

Danny van der Kleij

The utopianism of the radio and the vocoder

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Abstract

This thesis is primarily focused on the relationships between the notion of utopia and two devices used for electronic speech, namely the radio and the vocoder. This utopia is constructed out of contradictions rather than an unreachable social-politically perfect utopia. Considering radio as a utopian space, or rather a utopian moment within that space. Seeing radio as a distant and fleeting yet inescapable omnipresent broadcast.

On the other hand the vocoder is a device that is concealing the voice, making the voice anonymous. The vocoder has a military secure speech history where the transmitted message is concealed and its users made anonymous, but it serves the same purpose in futuristic pop music vocals. How does the secluded notion of utopia relate to the idea of anonymity? The music that is made using the vocoder is usually a form futuristic nostalgia.

These futuristic tendencies lead to the field of Afrofuturism where an alternative view on the space age is expressed via a form of music that most of all speaks on seclusion, as a metaphor for the position and history of the Afro American people.

The history of the vocoder also leads towards other forms of cryptography within music, such as number stations and the Conet project as well as hidden messages within music.

Introduction - the opposition between the radio and the vocoder

During the last two years, one of the aspects of my work as an artist shifted from working with the medium of sound to working with the medium of radio. Now these two media seem to be almost the same, they are fundamentally different in a couple of aspects. My work used to consist of composed or recorded sound, that was played back or generated by hand build machines. This led to a very tangible sound within my work. However with radio this materiality of sound disappeared somewhere in between the making of the content which was to be transmitted and the reception of the radio signal. This disappearance of the medium of sound combined with the fact that my radio transmissions were always very short lived and short distance in terms of broadcast radius led me to question the materiality of radio itself. What did remain in my work is what I decided to broadcast is rather anonymous, in the shift from an abstract tangible sound to radio, I did not choose to broadcast my own voice or music that was made by myself. The content that I decided to transmit was either an edit of someone else's voice or spoken text generated by speech synthesis. In contrast to the usual radio station which values clarity and reaching a large audience, my work was rather opaque and meant for the selected few that made an actual effort to find my radio transmissions. It is a valid question as to why this opaque medium of radio seemed as something natural to me.

The starting point for my research was the materiality of radio itself and what is actually happening during a radio broadcast in relation to anonymity and the hidden nature of a weaker radio signal.

On April 11, 1987 on W.H.Y.T. a radio station from Detroit, Michigan, on the broadcast frequency 93.6 FM, a radio DJ that went by the pseudonym "The Electrifying Mojo" pitted two DJs against each other in his radio show called "The MixerDome". Voters could call in and vote for their favorite DJ, and thus determine the winner of this so called battle. In this particular episode the competing DJs were DJ Rotator and Mad Sounds. The second song of Mad Sounds first mix was a true vocoder classic namely Bass Mechanic by M.C. A.D.E.

It was a moment where the standard robot voice that the vocoder could produce was heard on the radio. At the time, this moment where a vocoder like sound was transmitted over the radio was anything but a special occasion since “The MixerDome” had many episodes during which DJs would show their skill and thus tried to mix together as many songs as possible and a lot of these tracks were the same kind of vocoder electro music not unlike Bass Mechanic.



Fig 1. M.C. A.D.E. Bass Mechanic, 1986, 12” record, 4:29 min. 4-Sight Records

However there is something peculiar about the meeting of the vocoder sound and the radio broadcast. The radio and the vocoder are at the same time closely related and almost opposites of each other. This is both in terms of their ways of communicating or transforming sound as well as in the way they are operated as an electronic device.

Both the radio and the vocoder have a military history. However, the way in which these devices were used within that military history is where the vocoder and the radio are in many respects opposites of each other. For example in the way they were used in wartime communication. The radio was used for broadcasting propaganda and wartime news. A communication of a few towards the masses. The few being the broadcast stations and the masses being the audience within audible range of a radio receiving that broadcast and amplifying it over its speakers, this means not only all radio homeowners but radios in public space as well.

The vocoder however has its wartime history in being used as a device for enclosure and encryption. The vocoder's first usage outside of its prototyping phase was in the first true secure speech and telephony system named SIGSALY during the second world war. So in contrary to the radio as a media technology used for mass communication, the vocoder was used as a device within communication between only a selected few.

When we view the radio and the vocoder as stand alone devices a same kind of opposition emerges. The radio transmitter and receiver are used for one way communication, either receiving or sending. The vocoder is merely used for the transformation of sound. It cannot

convey that transformed sound by itself.

Even for producing the vocoder's transformed sound it needs an amplifier and a speaker, it cannot produce its own sound beyond its own circuitry, let alone transmit it to a distant receiver like the radio can.

When it comes to alternating the human voice, or sound in general, the radio and the vocoder are opposites of each other as well. Radio is a lo-fi alteration of the human voice and sound in general. This has to do with radio 'static', a form of superposition of white noise during radio reception, which is caused by electronic noise from the receiver input, or by interference from radiated electromagnetic noise picked up by the receiver's antenna.

The vocoder, on the other hand, narrows down the voice in a number of pre-selected and tuned bands, re-synthesizing the voice into something clean and unreal. So in terms of adding or subtracting audio texture, the vocoder does something opposite to the addition of noise in radio reception.

By narrowing down the full spectrum of the human voice to just a set number of frequency bands, the vocoder is a device that literally separates the natural characteristics from the human voice. The tuning of the voice is done through synthesis which further alienates the natural voice because the pitch is perfected by electronic oscillation. Modern vocoders used in popular music today use a greater number of frequency bands and thus sound less robotic and synthetic than its predecessors, but the principle of removing texture within sound remains the same.

Although the radio and the vocoder are opposites in many ways, there are also moments in which they seem to share some aspects. Beyond their history as wartime communication equipment they also meet when we discuss these devices in the light of an utopian usage or a utopian view. When we discuss the ideas surrounding an utopia, the ideas of spreading one's message of a perfected community or society immediately come to mind.

From this viewpoint of utopia, the radio is more easily expected as something utopian because it can convey a message to the outside world. However, is there more to the utopian nature of the radio broadcast beyond its ability to transmit a message?

The vocoder on the other hand has a much richer history in utopian themes and lyrics within pop music. Where the radio doesn't provoke the broadcast of a certain type of music above others the vocoder has almost solely produced songs with futurist themes.

If we could describe something as imminent and present tense as a radio broadcast as something utopian, question arise on the immanence of the utopian notion itself. Can a utopia exist only for a short duration of time?

What seems as a valid question for the concept of time, also seems valid for the concept of materiality. A radio broadcast exists out of nothing but electromagnetic waves. Can a utopia exist out of a transmitted nothingness, or are these electromagnetic waves that are meaningless unless received by a radio receiver an ideal representation of the unreachable future of a utopia?

In other words, is there a relation between the invisible wireless communication of the radio and the unreachable, unknowable utopia?

Again in opposite of such lines of thought lies the vocoder, which modulated forms of speech do not leave the machine if it is not aided by another device. However the relation of the vocoder to a view on utopia within pop music ranging from Kraftwerk to Giorgio Moroder to Afrika Bambaataa seem to imply that there could be more possibilities to convey a utopian message beyond transmission alone. Can a feeling of utopia exist within the act of modulating a sound to another sound alone?

Establishing an idea of utopia

When defining the radio and the vocoder as two devices which are inherently utopian, we have to define what is exactly utopian in the first place or at least a set of ideas that relate to the topic of utopia in the light of the radio and the vocoder. The most common idea that comes to mind when hearing the word 'utopia' is that of an ideal society which is somewhere in an unreachable future.

The word utopia was coined in Greek in 1516 by Sir Thomas More in his book titled 'Utopia' which describes a fictional island in the Atlantic Ocean. He made the word by joining the Greek words Eutopia meaning a good place and Outopia meaning no place. Given that both these words are pronounced in the same way gives rise to the double meaning of the word. From this double meaning of on one hand an existing good place and on the other hand a place that doesn't exist at all comes the idea that utopia exists within a certain form of contradictions.

The same goes for the common idea of utopia, as an ideal society it will still have a certain set of goals or at the very least a set of ideas by which this society resides. The contradiction then lies in the fact that by stating its utopian nature these nameable goals have become unreachable.

Aside from this notion of utopia there are several other utopian ideas that are in some ways fundamentally different from the common idea. One of these is an idea where the prerequisites of a utopia are not unreachable at all but exist out of a certain set of parameters.

For instance Jean Baudrillard mentions America as a utopia that exists because of a fundamental loss of memory and history. In his essay Utopia Achieved he writes the following:

America ducks the question of ; it cultivates no origin or mythical authenticity; it has no past and no founding truth. Having known no primitive accumulation of time, it lives in a perpetual present. Having seen no slow, centuries long accumulation of truth, it lives in perpetual simulation (Jean Baudrillard, Utopia Achieved)

Baudrillard speaks of a utopia achieved not so much because an ideal society has been achieved but because the meaning of the word utopia is met, to a certain degree. In the case of America as a 'Utopia Achieved' there is a good place to certain standards. In any case the utopia Baudrillard speaks of is not ideal in every sense, it has to deal with its own form of crisis and mishap. At the same time the notion of the no place is also met because of a certain artificiality of that place. That artificiality is build upon an inherent lack of history, wherein a perpetual factor within that present is crucial. Utopia is achieved because of a constant present tense.

While this view of a utopia is less common it is of more value when we discuss a present day device such as the radio or the vocoder. Not only are these devices situated within a society that is not considered to be a utopia in the common sense of the word, they are also not to be considered perfect themselves. However they are able to meet certain criteria that can constitute a utopia.

The viewpoint of seeing utopia as a moment or a certain set of criteria that can somehow be

met is not unique to Jean Baudrillard his writings. In an essay by Ben Anderson on the notion of utopia within music in general I came across the following:
An idea of Utopia that is not located else-where or else-when in a transcendent realm separate from the present but is paradoxically immanent to 'everyday life'(Ben Anderson A principle of hope)

while at first this quote seems to be almost the same as the views of Baudrillard, but the idea is different at the point of materiality. Where Baudrillard writes on an entire society that is somehow utopian, Ben Anderson doesn't speak of a society at all. A utopia that is paradoxically immanent to everyday life, excludes the idea of a society as a prerequisite for utopia. Utopia is in this case a moment or a state of being rather than an actual place let alone a full society in the social-political sense.

Again for defining utopia within the radio and the vocoder this idea of utopia seems more usable and valid. They are devices that have an impact on our society and everyday life but are not a society as such. The only exception is when we view the idea of radio as the entire radio broadcasting center, then we can view this environment as a form of society. However even then do we define radio in moments of transmission and reception or lack thereof and problems arise if we try to define radio as a society that is as omnipresent as our own. For the vocoder matters are more clear, it is a device that cannot step outside of itself. Beyond its users and those who hear its modulated sound there is no form of society surrounding the vocoder. If a vocoder is at all in any sense a utopian device we can only conclude its utopian nature during the moment of operation.

Radio utopianism and the radio material

Having defined what constitutes a utopia, we can now look at how such a utopia works within a medium such as radio. What is it that constitutes an idea of utopia within the radio medium or within the action of a radio broadcast? The obvious first thought would be radio as a carrier for propaganda of a certain utopian message, whether that is in music or in speech. The far reaching wireless transmission of the radio signal makes for an ideal carrier of a certain belief system. The reception of a radio signal depends on transmission strength, not on an infrastructure of wires. The availability of a certain radio signal is thus completely centralized, dependent on the strength of the one who wants to convey his message. On top of the centralized transmission model lies the fact that a radio transmission is one way directional by definition, it is merely a transmission not a form of communication per se. Unless someone designs a special method of communicating with the radio broadcaster, there is no option for discussion regarding the broadcasted material. This combination of a centralized and one way communication model makes for an ideal platform to spread one's message or at the least to utilize the radio transmission model to enact a utopian moment.

Within the enactment of that utopian moment, the total lack of feedback from radio receivers during the broadcasted moment can be utilized to exercise the perfection of a utopia. This is due to the seclusion of that broadcast moment. During this moment the radio transmission operates within a state of total seclusion.

If seclusion is a condition of a radio utopia then we can also consider pirate radio stations to be a more prolonged and profound utopia. An example of this would be the British pirate radio station Radio Caroline which broadcasted from a former Danish ferry, the *Fredericia* (named after a Danish town, Frederica), later renamed to the *MV Caroline* to match their radio station's name. Anchored five kilometers off the coast of Felixstowe, Suffolk, England, just outside British territorial waters, Radio Caroline operated from a state of physical seclusion.

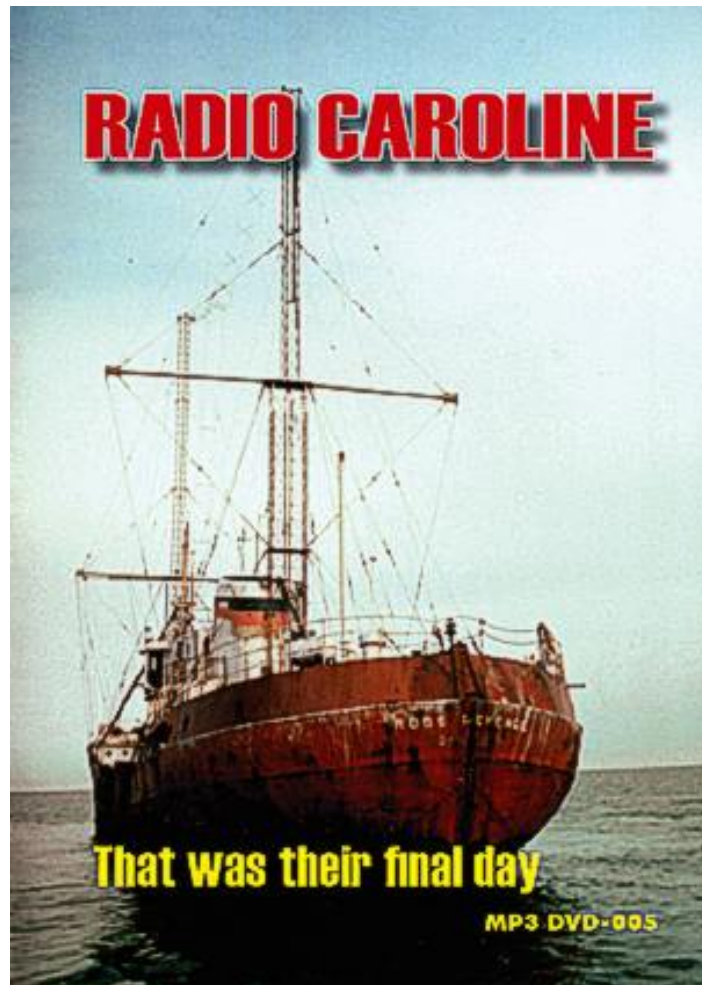


Fig 2. Radio Caroline Poster.

In addition to radio broadcasts from physically secluded areas such as ships, there is also radio piracy that operates from a form of political or sociological seclusion.

Radio Luxembourg operated as a pirate station from a principality which is a kind of political seclusion. Radio Luxembourg began in 1933 with an English language service. They broadcasted from Luxembourg but with Britain as their intended audience. They were one of the earliest commercial radio stations and an important forerunner to pirate radio stations since the bigger pirate stations also relied heavily on the use of commercials, especially those who operated from physically secluded places since that could be a costly operation. Both these types of seclusion were an effective method to circumventing British radio legislation which until 1973 gave the BBC a monopoly of radio broadcasting on UK territory and prohibited all forms of advertising over the domestic radio spectrum.

Radio Luxembourg was in this case not so much a political seclusion in every aspect of life, however in the light of radio broadcast regulation and legislation Radio Luxembourg was indeed very different from the rest of Europe.

Broadcasting from a ship in territorial waters or broadcasting from a principality is a more tangible kind of seclusion than the moment of non-communication of the radio broadcast. However, seeing the radio broadcast moment as something utopian and seeing the place from which this broadcast takes place as utopian as well doesn't need to exclude each other. However it does raise a valid question on where exactly does radio exist.

A logical first answer to this question might be that radio exists within the transmission radius, however we can also consider radio to exist only where it is made and received, not including where it all could be received. Either way, radio doesn't exist when there is no transmission.

Just as Ben Anderson wrote of a notion of utopia that existed only within a certain moment but paradoxically immanent to everyday life, so does the radio broadcast only exist within a certain moment of transmission.

From the idea of utopia as a moment rather than a place, combined with the idea of seclusion during broadcast emerges the idea of a radio broadcast as an utopian space. Seeing a radio transmission as a untouchable, distant and fleeting yet inescapable broadcast.

In this light we can see radio as a no-place, a place that only exists during broadcast and in the form of unhearable sound waves. When the broadcast is stopped or the distance between receiver and transmitter is too close, this place ceases to exist.

In this sense radio is incredibly present tense, a radio transmission does not imply any form of recording or archiving of its broadcasted material. The radio transmission is also unable to predict or pre-calculate its future. This does not mean that nothing can be done to ensure the future or preserve the past of a radio broadcast, but these mechanisms are not radio per se, they are not present tense. There is no memory in radio, whenever the broadcast is made there is no certainty about its preservation. Radio is at once fleeting as it is an actual space for manifestation.

The fleeting, present tense nature of the radio broadcast raises the question of radio materiality. What is the radio transmission or reception made of? It is not an audible sound, in order for the radio signal to be transmitted sound needs to be modulated to sound waves that are not audible by humans. It is modulated sound, demodulated upon reception. While we would take this for granted while tuning in with a radio receiver, it does introduce an interesting concept when we consider the moment when a radio broadcast is received as an utopian moment.

The success of reception is in this way directly linked to the occurrence of the utopian moment.

Gregory Whitehead, writer, radio maker and audio artist has written a lot on radio and its relation to utopia as well as the radio and its materiality. He describes radio as a medium that exists in contradictions and according to him from these contradictions emerges the utopian nature of radio. In an interview he discussed the resemblance between the inner workings of electronic media and one of his radio shows called Shadow: a Parable with the following quote 'not just the fine line between the living and the pile of corpses, but the even finer line between cipher and key, between lucid fact and dreadful nonsense' (Gregory Whitehead, Radio Silence, p.3)

Even though this quote is quite cryptic by itself it does tell of a distinct difference between a received and understood message and a message that is not received at all, or that is not understood or demodulated. The difference between radio and most other forms of communication is that in the instantaneous moment of radio transmission you are sending a signal and are completely unaware of its reception. This view on radio materiality further enhances the seclusion that radio is in. Whitehead continues to describe a failure of reception:

And if we cannot refigure ourselves, well then all is lost and you end up rotting into a black puddle beneath the midnight sun, on a ghost ship, under full sail, full of meaning, perhaps, but heading nowhere, a cipher that cannot be delivered nor returned - a dead letter. (Gregory Whitehead, Radio Silence, p.3)

When we describe radio in this sense its present tense and its seclusion meet each other. Not only is the radio broadcast live, without future or past, it also does not know its audience.

The seclusion of the vocoder

The relation between radio and utopia comes largely from the way it communicates towards its intended audience. The vocoder on the other hand is completely incapable of doing so, since it is not a communication device but a device that merely transforms sound. The vocoder is a method of speech synthesis, it is used within certain genres of pop music and in the encipherment of speech for secure telephony.

Again the first thing that comes to mind when we try and see the vocoder in a utopian light is the vocoder and its usage as a robotic voice in certain genres of pop music from the late seventies all through the eighties. Whether it is a smooth monotone robotic voice used by the disco band Transvolta for their song Disco computer from 1979 or it is a darker more repetitive voice from the deep as in Techno city by E.V.I.A.N. and the Atlantis posse from 1988, in both cases the vocoder is utilized to create an idea of a voice from beyond.

The futuristic ideas associated with the robotic vocoder sound have since been overtaken and replaced with modern forms of speech synthesis that utilize more bandwidth within the audio spectrum and thus sound more realistic and more importantly less robotic. The iconic sound of the vocoder is now more associated with a form of nostalgia and can best be described as how the future used to sound.

Beyond this clear cut futurism of robotic voice lies another another connection between the vocoder and utopia which comes from the idea of seclusion. Just as with the radio, the inner workings of the vocoder deal with a transformation and concealing of the original sound. Even more so than with radio, this transformation was the first purpose of the vocoder and inherent to its design. The vocoder was invented at Bell Labs in 1928 by Homer W. Dudley. It was first designed to simplify the voice so it could be transmitted more easily and with greater clarity over telephone lines, later it was used as a means of disguising military voice transmissions during world war 2 since it was part of the SIGSALY speech encipherment system. The SIGSALY system was the first secure telephony and teleconferencing system. The first two points from where the SIGSALY system operated were in Washington from the Pentagon and London, later when the system became a success the network was expanded to 8 nodes. Although the role of the vocoder in the SIGSALY system was crucial it is not to be mistaken as

the whole device itself. Within the system the vocoder was used in ‘the transforming of voice signals into digital data. ‘(Weadon, SIGSALY story, p 2)

The vocoder scrambled the human voice until it resembled a high pitched hornet like noise. In this way espionage on phone lines became a matter of cryptology for the opposing axis powers. This encipherment of the voice is in relation to utopia almost the same as the modulation of sound within the radio broadcast. The difference being that with the vocoder this transformation is not necessarily live and broadcasted the same moment that it is modulated. The vocoder has in that sense no utopian moment, it isn't as present tense as the radio signal. On the other hand it does truly encipher the signal, replacing the original signal with a related cipher-text that is in the case of the vocoder synthesized from the original source. It is harder to reverse to the original signal than it is to demodulate a radio signal into audible sound. One could argue that the vocoder sound is more secluded than that of the radio, because of this speech re-synthesis method. That which makes the vocoder utopian beyond the robotic futuristic voice thus relies more heavily on the idea of seclusion and encryption.

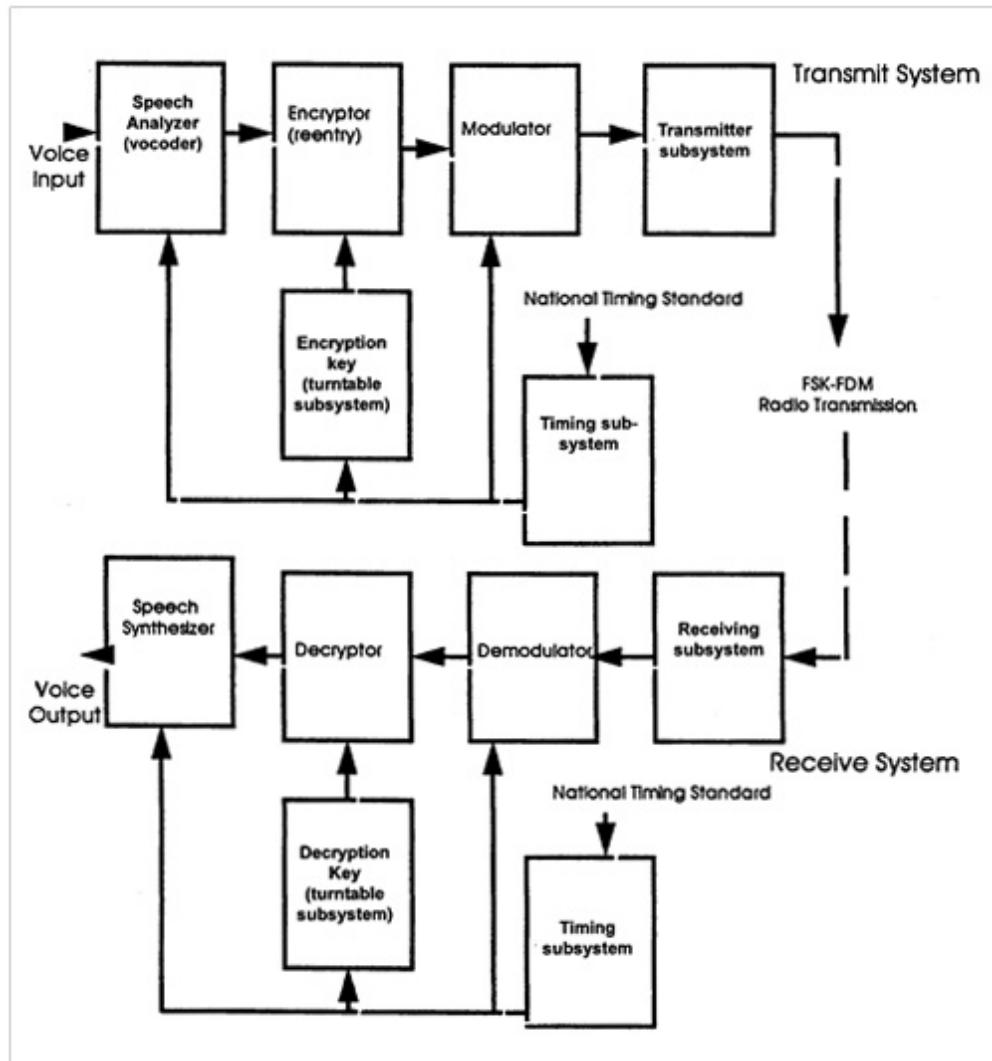


Fig 3. Flow chart of the SIGSALY system.

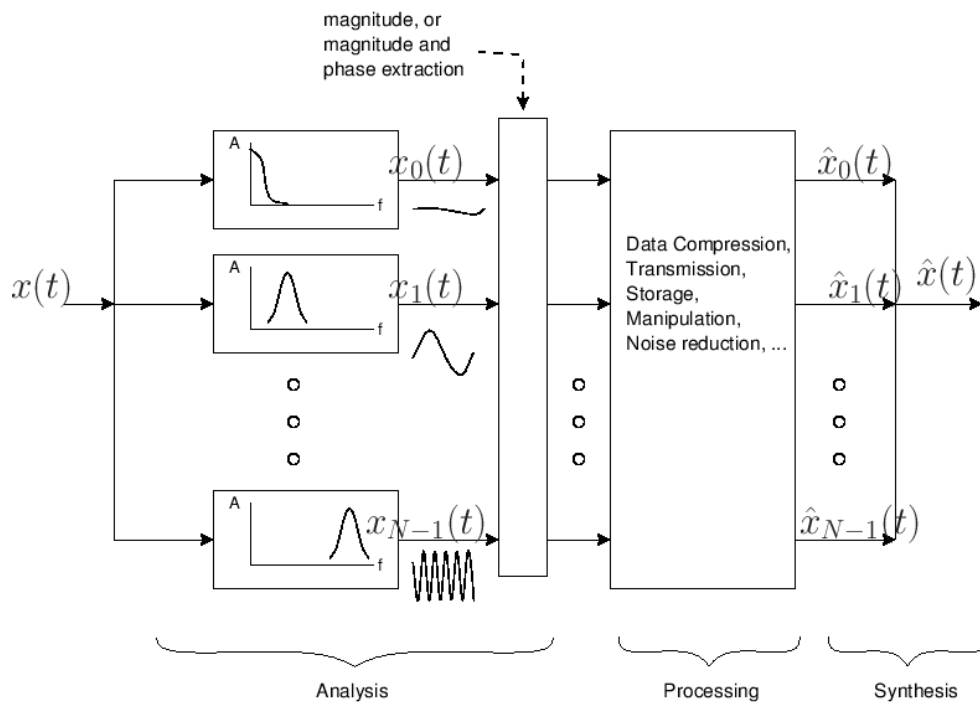


Figure N.1: Channel or phase vocoder block diagram.

Fig 4. Block diagram of Homer Dudley's channel *vocoder*

The usage of robotic speech and the longing for a futuristic disco computer and the world of military speech encipherment seem far apart. However to mask human aspects of a person's voice and conceal someone's identity is exactly what the vocoder does, whether it is wartime or pop music nostalgia.

In Kay Dickinson her writings on the usage of the vocoder in popular music she explains the origin of the word vocoder as following 'Etymologically, the word is an abbreviation of 'voice coder' and so intentionally bears the connotations of 'coding' human expression, of delivering it in cyphers.' (Dickinson, 2001, p.333)

There is a fine line where the listener is accepting the vocoded voice as that of a machine and where the listener can still identify with the re-synthesized voice or at the very least understand what is being said or sung.

One can wonder if musicians that used the vocoder knew of the military background of the machine, and that it was used the warp and change the voice until a point that it could not be recognized. Dave Thompkins did extensive research on the vocoder through interviewing both the military and the musical world. In his book *How to wreck a nice beach* he answers this exactly in the introduction of the book:

Of all the World War II cryptology experts I interviewed, none was aware of the vocoder's activities in the clubs, rinks and parks of New York City. ("It was just analyzing breakdowns of speech energy," said the Pentagon.)

Of all the hip-hop civilians I interviewed, none was aware of the vocoder's service in any war, nor were they surprised by it. (Thompkins, *How to wreck a nice beach* pp 23)

Still the musicians that used the vocoder were balancing on the edge of using something anonymous and using something unrecognizable. Most vocoder vocals can barely be understood, one of the few ways to recognize what is being said, is by knowing the title or lyrics of the song beforehand. An example of this unrecognizability is in the title of Dave Thompkins' book *How to wreck a nice beach* namely the sentence how to recognize speech but then misunderstood. However if this barely recognizable speech is enough to constitute for something that crosses the barrier between the existent and the non-existent and thus elevates a piece of spoken text that is merely opaque or masked to something utopian, remains to be answered.

Afrofuturism and the vocoder, A mythical non-existence

When talking about both the operation from a state of seclusion such as in a radio broadcast, as well as the idea of a meaningful non-existence such as in the enciphered or modulated signals of both the radio and the vocoder, the idea of Afrofuturism comes to mind. Not only because music that is labeled as Afro futuristic often uses the vocoder, but because of various other reasons as well. Afrofuturism is a term that evolved mostly from an internet community by the same name. This internet community was launched in 1999 by Alondra Nelson, at the time she was a graduate student in American studies at New York University. Within this internet community the field of Afrofuturism was debated to such an extent that it became a recognizable field of scholarly and academic research. In a thesis on Afrofuturism J. Griffith Rollefson described the early development of this field as 'an online community dedicated to the study of what might be best described to the uninitiated as black science fiction.' (Griffith Rollefson, *The "Robot Voodoo Power"* Thesis pp 83)

It is indeed a form of black science fiction that was a starting point in describing the utopian nature of the vocoder's robotic voice, since it's something that is often utilized within afrofuturistic music. However as said by Griffith Rollefson the description of black science fiction is a term for the uninitiated implying that there is more to the field of Afrofuturism than the idea of black science fiction alone. When we look further into the metaphors that Afrofuturism uses we see a contradictory notion of an unreachable place that is within the near future and that works as an apt metaphor for black history. This metaphor is where the contradictory nature of utopia and Afrofuturism meet.

The field of Afrofuturism is often defined as being founded by the following artists namely Sun Ra, Lee "scratch" Perry and George Clinton and they all refer to unreachable and often traveling mythical places. For example Sun Ra's "Space is the place" and Parliament's "Mothership connection" and Lee Perry's "Black Ark Studios". The reasons for the representation of the longing for a mythical technologically driven future are manifold. They range from a metaphor for the state of the black race within the United States, where the lack of civil rights is compared to leading a mythical existence to using the metaphor of space travel to the history of slave trade that the black race went through. John Akomfrah relates both of these metaphors at once which is not at all unusual in an interview in *The book of imaginary media*:

Afro-technophilia if you like, in a range of black music, and what then seemed a disparate set of futurological musing which we began to understand as a quest for Utopia. an archaeology of the slave narratives, mystical writings on Egyptology. (Akomfrah, *Book of imaginary media* pp 283-284)

The aforementioned artists aren't the biggest users of the vocoder, for that we have to look towards more recent forms of music that also fall under the moniker of Afrofuturism. Arguably one of the most credited afrofuturistic songs is "Planet Rock" by Afrika Bambaataa & the Soulsonic Force. This song has been credited to be the starting point for many genres from Electro to Miami Bass, to Hip hop and Latin Freestyle as well as paving the way for later forms of dance music like House and Techno. Even though Dave Thompkins has a very thorough view on the on the rise of afrofuturistic electronic music he still views Planet Rock to almost spawn an entire genre "Planet Rock" essentially gave us Miami Bass, due to its speed, sub-frequency (a sine wave generated by the Japanese-made Roland-808 Drum Composer) and an orchestral stab.' (Dave Thompkins, How to wreck a nice beach, pp 82) ' Even though Planet Rock is far less mysterious in its lyrical theme than say "Black Myth / It's after the end of the world" by Sun Ra , the topic of a utopia remains. With "Planet Rock" this utopia is a lot less mythical and by all means more global 'Planet Rock all for an (African) American song about a global utopia. Live it up, shucks. '(Dave Thompkins, How to wreck a nice beach, pp 82) This global and present day utopia which "Planet Rock" refers to is arguably what gave the song its pop strength and influence.



Fig 5. Afrika BamBaataa and the Soulsonic Force, Planet Rock, 1982, 6:25 min. 12" Record, Tommy Boy Music - TB 823

The topic of utopia that Afrofuturism is strongly rooted in, does in some ways relate to the vocoder and its concealment of someone's identity. However it is not the case that one cannot exist without the other. The artists whom Afrofuturism is based on do not use the vocoder while they still refer to a mythical place of non-existence. On the other hand electronic afrofuturistic music is one of the first types of popular music to make heavy use of the vocoder, and in almost every occasion it is used to represent some kind of impending future. One could argue for the idea that the utopian nature of Afrofuturism is at the least heightened by the anonymous sound of the vocoder or its sound based on seclusion where prior knowledge to the conveyed message is required. In a certain way it is a sound for an informed audience. Only those aware of the mythical non-existent nature of the afro futurist sound can fully understand the music. However I feel that this has more to do with an understanding of the slave narrative or civil rights metaphor than it does with a certain anonymized sound.

From seclusion to cryptography

For the vocoder the concealing of a message seems to be one of the few things that relates it to the idea of utopia. For the radio this is not so one sided and its utopian nature comes from different aspects than just seclusion. There is a lot to be said about the radio's mode of operation and its materiality as well. Considering radio as a communication technology one can wonder if there is a usage of radio, that deals with encryption and where the actual message of the broadcast is more deeply concealed.

On the radio's shortwave band there is a hidden network of spoken code known as number stations. These stations transmit a form of spoken code for a short period of time, mostly in the form of numbers. These radio stations are an example of encryption within a technology that is normally used within music, just as with the vocoder and the SIGSALY system. Number stations also put radio within a more networked perspective, then just the one broadcasting center that transmits its message towards its receivers. London radio enthusiast Akin Fernandez collected these transmitted fragments into a 4 CD compilation he called the *Conet Project*. Because of the obsessiveness it took to create this compilation of espionage recordings he was interviewed by the Washington Post. In regard to utopia the question that arises is whether these number stations can be considered a more profound utopia than normal radio since they conceal their transmitted message even further. When a number station transmit a certain code it has a very clear idea of who is going to be the recipient of that code, which is interesting for the way the radio communicates. The Washington Post article on the *Conet project* and Number station sheds some light on the communication model of radio when it broadcasting a message.

"In a two-way communication, you have to acknowledge the message," says David Kahn, author of "The Codebreakers," a history of cryptology. "But with a shortwave broadcast, anybody can listen, which means that nobody knows who the message is intended for.(David Segal, The Shortwave And the Calling, Page C01)

The way radio communication is viewed in this comment is different from the way we viewed radio communication earlier. In this model there is one intended target, and the rest of the audience is unknown, while in the earlier model the reception of the signal itself by any audience was considered unknown. In some ways this ties back to the writings of Gregory

Whitehead where the moment of broadcast meets the radio's secluded nature of its one way communication model. However in the case of number stations it does not deal with the materiality of radio itself, but with its broadcasted content. In terms of a relationship to the notion of utopia not much changes when the broadcasted content is highly encrypted and cannot be understood by the average audience. If the definition of a utopian moment is that of seclusion alone then the encryption of the transmitted content can then be seen as heightening the utopian ideal. However the utopia that was defined earlier also dealt greatly with an idea of contradictions. The content of normal radio stations are meant to be received by everyone within the transmission radius in an easy way, however the moment wherein this transmission takes place loses its connectivity with the outside world, thus creating a contradictory seclusion within a mass media technology. Number stations on the other hand, direct their messages to a highly informed single individual and do not have this contradiction.

There is another topic where number stations deal with an utopia which does not relate to the medium of radio at all, and that is through the codes that they transmit. The broadcasted codes that these number stations transmit are largely indecipherable for those who are not the intended target because of the way they are constructed. These uncrackable encryption methods are called one-time pads. A one-time pad is used only once and the key required to encipher and decipher the message is as long as the message itself. Because the encryption key is as long as the message itself, it doesn't need to be repeated more than once to encrypt the message. In this way no pattern emerges out of the encrypted message. Any pattern recognized by the person wanting to crack the message can still be false or with other words, imagined. For this reason people like Akin Fernandez that search for and try to crack the messages of number stations have long been in the realm of conspiracy theories. Number stations are however very real, and not the cause of some amateur radio pranksters. Dave Segal mentions 'Numbers stations, it turns out, are the one-way chatter of espionage agencies to their spies. This isn't conspiracy theory hokum; it's referenced in a dozen-plus memoirs of assorted ex-spooks and defectors.' (David Segal, *The Shortwave And the Calling*, Page C01) Although the imagined pattern or meaning in an undecipherable code doesn't necessarily deal with *The Conet project* and other number stations enthusiasts it does raise an interesting question on how they might relate to the imagined places of Afrofuturism. There is a distinct difference between the two and that is role of the metaphor for Afrofuturism that the imagined meaning within a message does not have.

The idea of the imagined message within uncrackable code does raise a totally different topic. Although the musicians that used the vocoder were unaware of its military history and usage in speech encryption one can wonder if there are musicians that use similar methods of encryption or concealment to hide certain messages in their music. Instead of using actual cryptographic technology such as the vocoder, one could devise a system to encode a message using a system of numbers of even musical notation just as with the number stations. Although it seems unlikely that a composer is busy with encoding information within the structure of his music and the writing of music itself at the same time, there are some instances of musicians that mentioned forms of cipher to be part of their music 'So to the closest link of all. Perhaps music actually is a form of cipher? Schoenberg thought so' (Eric Sams, *Music and Cipher*, p 730)

The most notable example that I found is the music of Lili Boulanger. Bonnie Jo Dopp did extensive research on possible hidden messages within her music.

She published these findings in “Numerology and Cryptography in the Music of Lili Boulanger: The Hidden Program in Clairières dans le ciel”. This paper contains a rather precise technical description of Lili Boulanger her music

Sa- voir ma vie tom- be[e] fix- ez la tige.
 D B-flat B-flat D B-flat D B-flat D D B-flat

 24 13 13 13 24
 (To know my fallen life gaze at [fix your attention upon] the stem)

Fig. 6 Bonnie Jo Dopp, An example of a symmetrical placement of three 13's in Lili Boulanger's Music.

Although Lili Boulanger her music does contain certain elements of cryptography, she also placed a certain own system of symbolism within these encoded messages. Because she placed occult symbols of herself within her music, she believed that when the songs were heard the presence of the spirits of her own symbolism would be felt. Bonnie Jo Dopp explained this as the following:

The hallmarks of symbolism include obscurity, indirection, and particularity, the notion that a small symbol carries enough representation in it to stand for a greater whole, rather as a whole song cycle(Bonnie Jo Dopp, Numerology and Cryptography in the Music of Lili Boulanger: The Hidden Program in "Clairières dans le ciel, p 577)

One could argue that obscurity and indirection are the same as the utopian idea of seclusion and concealment. However in the materiality of the radio and the concealment of the vocoder there is no idea of a representation of a single symbol that could stand for a greater whole. Even within the concept of Afrofuturism is the idea of the mythical elsewhere place represented fully by lyrical content and a certain stage act. There is no stand alone or even hidden symbol that represents more than the act itself. Which does seem to be the intention of Lili Boulanger her symbolism. Dopp continues by stating that:

More mystically, symbolist poets and artists believed that a symbol presents a greater reality, that it does not simply stand as a sign of a thing but evokes the thing itself when received by a viewer, reader or listener.(Bonnie Jo Dopp, Numerology and Cryptography in the Music of Lili Boulanger: The Hidden Program in "Clairières dans le ciel, p 577)

The anonymization of the voice within electronic afrofuturistic music and the symbolism of Lili Boulanger are different in a couple of aspects. Both of them refer to a greater reality beyond their own music, and with that greater reality do they try to convey a message that goes further than a literal explanation.

The main difference is that of a subconscious understanding of Lili Boulanger her symbolism which is not the same as utopianism. A utopia is meant for the informed, in the case of radio

those who have tuned in to its signal, in the case of Afrofuturism it is those who understand the metaphor behind the futuristic them. Those that are informed are not a select few per se, but there is a division between those that know access to the utopia and those who don't. In Lili Boulanger her music anyone is subject to that form of symbolism. Those who listen to the music also receive the hidden work, and are affected by her symbolism regardless of understanding its meaning.

Another difference between the radio and the vocoder and Lili Boulanger her practice of enciphering her own music is that it a conscious choice of her to embed a secretive system of personal symbols in her music. The utopia that came forth out of radio and in lesser sense the vocoder came from the usage of the device itself without a prior conscious decision. Lili Boulanger devised this system and embedded it in her work as a way to ensure an ongoing life. A work that survives itself. In a certain way this is almost the exact opposite of the radio utopia, which does not survive itself, because it only exists within the present tense and does not ensure itself a future nor does it preserve its own past.

Conclusion

Although it is not common to attribute an idea such as utopia which is normally used to describe non-existent societies, to a device such as the radio or the vocoder, yet by defining utopia from a perspective of contradiction and the present tense we can distinguish some differences in the utopianism of the radio or the vocoder.

The main difference between the radio and the vocoder in terms of utopianism is the fact that radio is a one way communication tool and the vocoder isn't. While a radio transmitter is broadcasting, there is an occurrence of a utopian moment, where the radio's seclusion and the present tense meet. The vocoder lacks this moment because the moment it transforms the incoming sound it does not necessarily broadcast it to the outer world. In this sense the radio is inherently present tense and the vocoder isn't. If the perpetual present tense is crucial for the existence of a utopia, then the radio is a utopian device and the vocoder is not.

On the other hand the vocoder is a tool for concealment, and anonymization, much more so than the radio. While both technologies alter the natural sound and the sound of the human voice in their own ways, the vocoder has a much larger history in encryption. The encryption of a message is valuable when it comes to utopianism, especially when dealing with the notion of seclusion.

The vocoder also has a more rich history in the terms of afro-technophilia and futurism. When used in a creative way the vocoder is almost solely used to express ideas about the future. Although musicians using the vocoder were never aware of its military encryption history, the notion of seclusion is still what they have in common.

The idea of encryption and seclusion also lead us to more profound examples of encryption within radio broadcasts and music. However both these forms of encrypted content were different to the defined idea of a radio utopia because of the way they dealt with their audience. Number stations send encrypted messages over the radio to their espionage agents, which is less contradictory than the utopian radio broadcast where an unencrypted message is sent towards an unknown audience. In the same line Lili Boulanger devised a system to convey the message of symbols hidden within her music.

The idea of symbolism that can be understood through some unconscious understanding of those symbols is fundamentally different from the utopia that comes forth from radio. Within a radio utopia there is the notion of tuning in to the right channel, with knowledge gained beforehand, while on the other side of the broadcast there is no intention of a hidden message.

Within my own work, the idea of an anonymous radio utopia is still very active, but also very young. The research that I have done for this thesis, has led me not only to a greater understanding of the medium that I work with, it also has given me more tools and options to consider. In terms of a medium such as radio or speech synthesis, as well as how these media can be utilized to provoke ideas of anonymization, encryption and utopia.

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