice is replaced by a plurality of voices, while the formality of the announcement is replaced by playful, sonic experiment.

I will not make a close analysis of all the voice samples, since Ola Stockfelt and Ansa Lønstrup have already done so, but simply mention the most prominent features: The voices are cut up and some of them distorted. Each voice fragment gives a brief sense of a person with a gender, a body, an accent and a certain mood. The nonverbal vocal sounds (laughter, clearing of a throat, gibberish) are significant, not only of bodilyness, but also of the side effects of verbal communication and of an informal and comic tone.

The most prominent nonverbal sound is the myriad of tones, a rudimentary 'cloud' of widespread, popping sound particles. The particles are irregular and unpredictable in both rhythm and individual tone, even though they form harmonic patterns. They are stylistically reminiscent of glitch electronica, which uses skips and defect CDs to create a stuttering or fragmented gesture (Sangild, 2004). The characteristic clicks of the struggling CD player can be heard a few times (especially at about 13"). Thus, the tones signify not only the virtual materiality of scattered particles, but point discreetly towards digital technology.

Apart from the glitch tones there is a crackling noise closer to that of a vinyl record (7-13"), and at 15-16" we get the sound of granular synthesis with a gesture of collapse. In the background one can just make out the sound of a ticking mechani-

cal clock (9-11"). Remarkably for a programme called Radiolab none of these noises are related to the medium of radio. The obvious sound that one would expect would be the white noise of an FM Radio.

Further analytical remarks

The Radiolab signature has the structure of expectation and hesitation followed by a wave of energetic bursts, which calm down towards the end. It is expressive of plurality, dialogue, technology, playful montage, musicality and informal speech. These are indeed all significant parts of the style and tone of the programme.

However, the content of Radiolab is not revealed by the signature, which is quite unusual for a sound montage signature. There are no direct indications of science, nature, the universe or research. Indirectly, and with the benefit of knowing the context, one might however argue that the expression of technology and playfulness point in that direction. The 'lab' in the word Radiolab certainly seems to have its place. In the same vein, the swarm of glitch tones could be conceived of as a sonic parallel to the complexity of the physical and biological world. These observations are, however, contextual and can only be derived from prior knowledge of the programme. Rather, the point seems to be that science is indeed about creativity and play.

The 'radio' of Radiolab is not present in the form of broadcast noise or any other sounds related to the broadcast medium of airborne radio. There are no sounds of FM technology, only of CDs, vinyl records and a ticking clock. The signature focuses on the digital world and on music, which could point in the direction of the podcast which is accessible for a global audience and has made the programme well-known outside of USA. The concept of 'radio' is undergoing a transformation altogether with digital radio and web streaming, perhaps leaving the sound of FM broadcast noise obsolete and marginal in a few years' time.

Rather than point at broadcast technology, the Radiolab signature points at radio production; of creating a montage of sounds and voices. The focus is on radio as playful editing and as dialogue. The title 'Radiolab' also points towards radio as experiment, as a sonic laboratory.

The course of the signature from prelude to announcement develops from an off-air feeling with its distracted energy, as if preparing for an interview, to the high adrenaline and energetic focus of the actual start of an interview, calming moderately down as the conversation is running.

This brief analysis of the Radiolab signature focuses on the overall gesture and the most significant sound events from the generic perspective of the radio signature. Detailed analyses of timbre, space, voices etc. can be found in the other two contributions to this suite of articles. In the last part of this contribution the Radiolab signature will have the role of an analytical example of a more general con-

ception. Some of the observations above will be explained and analysed in further detail.

The semantics of radio signatures

My current research on radio signatures is an inclusive attempt to found a new research field. This implies creating a semantic model of different levels of meaning produced by the signature and its context (Figure 2). The model is essentially and consciously eclectic, and the word 'semantic' is to be understood in its most general sense as the production of meaning. It does not exclude any type of meaning, be it formal, phenomenological, semiotic, discursive, hermeneutic or cognitive etc.; rather, it claims that they may all contribute to an understanding of the complex phenomenon of sonic meaning, which is produced on many levels in the experience of a radio signature.

As Andrew Crisell has pointed out (Crisell, 1994, p. 49), the semantics of music and sound is open and 'imprecise' in comparison with language. I would rather say that the semantics of organised sound is 'abstract'. It is dominated by a signification of abstract gestures such as acceleration, contrast, suddenness, liveliness, graininess and endless other gestural meanings and by the indexical, referential meanings of recognisable sounds and voices. The abstract meanings of a radio signature become more specific and concrete, when they are anchored in a constellation with the programme and context.

The levels of meaning correspond to essentially different modes of perception. They are, however, interdependent, and the same sonic object will produce meanings on different levels. For instance, the 'okay' of the prelude of the Radiolab signature is part of a rhythmic and tonal structure (level A); as a voice it has an indexical meaning of being uttered by a person in a certain tone (level B). It is part of a gestural movement of call-response and an atmosphere (level C) of anticipation, in which it has the role of encouragement. On the discursive level (level D) the word 'okay' has a meaning, and there are marks of gender (female). Also, the levels are intertwined, in the sense that a change on one level will often have consequences on other levels. Thus, for instance, the discursive level affects the way we perceive the gestural and indexical levels. There is no idea here of a pure, structural listening.

Level A is where form and structure are perceived. The first category is the traditional musicological forms; the second is concerned with spectromorphology, i.e. the object forms of sound objects, understood as the perceived sound spectrum as it manifests itself in time.[14] The particular way that the drone of the Radiolab intro grows and recedes is a question of its morphology. It makes a tiny difference whether it grows steadily (as in this case) or if there is a point of growth acceleration. Often, spectromorphological observations and accounts are very detailed and

only few of these will be an explicit part of an analytic account. This does not mean that the morphology is insignificant, but rather that a range of morphological particulars take part in the overall sonic gestalt as its basic elements. The syntagmatic structure (A3) is the formal relation between the signature and speech/bed. The category of formal relations between intro breakers concerns the variations and affinity between them.

Level B concerns the referential meanings which are produced by indexical sounds, i.e. sounds which are immediately perceived as coming from a specific well-known source. Indexical qualities are perceived as essentially different from more abstract qualities, and their significance is prominent because of the conspicuous, concrete references. The sound of a guitar will immediately be recognised as such by most listeners.[15] The point here is not whether the guitar sound actually derives from a guitar, but rather the indexical quality of its guitar sound and the recognition of how it is treated (strumming, picking, plucking etc.).[16] In the same vein, there are indexical aspects of voices, media noise (frequent in radio signatures) and other concrete sounds from slamming doors to ocean waves. Because of the semantic salience of concrete sounds, signature composers tend to employ them carefully and often toned down or distorted by sound effects, thus subduing their indexical qualities.

In the Radiolab signature the media-specific noises of vinyl records and skipping CDs are fairly discreet. The same cannot be said of the voices, which attract all attention from the casual listener. This is the feature a Radiolab listener will be able to remember about the signature: that it is a voice montage. The voices, as indexes, of course point to persons uttering them.

Level C is my attempt to describe how we perceive non-indexical aspects of music. It is my thesis that we perceive musical objects and gestalts in a virtual space which is projected out into the listening space (Sangild, 2012). Whereas the listening space qua physical is basically homogenous, the virtual spaces of produced music in general and electronic music in particular are often rudimentary and heterogeneous. We perceive musical gestalts as having a (virtual) materiality, performing (virtual) movements in a certain atmosphere. This is a basic cognitive way of perceiving music.

The 'materiality' of a sound object is that which we try to describe with words like soft/hard, massive/porous, sharp, solid/fluent, clear/turbid etc. We use these terms, because there are perceptual analogies between these qualities of sound and qualities of visible and touchable materials. The drone of the Radiolab signature has some qualities of a vibrating metal string or a tuning fork, even though its sustain and decay are different. It is softer and less solid, blending the materiality of vibrating metal with that of a pneumatic material. A virtual materiality is often a physically impossible blend, as opposed to an indexical sound.

The 'movement' aspect relates to how the sound objects and gestalts 'behave' over time and to virtual energy patterns like tension and release. Sound events can

be sudden/gradual, inertial/smooth-running, mechanical, hesitating, stumbling etc. Thus, the swell and decrease of the drone in the Radiolab signature is perceived as two gradual movements of increased energy, the second stronger than the first. They are reminiscent of a failed attempt followed by a more insistent, successful one. The announcement part begins with an 'explosion' of energy followed by these scattered, unpredictable pops of glitch tones. There is thus a clear energetic climax point at 7" to which the prelude in retrospect behaves like anticipation. After the climax an entropy follows (with more 'space' between the glitch tones in general and a vocal pause before 'from') towards a calm period around 14-15.5". The last second of granulated noise, however, is a last, brief burst of sudden, flickering movements which ends in a cut off.

The 'atmosphere' is the quasi-objective mood of the virtual space. This concept is partly inspired by Gernot Böhme's general aesthetic concept of atmosphere (Böhme, 2001; see Sangild, 2012). All sound partakes in the creation of atmospheres, though some sounds are more atmospheric than others. In the Radiolab signature the prelude has an atmosphere of expectation and hesitation. It is not nervous, but rather a getting ready, a mobilising of energy and readiness. The announcement has an atmosphere of restless joy and playfulness due to the lively movements with a tint of something more bittersweet around the unresolved C# at 10.5".

The discursive-contextual level (D) is concerned with discursive signs in the signature: Words have a meaning; music is stylistically coded; there can be identity markers etc. In the Radiolab signature the meaning of the words is less conspicuous than the way they are uttered, distorted and montaged. It is basic information on the show and the institutions behind it. The hosts are not mentioned (they name themselves in the beginning of each episode) unlike many other signatures. The first actual sentence 'You're listening to' is not only a fact statement, but also a direct address of the listener. The fragments of 'hey wait', 'okay' and 'all right' do not signify much in themselves, but in the context they are clearly warming up, going from 'not ready' to 'ready'. There is a stylistic reference to the style of glitch electronica, signifying experiment, trial-and-error, contemporaneousness and digital technology.[17] One might argue that voice montage is also a stylistic reference, connoting experimental sound art and radio montage. The fact that montage is commonplace in signatures weakens the significance of this reference, but at the same time it is highly prominent and quite dense, which strengthens its significance. I am unable to hear ethnic identity markers in the voices (apart from the fact that there are no foreign accents), but an American listener might. The ambiguous C/si (repeated as an echo after the first C) could refer to the Spanish word for 'yes'. Culturally, the signature with its sonic plays without a catchy melody is signifying smartness and playful intelligence, in other words, high cultural capital. It addresses a core audi-

ence of urban, educated people and, at the same time, it has an unpretentious electronica hipness, which primarily relates to urban people under the age of 50.

The functional level looks at the syntagmatic as well as the paradigmatic relations between the signature and the programme. As for these aspects of the Radiolab signature, see above.

The Radiolab signature highlights and accentuates aspects of the programme (sonic playfulness, dialogue, technology, experiment) at the expense of others (scientific theory, the universe, biology, the brain). This coincides with the conscious image of Radiolab as not just another science programme, but a show focused on science as a creative process with curious and wondrous consequences; a show which employs a range of sound effects and sonic 'illustrations', attempting to make radio, which is a sonic experience in itself.

Notes

1. In radio research books, one may find a brief passage about signatures and idents (notably Crisell, 1994, pp. 50-51). Philip Tagg and Bob Clarida have done significant research in title tunes for films and television series (Tagg & Clarida, 2003).
2. Oxford English Dictionary: signature, n. 4d. Second edition, 1989; online version. Accessed 24 March 2011 on: http://www.oed.com:80/Entry/179546 (reference: Printers' Ink Monthly May 42/2, 1937).
3. In Danish the word 'jingle' is used as an overall term (for both commercial jingles and public radio signatures), whereas 'kending', or 'kendingsmelodi', specifically signifies an intro signature. Other languages use terms such as 'indicatif sonore/musical' (French), 'Erkennungsmelodie' (German), 'vignet' or 'kenningsmelodi' (Norwegian), 'signaturmelodi' (Swedish), 'titelsong' (Dutch), 'música-tema' (Portuguese). Most of these words include a reference to music.
4. The function and aesthetics of Station IDs are closely related to that of signatures and much of what is being said here about signatures also applies to these.
5. Just as the paratext of a book can be said to create a transition zone between text and off-text (Genette, 1997, p. 2), the intro/outro signatures are transition zones between the programme and the general broadcast flow of the station. A sound signature is not required for this function, since a live presenter can announce the programme, but the framing aspect is usually stronger with an actual signature, especially in talk radio.
6. My current research is a part of the LARM radio archive project: http://www.larm-archive.org/about-larm
7. Apart from the two hosts, Radiolab has a six people staff with reporters and production assistants. See http://www.radiolab.org/about/
8. Glenn Gould: *The Idea of North* (1967), *The Latecomers* (1969), *The Quiet in the Land* (1977). Produced by the Canadian Broadcasting Corporation (CBC). These radio documentaries by the famous pianist are sometimes referred to as *The Solitude Trilogy*, since they all focus on people who have chosen to live in deserted places in Northern Canada.
9. Other variations have occurred over the years. The brief 'shorts' episodes have their own variation with a boy shouting 'shorts!' at 10''.
10. Not only the voices, but also the words of the credits change from programme to programme.

11.   I have contacted Radiolab with a request for information on whom to credit and other relevant facts. They have not responded. If it is made by Abumrad, his background as a composer might be said to pull in the direction of a professional rather than homemade signature. The decisive point is, however, that it is an in-house production by a host, which I assume here.

12.   The time indications are of course approximate, since it is difficult to establish exactly when the signature begins. Therefore, I will not indicate events more accurate than within half a second. The key function of Figure 1 is to provide an overview of the sonic events.

13.   This fragment sounds like the voice of host Robert Krulwich.

14.   The concept of spectromorphology is developed by Denis Smalley in relation to electronic and concrete music (Smalley, 1997).

15.   Evidently, not everybody recognises everything. A person who is not familiar with the sound of a guitar will not recognise it, whereas a guitarist will sometimes be able to recognise the type of guitar as well as details in the guitarist's technique. This holds true for all indexical signs. The index is an affordance.

16.   It is, of course, possible to emulate instrumental sounds as well as other indexical sounds through electronic means. The decisive point is that it sounds like a guitar that is being played in a certain way and thus signifies a certain 'guitarness'.

17.   Glitch electronica originates from the 1990s and peaked around 2000 (see Sangild, 2004), which means that it is not cutting edge anymore, but still quite recent, compared to the often conservative styles employed in radio signatures.

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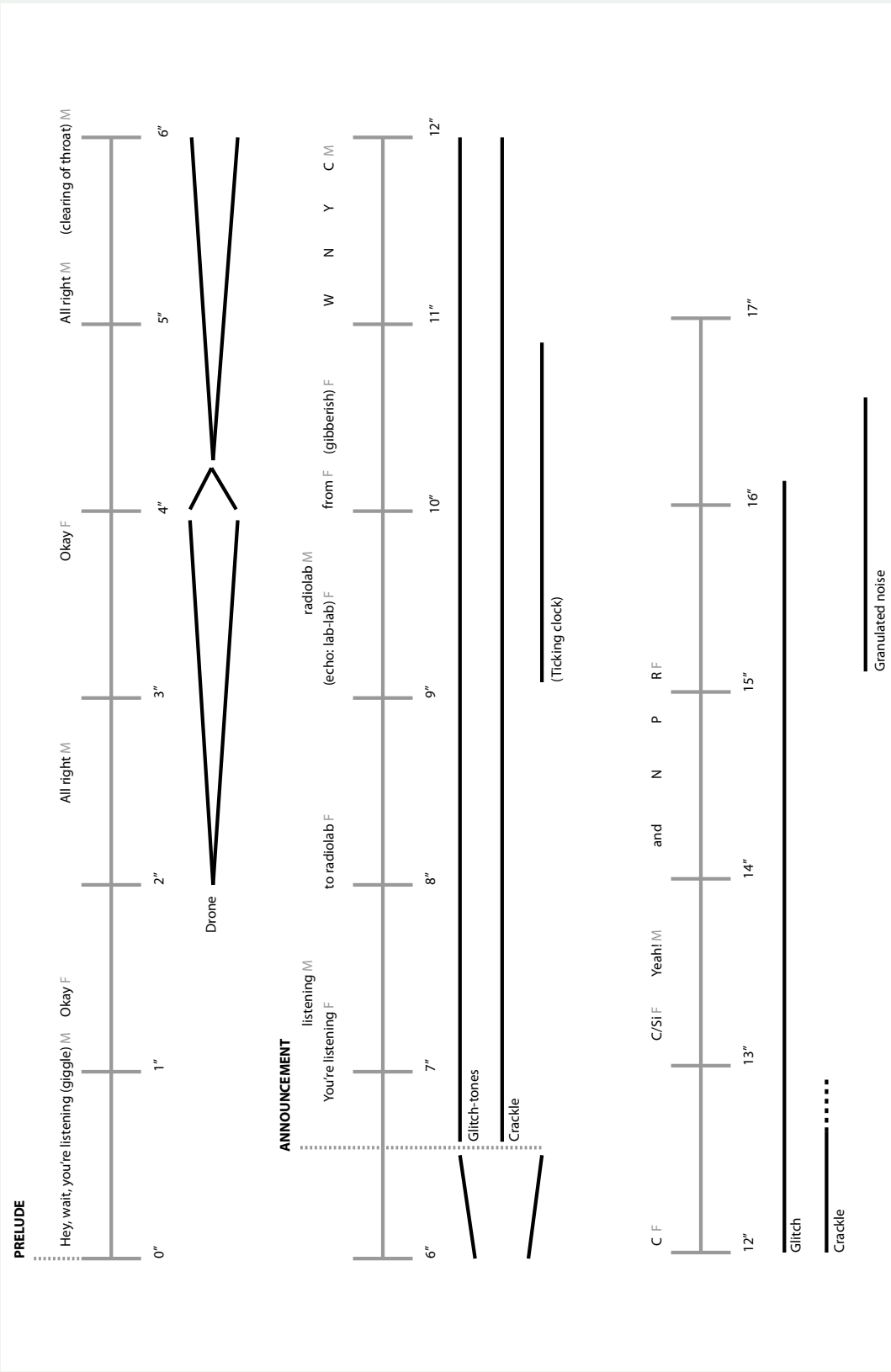Tagg, P., & Clarida. B (2003). *Ten Little Title Tunes.* New York and Montreal: MMMSP.

PRELUDE

Hey, wait, you're listening (giggle) M   Okay F

0"   1"   2"   3"   4"   5"   6"

All right M   Okay F   All right M   (clearing of throat) M

Drone

ANNOUNCEMENT

listening M
You're listening F   to radiolab F   (echo: lab-lab) F   from F   (gibberish) F
radiolab M

6"   7"   8"   9"   10"   11"   12"

W   N   Y   C M

Glitch-tones

Crackle

(Ticking clock)

C F   C/Si F   Yeah! M   and   N   P   R F

12"   13"   14"   15"   16"   17"

Glitch

Crackle

Granulated noise

Figure 2 – A semantic model of radio signatures

A. Formal/structural level

      1. Melodic, harmonic, rhythmic, timbral stuctures etc. (musical form)

      2. Spectromorphological structures

      3. Syntagmatic structure (including bed/live-speak)

      4. Formal relations between intro, breakers, outro.

B. Indexical perceptual level

      1. Instrumental sounds

      2. Media noise

      3. Embedded voice samples

      4. Concrete sounds

C. Gestural/virtual perceptual level

      1. Materiality

      2. Movement

      3. Atmosphere

D. Discursive-contextual level

      1. Content of words in signature

      2. Musical style references and intertextuality

      3. Identity markers (gender, social status, ethnicity etc.)

      4. Other discursive significations

E. Functional-contextual level: The radio program

      1. The structural use of the signature in the programme

      2. Programme content

      3. Style, structure and sonic aesthetic of the programme

      4. The character of the live-speak.

      5. Institutional (hosts, history, media profile, reception, affiliation etc.)

Conclusion

The three different takes on the same sound 'object' has shown not only three different analytical listening strategies and methodological approaches, but also three different notions of the epistemology and the ontological status of the sound object.

Stockfelt argues that sounds are not independent objects, but rather 'mental concepts, created through the act of listening'. Lønstrup argues, phenomenologically, that sounds are a form of voice utterances and, hence, that the sound object can be viewed as a sound 'subject'. Sangild maintains an ontology of the sound as an independently existing expressive phenomenon, which the listening subject can experience, and the meaning of which is created within the frame of a given context.

While Lønstrup's and Sangild's conceptions can easily be compared, since the concept of an expressive object is close to that of a voiced quasi-subject, Stockfelt's more subjectivist or constructivist notion is at variance with these. The discussion between these two fundamental ideas has existed within the humanities for decades and will not be resolved here.

The three papers also present different aspects of listening. In Stockfelt's article focus is on analytical listening as a process, including mistaken observations and assumptions. Lønstrup focuses on listening and sound-making as existential activities. And Sangild draws on analytical listening as a cognitive experience.

All three notions imply that the semantics of sound is not unequivocal, but more or less ambiguous or abstract. However, the three articles also imply that the analyst can say meaningful and binding things about the sound object, even though they may disagree on what one can conclude.

A reading of the three analyses shows some correspondences in the description of the Radiolab signature, apart from the obvious formal observations. They include the following:

– The analyses (especially those of Stockfelt and Sangild) operate with a common gesture outline: a marked change in the expression at a specific point (6,8") from informal to formal, from preparation to actualisation, from sound check to recording, from prelude to announcement, from expectation to climax, and then a receding gesture, a diffusion of energy towards the end.
– The voices are clearly perceived as the foreground of the sound in all analyses. This may be an invariance in our form of perception; we tend to perceive voices as situated in the foreground.
– All three perceive a dialogue or call-response figure in the first part, constructed through montage.

- All three agree that there is a sense of community or plurality. This is most notable in Lønstrup's key concept of polyphony and her description that 'everyone gets a voice'.
- Further connotations seem to correspond quite well: Stockfelt (uninformed about Radiolab) mentions 'pretentious', 'conscious', 'experimental', dissociation from mainstream/commercial radio, 'serious', 'modern', 'professional'. These keywords correspond quite well with Sangild's informed descriptions of the programme.
- They all agree that the sound object is quite compact, especially the second part. Stockfelt, however, maintains a description of the sound object as 'conventional' and only superficially sophisticated. This perception comes from the perspective of aural and audiovisual sound design. In Sangild's generic and contextual approach, the standard of measurement is the design of radio signatures and, accordingly, the Radiolab signature in this perspective appears to be quite complex.

The outcome of the experiment is twofold: 1) A triple close analysis of the Radiolab signature, supplementing each other and thus arguably highlighting more facets than a single approach would do; and 2) a demonstration of the correspondences and variances between different approaches, including different ontologies, methods, epistemologies and concepts of listening.