Towards a Media-Archaeology of Sirenic Articulations

Listening with Media-Archaeological Ears

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ABSTRACT Media archaeology is not just a methodological claim but first of all a research practice of media culture. The case study described in this text is meant to demonstrate that archaeoacoustics can be applied to cultural aesthetics as well. The research expedition of April 2004 exploring the sonosphere of the Li Galli islands facing the Italian Amalfi coast measured the sonosphere of the acoustic theatre where the Homeric Sirens are supposed to have sung, resulting in surprising findings about the acoustic real(ity) lurking behind the myth. The relation between media archaeology and aesthetics is a dialectic one: Only through the application of most positivistic acoustic measurement technologies can new evidence against the philological tradition be gained, while at the same time these data only make aesthetic sense when coupled with cultural knowledge.
KEY WORDS Media archaeology, Homer, Sirens / sirens, archaeoacoustics, recursion, musicology, Pythagoras

Sonic media archaeology is not simply about the reanimation of first recordings or even prephonographic sound inscriptions *avant la lettre*, it also regenerates sonicity in co-originary (German *gleichursprünglich*) ways, re-tracing the *arché* of sound.

When in early April 2004, an academic team from Humboldt University Berlin undertook a sound-archeological research expedition to the Li Galli islands at the Amalfi coast of South Italy, its basic premise was "[...] unqualified trust in the ability of Homer's [...] words to describe Siren songs and a qualified distrust in the ability of human ears to fully understand them. Several experiments involving human organs and technical apparatuses were conducted. On the human side, mouths sung and spoke Homeric verses at and from the islands while human ears listened",[1] while a set of sonic signals originating from animals or even machines tested the non-human theory of Sirenic singing. Does the acoustic contemplation of water waves with ears which are heated up by firm knowledge of the Homeric tradition lead to auditory hallucinations of acoustic waves as spatially close and at the same time temporally far away? Siren songs would thus be understood in both Walter Benjamin's sense of "aura" and as aural perception. Such a sonic water wave setting is familiar from the prelude of Richard Wagner's *Rheingold* opera; here the natural tonal series unfolds like a Fourier analysis of superimposed

sinus waves (corresponding with the river Rhine itself) rather than a compositional musical melody.[2]

Ernle Bradford (well known for later having tracked Ulysses' naval voyage across the Mediterranean) reports that he heard the Sirens sing while serving on H.M.S. Exmoor in early September 1943 carrying out defensive patrols in the Gulf of Salerno:

> The music crept by me upon the waters [...]. I cannot describe it accurately, but it was low and somehow distant – a natural kind of singing one might call it, reminiscent of the waves and the wind. Yet it was certainly neither of these, for there was about it a human quality, disturbing and evocative.[3]

Gallo Lungo, Castelluccio and La Rotonda have been assumed since antiquity to be the home of the Sirens and in World War II served as a possible hide-out for enemy vessels. The media-archaeological question arises: Is there something like a physically given setting, a grounding in the "real" of signal processing, that kept cultural memory insisting on that place and which only sonic measuring media can reveal (analog to Benjamin's notion of the "optical unconscious" which can only be detected by the camera lens[4])? Let us point out the "grey zone between natural sounds and specifically addressed messages with a 'human quality.' Meaning emerges from noise and reinforces its content by activating a cultural memory of antiquity – a Lacanian transfer from the real (waves) over the symbolic (encoded communication) to the imaginary [...]."[5]

On the literally "symbolic" level Barry Powell convincingly argues that between *Iliad* and the *Odyssey* lies the invention of the Greek alphabet, i.e.: the adding of vocal symbols to the syllabic Phoenician alphabet in order to record the musicality of Homer's oral poetry.[6] The Sirens are literary expressions of this vocality. A sonic media archaeology of the *Odyssey* has to confront an (a)historic dilemma: How can an acoustic event which is supposed to have happened before the age of gramophonic recording be verified? The Siren songs in Homer's *Odyssey* have long been treated as a mere cultural-poetical invention by the bard. In contrast, the research project tried to test and reconstruct such acoustic events by media-archaeological means – a sound analytical provocation to philological methodologies.

This can be re-formulated in terms of Julian Jaynes.[7] "Sound politics" in Homer's time meant gaining control over authoritarian verbal hallucinations via the adoption of writing as a sound-technology driven by symbolically reproducible vowels. As cultural technique, "acoustic" writing and sound reading of the sonosphere of language mediated by

the phonetic alphabetic code remodeled our bicameral mind becoming conscious.[8]

The media-archaeological investigation performed on the site of the Li Galli islands provided evidence that the myth – which since Strabon's *Geographica* has been sure about the location – "echoes" actual acoustic phenomena on the site. For such a precise location of cultural memory, there must be a foundation in the acoustic real.

Sirens are "non-human" in terms of machinic or cyborg sound. What makes the mythological Siren motive relevant for present media archaeology of sound is the intervention of the phonograph, since for the first time, the replay of recorded voices was considered like the presence of humans while at the same time knowing it is reproduced from dead signals on a storage medium – and even more with electronic sound processing. Here, the uncanniness of the monstrous Sirens corresponds with the imaginary of technology itself. Jussi Parikka defines "imaginary media as shorthand for what can be addressed as the non-human side of technical media; the fact that technical media are media of non-solid, non-phenomenological worlds (electro-magnetic fields, high-level mathematics, speeds beyond human comprehension"[9] – which, beyond the phonograph, is true for electronic sound media up to the digital sound processing of today with "ultra-sonic" speed of processing.

The zone of indeterminacy between human and non-human sound is what Maurice Blanchot once identified as the "acoustemic" core of the Siren songs. Blanchot takes into account the notion of human singing turned upside down:

> Some have said that it was an inhuman song – a natural sound [...] but on the borderline of nature, at any rate foreign to man; almost inaudible [...]. Others suggested that it [...] simply imitated the song of a normal human being, but since the Sirens, even if they sang like human beings, were only beasts [...], their song was so unearthly that it forced those who heard it to realise the inhumanness of all human singing.[10]

Vocal effects of presence can be achieved even by completely virtual (that is: computational) artefacts. The sonic undoing of the anthropologically and culturally significant difference between life and death is the epistemic message of the uncanny Siren *myth*ologeme (with *mythos* naming the acoustic rumour).[11] Another uncanniness derives from the technological sublime:

> Kittler mentions the Sirens as [...] example of recursive history 'where the same issue is taken up again and again at regular intervals but with different connotations and results' [...]: from seductive Greek sea nymphs to monsters of early Christianity, from mermaids of the Middle Ages to the nineteenth-century technical use of the term in the form we understand it, i. e. as a signaling device with a sound, subsequently playing a key part in the mapping of the thresholds of hearing as well as the development of radio [...].[12]

The artefactual correlation for the Sirens as subject of sound-archaeological research is the technical siren apparatus indeed which has been once developed to synthesise vowels[13] – especially in the double siren version as developed by Hermann von Helmholtz, remarkably corresponding with the *casus dualis* of the Homeric Sirens. The experimental settings of the Li Galli expedition has been to fold both meanings of the "siren" upon each other – the cultural and the technological one. That is why it was almost obligatory to emit across the island, among other sound sources, acoustic impulses generated by the technical double-siren.

With the technical siren as *sonic* device (as developed by Cagniard de Latour and refined by Hermann von Helmholtz) the vocal formants became mathematically analysable and thus calculable; this had a retro-effect towards the metaphysics of the voice in occidental ontology: Since then, a human voice is considered and perceived as a frequency-based vibration event in itself, no less "mechanical" than technical machines. An ahistorical short-circuiting of distant times takes place once the technical siren as sound generator confronts its mythological object, the Homeric Sirens: "Recursions fold time and thus enable direct contact between points and events (and S/sirens) that are separated when history time is stretched out on a continuous line."[14] Such a procedure was carried out on a technical level: sound-producing technologies were used to project sounds to and from the Li Galli islets while being recorded by storage devices. The subsequent technical analysis of the recordings produced a truly techno-logical insight: "Sounds emanating from the main island Gallo Lungo hit the Siren rocks Castelluccio and La Rotonda and, much like a ball caught between the flippers of a pinball machine, start to echo between the two, resulting in the disorienting sonic phenomenon experienced by Bradford [...]",[15] while even more addressing ears which are turned by the archaic Greek theory of musical sound ratios closer to Pan's *double* flute (*auloi*) than to the classic Apollinic lyra. Geoffrey Winthrop-Young points out the special twist of this forensic Siren analysis: "[...] one of the sound-producing devices used to disconceal the ancient Sirens was an aerophone, a noisemaker that pro-
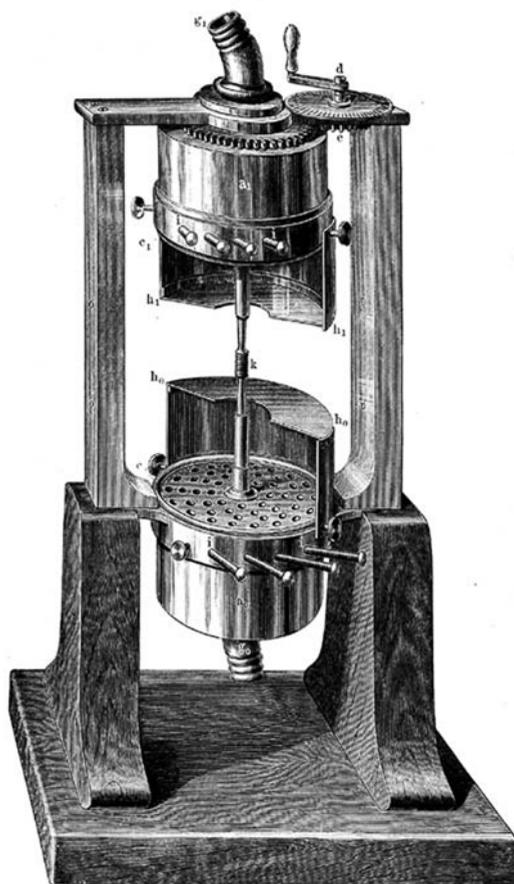
Vocal Siren. From Hermann von Helmholtz, "Ueber die physiologischen Ursachen der musikalischen Harmonie" (lecture 1857), in *Vorträge und Reden von Hermann von Helmholtz*, vol. 1, 5th edition (Braunschweig: Vieweg, 1903), 119–55, Fig. 1.

duces signs by interrupting the air flow – in other words, a modern siren. Sirens track Sirens" – which is both acoustic media archaeology and media archaeology of the acoustic. In terms of cultural techniques,[16] the condition for such an awareness was the phonetic alphabet:

The ancient Greek notational practice of the vowel alphabet which was used both for musical and for speech notation set an epistemological *a priori*. From the point of view of the archaeology of knowledge, this beginning of the technology of vocal culture already contains its teleo-archaeological end. The true message of the phonetic alphabet as a cultural technique is the desire to achieve an indexical relationship to the sound of the voice, but this outstrips the capabilities of symbolic notation. The phantasm is only realized by a genuine media technology, the phonograph.[17]

All of a sudden, comments Winthrop-Young, we are carried into Walter Benjamin's media-theoretical territory, especially into section XIV of his essay on *The Work of Art in the Age of Mechanical Reproduction*. According to Benjamin, every historical era "shows critical epochs in which a certain art form aspires to effects which could be fully obtained only with a changed technical standard".[18] This happens on the level of the symbolic signifiers as well. The alphabetic vowels transposed Homer's voice into symbolic recording, while the technical siren generates tones by numbered holes representing numerical frequencies as the reverse of the time domain of wave forms.

> In the case of the Siren-to-siren shortcut we are leap-frogging across millennia. Here [...] we come across a recursion of Hegelian splendor and magnitude that is related to the re-functionalization of the Greek alphabet. [...] In the Pythagorean tradition [...] the perfect harmony (expressed mathematically and musically) is that of the two sirens singing.[19]

If modern hearing is listening with technological ears, the experimental investigation of the acoustic properties of the Siren song area at the Amalfi coast is a perfect example of aural analysis in its media-archaeological sense.

> The white noise signal recorded between the two smaller islets showed higher amplitudes in the 1000–5000 Hz frequency range than the same signal recorded just in front of the islands. [...] This result can be seen clearly in the lower harmonics where the main energy of sound is located. The changes in loudness were distinctly perceived even to the naked ear. Our results lead to the conclusion that the specific geographical constellation of the island acts as an acoustic amplifier [...].[20]

If we suppose that "the Sirens" play more than just a metaphorical role in representing the true, perfect sound that ancient poets desired,

> [...] it should be reasonable to find further evidence and to think of investigations that reach beyond traditional philological methods. Sirens like Muses to minds of oral poetry were entities of real experience. They provided wisdom from within and through the audible domain [...]. On the one hand, as our experiments show, there is only a sharp line between real acoustic phenomena and acoustic hallucinations at the Sirens' Island. On the other hand in early Greek thinking Sirens incorporate acoustical features of superior soundings and of musicological relevance.[21]

Media archaeology focuses on the acoustic "evidence" or (in order to avoid oculocentrism) rather e-tonality which arises from such archeo-acoustic research: "As a matter of fact, [...] intervals given together by two Sirens at Li Galli can only be differentiated as being 'accords', that means having two separate sources, if their overtone structures do not merge."[22] Enharmonic tuning in Ancient Greece has been developed from an early diaphony for which next to the double-*aulos* the *casus dualis* in the song of the two sirens holds.

This *casus dualis* could therefore have been acoustically motivated which leads media archaeology to a musicological hypothesis of an early Greek diaphony based on enharmony. Methodically, this indicates that from the closest techno-archaeological analysis new cultural insights arise once it is coupled with aesthetic knowledge. However, such a hypothesis will require further *acoustic reasoning* on the site. There is still latent sonicity waiting to be unfolded media-archaeologically.

Modern sound technologies go beyond the classic "Pythagorean" hearing with its strong logocentric focus on cosmic order – *harmonía* –, listening to *logos* as integer number ratios.

In order to arrive at "non-Pythagorean sound",[23] let us take the notion "media archaeology of listening" literally, by focusing on the technical media of observation, measuring and recording as active agencies of knowledge on hearing. In that regard, the loudspeaker as sonifyer has played a crucial role: It was with the invention of the electric telephone and the vacuum tube-based, thus amplifying loudspeaker that previously non-acoustic phenomena (such as small electric currents in human nerves) could be sonified in physiology and other branches of science.

The fact that in recent years so-called "cultures of listening" and techniques of sonification have emerged within cultural studies is itself a

media-technological effect. In previous centuries, sonic articulation has belonged to the most *transitive* cultural phenomena. The recall of such listening experience depended on actual (and thus always unique) bodily re-enactment.

Actually *listening* to modernity[24] is a welcome widening by historians of the scope of source material from writing and visual evidence to past sono-spheres – as has been already aimed at by the World Soundscape Project of Raymond Murray Schaffer and other projects to "archivize" soundscapes of modern life. But the framing of this extension still remains within the historical discourse in its (literally) con*textualizing* gesture. Let us rather extend the sonic "understanding" of the past to media-archaeological hermeneutics.

When trying to re-access transient articulations, at first glance, it looks as if past modes of listening – which vary with cultural history – can only be reconstructed by written descriptions. On the other hand, both past and present ears can be coupled to the same media mechanisms – be it the Pythagorean monochord, be it the Edison phonograph. For all acoustic or musical experience which depends on machines I introduce the term sonic (in parallel to terms like "electronic"). This common denominator, exactly because it is non-human itself, allows for a non-historical immediacy, a co-original (in German: *gleichursprüngliche*) situation and position. The hard media archaeologic assumption is that the human auditory apparatus is forced to obey laws imposed by the media apparatus itself; historicity therefore is deferred by and to the technology.

How do we get access to past sound and hearing? This implies the non-trivial challenge: Pre-Edison sound(s) can not be historiographized at all, since they do not exist as historical records.[25] The best method to understand a medium is by re-engineering it and by its functional (re-)enactment.[26] When we re-enact the procedure which Pythgoras experimented with the monochord in the 6th century B.C. today, that is: when we pull such a string, we actually re-enact the techno-physical insight of the relation between integer numbers and harmonic musical intervals which once led Greek natural philosophers to muse about the mathematical beauty of cosmic order in general (including the experience and fear of deviation of this aesthetic ideology resulting in the "Pythagorean *komma*", that is: irrational number relations). Therefore we are certainly not in the same historical situation like Pythagoras, since the circumstances, even the ways of listening and the psycho-physical tuning of our ears, is different. But still the monochord is a time-machine in a different

sense: It lets us share, participate in the original discovery of musicological knowledge, since – in an almost Derridean sense (expressed in his *Grammatology*) – the original experience is repeatable; the experiment allows for com/munication across the temporal gap (bridging a temporal, not spatial distance like mass media do).

The reverberating chord is an operative sonic media diagram.[27] Charles Sanders Peirce described diagrammatic reasoning as such: "[...] similar experiments performed upon any diagram constructed according to the same precept would have the same results [...]."[28] Once human senses are coupled with technological (especially sonic) settings, man is within an autopoietic temporal field, a chrono-regime of its own dynamics (or mathematics, when data are registered digitally). Such couplings create moments of literal ex-ception: Man is taken out of the man-made cultural world (which is Giambattista Vico's definition of "history") and confronts naked physics.

Notes

1. Geoffrey Winthrop-Young, "Siren Recursions", in *Kittler Now*, ed. Stephen Sale and Laura Salisbury (Cambridge: Polity Press, 2015), 71–94; http://phenomenologymindsmedia.files.wordpress.com/2011/05/winthrop-young-siren-recursions.pdf. See Wolfgang Ernst (with Martin Carlé and Tania Hron), "Lokaltermin Sirenen oder Der Anfang eines gewissen Gesangs in Europa", in *Phonorama: Eine Kulturgeschichte der Stimme als Medium*, ed. B. Felderer (Berlin: Matthes & Seitz, 2004), 257–66.

2. See Friedrich Kittler, "Musik als Medium", in *Wahrnehmung und Geschichte: Markierungen zur aisthesis materialis*, ed. Bernhard J. Dotzler and Ernst Müller (Berlin: Akademie, 1995), 83–99: 96.

3. Ernle Bradford, *Ulysses Found* (London: Hodder and Stoughton, 1963), 130.

4. Walter Benjamin, "Kleine Geschichte der Photographie", in *Gesammelte Schriften* vol. II/1, (Frankfurt/M: Suhrkamp, [*1972], 2nd ed. 1989), 371.

5. Winthrop-Young, op. cit.

6. Barry B. Powell, *Homer and the Origin of the Greek Alphabet* (Cambridge: Cambridge University Press, 1991).

7. Julian Jaynes, *The Origin of Consciousness in the Breakdown of the Bicameral Mind* (Boston: Houghton Mifflin, 1976).

8. This has been the main argument Martin Carlé's lecture "Psychoacoustics and Simulation – Breakdown and Reconstruction of the Bicameral Mind" at the conference *Acoustic Surveillance* on April 8, 2005, at Bard College, New York.

9. See the chapter "Non-Human Media", in Jussi Parikka, *What is Media Archaeology?* (Cambridge, Mass.: Polity Press, 2012), 55–61: 61.

10. Maurice Blanchot, *The Sirens's Song: Selected Essays* (Bloomington: Indiana University Press, 1982), 59–65: 59.

11. This challenge returned in the digital culture with the "Turing test" and the cybernetic question addressed to the *electronic brain*: Can computers think?

12. Parikka 2012, 67, quoting John Armitage, "From Discourse Networks to Cultural Mathematics: An Interview with Friedrich A. Kittler", *Theory, Culture & Society* 23, no. 7/8 (2006), 17–38: 33.

13. The explicit harmonic analysis of acoustic vibrations (in adoption of Fourier's mathematical analysis) for the sensation of hearing "tones" was achieved by G. S. Ohm, "Über die Definition des Tones, nebst daran geknüpfter Theorie der Sirene und ähnlicher tonbildender Vorrichtungen", *Annalen der Physik und Chemie* 59 (1843), 513–65.

14. Winthrop-Young, op. cit., note 5.

15. Winthrop-Young, op. cit.

16. See Walter Ong, *The Technologizing of the Word* (London: Methuen, 1982).

17. See W. E., "Der Appell der Medien. Wissensgeschichte und ihr Anderes", in *Rekursionen: Faltungen des Wissens*, ed. Ana Ofak and Philipp von Hilgers (Munich: Fink, 2010), 177–97: 182.

18. Walter Benjamin, *Illuminations: Essays and Reflections*, ed. by Hannah Arendt (New York: Schocken, 1968), 237.

19. Winthrop-Young, op. cit.

20. Karl-Heinz Frommolt and Martin Carlé, "The Song of the Sirens", *The Nordic Journal of Aesthetics*, no. 48 (2015).

21. Frommolt and Carlé, op. cit.

22. Frommolt and Carlé, op. cit. See as well Martin Carlé, "Enharmonische Archäologie der griechischen Musiknotation", in *Die Geburt des Vokalalphabets aus dem Geist der Poesie*, ed. Wolfgang Ernst and Friedrich Kittler (Munich: Fink, 2006), 281–97.

23. A term coined by Johannes Kroier, Berlin.

24. See the Sawyer Seminar lecture series *Hearing Modernity* at Harvard University (Dept. of Musicology), winter term 2013/2014.

25. See Axel Volmar, "Gespitzte Ohren: Akroamatische Dispositive und musisches Wissen als Grundlage für eine Geschichte epistemogener Klänge", *MusikTheorie: Zeitschrift für Musikwissenschaft* 22, no. 4 (2007), (thematic issue: Perì mousikès epistéme. Zur Aktualität des antiken griechischen Wissens von der Musik, edited by Sebastian Klotz), 365–76: 366.

26. On "reenactment" as historical method, see R. G. Collingwood, *The Idea of History* [*1946], rev. ed. (Oxford: Oxford University Press, 1993). See further-

more Wolfgang Ernst, "Experimenting Media-Temporality: Pythagoras, Hertz, Turing", in Wolfgang Ernst, *Digital Memory and the Archive*, edited by Jussi Parikka (Minneapolis and London: University of Minnesota Press, 2013).

27. The electromagnetic wave is a media-electronic equivalent to the vibrations of the monochord string only to a certain degree.

28. Charles S. Peirce, *The New Elements of Mathematics*, vol. 4, *Mathematical Philosophy*, ed. Carolyn Eisele (The Hague: Mouton, 1976), 48.