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The Tacit Grooves of Sound Art

Aesthetic Artefacts as Analogue Archives

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ABSTRACT

From the perspective of sound studies and media history this article explores approaches to analogue archives coming from the fields of sound art and media art. The authors analyse works of art by two contemporary artists from Berlin and Aarhus focussing on archival practices of storing and retrieving: Marianthi Papalexandri-Alexandri and Morten Riis. What is actually (not merely metaphorically) 'stored', 'inscribed' or 'archived' in and subsequently 'retrieved', 'read' or even 'decoded' from a certain sound artwork? From this starting point the individual artistic practices, the research strategies and the new and surprising ways of archiving and retrieving as invented and refined by Papalexandri-Alexandri and Riis are described and analysed. The observed artistic practices, the authors argue, converge in the direction of sonic affordances inherent in the material instruments or storage media: These affordances are stored and retrieved, as they represent the tacit grooves of sound art.

On Analogue Archives

The archive in itself is silent. It is silent as long as it is not used, as long as nothing is stored in it or retrieved from it. Practices of retrieval and storage are required to make the content of an archive manifest: discernible, audible, materially present. But are the consequences of archival activities really that easy to define? Is it so easy to say what an actual archive is – and what it is not? Artistic approaches to analogue archives indeed seem to question these truisms, and approaches from the most advanced fields of the natural sciences even more so. As part of the German Research Foundation's DFG Cluster of Excellence *Bild – Wissen – Gestaltung* at the Humboldt-Universität zu Berlin, we explored manifold aspects of analogue archives. Our project *Analog Storage Media* (Kassung, Rabe & Schulze, 2012) made it possible to engage in interdisciplinary research on new methods and technologies in the natural sciences, on interferences between technologies in the sciences and in experimental cultural practices, and on new cultural and artistic practices appropriating analogue storage media. This article is a result of this project.

At the end of our collective research we like to state: We conceive of an archive not as a stable thing; it does not work like a container which comes with clearly delineated borders and a complete and detailed inventory. Rather, an archive is always incomplete, preliminary and ambiguous. It is both product and process: An archive that has been created by someone (or at least: defined as such by someone) and determined, becomes a raw and open space for a person approaching the archive with her or his very distinct intention to retrieve from it, to use it or to add to it. Building an archive is a continuous activity, and this process of building and creating an archive already involves a range of ideas, decisions and practices that need to be explored if one wants to learn how an archive works and what can be found there. Our understanding of the archive thus intends to eliminate or distort

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essential archival features such as accumulation, preservation and representation. Rather, we conceive of an analogue archive as a site of continuous exchange between potentiality and actuality, between the virtual and the actual. In analysing archives we like to ask: What is stored, how has it been arranged, ordered and defined? What is its intended function? What should be retrieved from it in the future and how? What kinds of materials and technologies are used to create the archive? How has the archive been shaped by these aspects, components and practices?

In the context of this article, we are particularly interested in a new and perhaps unusual notion of the *analogue* archive. Although the intention is not to elaborate on the often and maybe over-discussed issue of analogue versus digital (Schröter & Böhnke, 2004), some of the basic characteristics of the analogue may function as operational and quite helpful concepts here: The emphasis of the analogue is on the *real* rather than the symbolic, the *continuous* rather than the discrete and the *material* rather than the codified. To further enhance our notion of the analogue archive, we do not mean a private collection of vinyl records, stored and carefully tended to, representing a particular taste in music and expert knowledge. Rather, to stick to the object of the record, we would be interested in the actual groove engraved in the vinyl disc itself. How has it been cut? By which machines, and relying on which algorithmic, electric and mechanical processes of translation has it become a tangible and material aesthetic artefact from which sound can be retrieved?

In our understanding of affordances we follow the convincing applications and quite specific expansions of this term in the fields of design and design theory. In this context the concept was taken up by William Gaver with reference to the perceptual theory by Jerome Gibson (Gaver, 1991; Gibson, 1977): It refers, in this later interpretation of interaction design, to the potential of a designed artefact to provoke certain, desired forms of usage and interaction – and to repulse less desired forms of interaction. Aware of the inherent aporias or even inconsistencies of this term as a concept, moulded to fit the actual practices of design, we regard affordance as a fruitful concept especially because of this ability to be moulded and expanded to fit actual practices in design. Materiality itself is co-constituted by the social, yet precisely the design practices and usage practices of design contribute to this.

Once again, applying this to our example of the vinyl record, the groove does not store sound itself, but a particular affordance of how to use it and of which techniques, practices and competences are required to activate it and make it sound. This specific relationship between materials and practices or between materiality and performativity will be emphasised and elaborated in the following regarding aesthetic artefacts in sound art, and we will ask: What are the *sonic affordances* of aesthetic artefacts that we call *tacit grooves*?

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Marianthi Papalexandri-Alexandri: Instruments as Archives

In our research into the broad history, surprisingly vital presence and possible future of analogue storage media devices we came across the works of art of two contemporary artists: Marianthi Papalexandri-Alexandri from Berlin and Morten Riis from Aarhus. Both artists regularly focus on the storage aspect of sound art. In searching for unknown aspects of analogue storage, our driving question in exploring their works, their aesthetic approaches, and in our various interviews with them was: What is *actually* (not merely metaphorically) 'stored', 'inscribed' or 'archived' in and subsequently 'retrieved', 'read' or even 'decoded' from a certain sound artwork?

Every instrument incorporates its own discursive and material attributes which become sonic affordances for instrumentalists or sound artists who play, interpret or manipulate the instrument. Taking the concert flute as an example, it is discursive in that it reflects and contributes to a particular cultural and musical history of instrument building and playing techniques. The indicators of this discursive formation are not solely metaphorical, but materially constituted in the size, material and design (including the location of the keys and transversal holes) of the instrument. We thus conceive of the classical flute as an analogue archive – its physical and semiotic properties create a sonic affordance that needs to be actualised and appropriated in the performance of playing, disturbing, manipulating.

It would be reductive to conceive of sonic affordances as essential and invariant; therefore, our conception of sonic affordance clearly expands Gibson's notion of affordance (cf. Gibson, 1979, p. 73). Musicians and sound artists have continuously challenged, through extended techniques and preparations, the conventionalised uses and sonic repertoires and concepts of musical instruments. Sonic affordance, in our understanding, does not reflect any essential property of the instrument, nor is it reducible to a mere potentiality of sound propagation. Sonic affordances are discursive and material starting points for artistic interventions, practices and techniques that only become manifest in a particular way of touching, triggering, disturbing the instrument. Sonic affordance also implies a reconceptualisation of the instrument, which becomes an artistic artefact in its own right.

In this article sonic affordance is developed as an analytical tool in relation to sound art in order to analyse artistic artefacts as analogue archives.

Marianthi Papalexandri-Alexandri's series of works called *Untitled* (2009-ongoing) explores different resonant bodies (musical instruments, architectural elements, materials), which are sonically activated through the main underlying principle of friction. This artistic research is either presented as sound sculptures/installations or as instruments to be performed/operated in the context of a live performance. In *Untitled I solo for flutes and sound devices* (2009) the vantage point is that the different parts of the classical flute are set apart and thus deconstructed,

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and the separated tubes of various lengths are arranged in such a way that they work as unique entities. For each of the tubes, extended materials and technologies are applied. While in *Untitled I* the different flute parts themselves were prepared, *Untitled II solo for sound sculptural instrument* (2010) takes a pivotal step further in alienating the instrument from its original: The artist does not use the metal flute parts themselves; the tubes are now replaced by acrylic glass tubes. Elastic membranes cover one of the opening holes of the tubes, and a nylon thread is attached to the centre of the membrane; the thread leads to a rotating motor-driven rod which is prepared with rosin. Friction is created when the nylon thread comes into contact with the rosin, and this friction is transmitted to the membrane, creating delicate and organic, croaking sounds in the resonant bodies of the acrylic glass tubes. If presented as a sound sculpture/installation, the motors are constantly running at three different steady paces, activating the tubes of different lengths so that various frequencies and rhythms emerge. The sculpture is bound to irregularities depending on the amount of rosin that is applied. Another irregularity occurs because the rosin wears off – and therefore the sound qualities change over time. In this way, an audio-visual experience is created that is not repeatable. If presented as part of a live performance, the whole set-up is arranged on solid surface, and while performed/operated the parameters have to be adjusted continuously: the speed of the motors, the tension of the thread, the position of the tubes. *Untitled II* then becomes a kind of living organism, an unstable being, always becoming, always in flux, in constant interaction with the performer, whose role oscillates between performer and operator. As a sound artist and composer, Papalexandri-Alexandri developed a sound sculptural object called *Schablone*, which acts like a score, a new type of graphic notation. This tool gives the performer instructions about how to operate the instrument. Using graphic notation combined with written instructions, this score is an orientation rather than a description of a fixed state, and usually the operator and the artist work closely together in preparing a performance.

The first time I encountered *Untitled II* was at a group exhibition at the Institute of Cultural Inquiry (ICI) as part of the conference *Resonant Bodies: Landscapes of Acoustic Tension* in Berlin (2013) organised by Zeynep Bulut, Brandon LaBelle and Claudia Peppel. The institute's library served as the exhibition space in which a number of sound artworks were presented, and here some strange, undefined and almost mystical sounds coming from the rear wall of the room caught my attention. Papalexandri-Alexandri's sound sculpture *Untitled II* (2011), created in cooperation with kinetic artist Pe Lang, drew attention to itself in at least two different ways: It made me want to get closer and closer to it in order to detect and examine the sounds it made and to observe its detailed mechanics, the joints and functions, the movements it created. Furthermore, the work attracted me as an agent able to affect my own corporeal state: The organic qualities of these sustained, rattling, breathing-

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like sounds and the periodically pulsating rhythms propelled me into an almost dreamlike state. Mounted on the wall, *Untitled II* behaved and sounded almost like a breathing organism, becoming an aural extension of the physical properties of the space and turning the space itself into a resonant body. The juxtaposition of sound, space and resonance, activated by *Untitled II*, created an intimate aural architecture (Blesser & Salter, 2007; Fieldnote Carla J. Maier, 13 June 2013, quoting Blesser & Salter 2007).

A different artistic practice of triggering sonic affordances can be found in connection with the performance of *Untitled I*. This may best be exemplified by the flute player Astrid Schmeling, who performed *Untitled I* at the *Music 21 Festival* in Hannover/Germany 2015. Being a classically trained flute player, in a first step Schmeling was instructed by Papalexandri-Alexandri on how to take her flute apart and rearrange it using a number of external materials and objects to prepare the flute parts. Though this is a very common action for flute players (taking the flute apart to store it in its case), playing and operating the dismembered parts represents a complete new situation. Significantly, this action starts a process of defamiliarisation: a process in which the identity and habits of the instrumentalist are also disassembled and reassembled. Interestingly, as Papalexandri-Alexandri said during our conversation:

> 'We are so much used to be in certain roles, and her role is to be a flute player. So the challenge is actually to make evident this particular role, as well as the "role" of the instrument. How to create a situation which actually prevents the flute player to enact her role in the ways she's used to – and instead activates a new engagement with the instrument as an autonomous object [...] In this way, something very interesting happens: Through the process of limitation – in taking apart the instrument -- and thus taking away most of its conventional spectrum of sonic abilities, we allow the instrument and its parts to reveal the hidden affordances of these resonant bodies'. (Maier & Papalexandri-Alexandri, 2015)

It is the exploration of the 'hidden' sonic affordances of the classical flute that creates this open space for exploring emerging relations between resonant bodies, external materials and motor-driven devices and the operator as a particularly exciting and defamiliarising constellation. The artist achieves this via a combination of visual and aural components; the sonic practice is thus also affected by her visual decisions:

> 'I choose my materials carefully. Often they have some small imperfections, so they won't presuppose perfect regularity. Therefore, they will not sound artificial or purely mechanical. This is a conscious decision. The visual and acoustic elements that I use are equally important, because I want to create an experience, which sets into relation the space, the sound and the objects in this particular moment. I am somebody who is shaping works that can become alive at that very moment'. (Maier & Papalexandri-Alexandri, 2015)

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What is significant about her practice is the way Papalexandri-Alexandri in her work triggers specific and what she calls 'hidden' sonic affordances that affect the behaviour of the performer and at the same time reconfigure the instrument. This becomes compellingly clear when we look at how her specific artistic practices have developed over time, shifting from the preparation of instruments through practicing improvisation (as a performer) to the creation of sound objects and sound installations, some of which are again performed as new kinds of instruments:

> 'The idea of working with a given acoustic body, which is the instrument, and then combining this with some external materials, which are objects. At the beginning of my career I was more interested in taking apart the instrument, to decompose the instrument, and to look at this instrument not as one body only, but to be able to see each individual part, and therefore to pay more attention to the mechanics, the mechanical parts, the anatomy of the instrument itself. What happens if you take the instrument apart and [thus] highlight the quality of the instrument'. (Maier & Papalexandri-Alexandri, 2015)

Sonic affordances are therefore created at the intersection of instrumental parts, objects and bodies:

> 'If I insert a piece of paper in between the violin strings, that area where the paper has been placed, for me it creates a medium between the performer and the instrument. In other words, it kind of isolates, you mark that area, and it becomes an area you cannot ignore. And if you like, if you have the whole instrument, this piece of paper separates the strings and the body of the instrument into two parts – or into three parts, if you include the part where the paper is located'. (Maier & Papalexandri-Alexandri, 2015)

Tacit Storage in Aesthetic Artefacts

The archiving practices of Marianthi Papalexandri-Alexandri are instrumental practices combined with practices of developing, transforming, enhancing and building instruments.[1] Her flutes are mutated flutes. In her artistic practice she explores the archival potential of the resonant body of an instrument. This potential she subsequently unfolds in a series of experiments, of experimental settings, in playful, but always carefully organised improvisations on the possible usages, manipulations, new uses or abjected uses, which the potential of the instrument may inspire. A well-known instrument like the classical flute (or in other cases the classical violin) is approached as an almost alien artefact: Marianthi Papalexandri-Alexandri plays a rather deliberate game of wilfully ignoring the deep history of the instrument – which nevertheless inspires and informs her experimental approach. During the experiments she *plays with the flute*, but she never actually *plays the flute* in the traditional sense. You could say that this playing around, almost a fooling

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around, a dismembering, dissecting and reassembling of this musical instrument allows her to open up the potential of this instrument performatively. This is not done via archival research, at which a researcher in instrumental history or in the history of composition would unquestionably aim; instead her own corporeal inclinations, obsessions, enjoyments and disinterests shape this research. She follows, quite intimately so, the traces, the grooves, in this object.

In this sense her research should be regarded as truly *artistic research* (cf. Holert, 2011; Borgdorff, 2013). This deeply practice-oriented approach of her artistic activity to do research is – and this is often neglected in discussions of this field – in fact not that different from traditional research activities seen in the natural sciences, in physics and even in the engineering sciences, which may be seen as the pinnacle of utilitarian, "non-artistic" research. Her improvisational tweaking and testing, holding and playing of this presumably alien instrument is not systematic in a computational sense of completeness; but the incredibly tiny results, the nano-grooves in each improvisational session guide her in each situation through her further explorations. Some ways of using these instruments are neglected as less inspiring and may instead lead to an artistic cul-de-sac; others indeed may seem more weird or absurd, even scary and unnerving – yet they seem to provide a potential for further enquiry. So she, the artist, may prefer to follow this path.

Therefore, the actual storage practices and techniques she finds, chooses and applies may be categorised in the following way: a) contingent, material responsiveness, b) proportions in the visual, c) triggering sonic affordances. Her artistic research practice begins with her individual and quite personal inclinations towards a certain material responsiveness: In this practice she explores the size and quality of the potential stored, and she personally responds to the grooves in the instruments, their quite contingent, material aspects. The physical and material character of this original instrument, even in its most arbitrary and maybe neglectable aspects, is explored and cherished. In the second step, after exploring these qualities, her visual sense becomes more crucial: She decides on certain aspects of her artistic work mainly in the realm of the visual – even if, like in the case of deconstructing the flute, the actually audible tones may be obviously and strongly affected by this decision. There is no doubt that the visual takes the lead. Finally, in one last, or better, in the endlessly following steps, the epistemologically insightful method of triggering sonic affordances becomes pivotal. Though the individual decisions are carefully thought through, there is no overall programming plan from the beginning. Yet, the element of contingency, even of accidents and weird aleatoric interventions by other collaborators, involuntarily included colleagues, friends or even mainly uninvolved circumstances of this artistic work, may indeed be embraced as constituents of artistic research. In artistic approaches to research these surprising events are not uncommonly interpreted as welcome

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detours and *dérives* from a maybe all-too cleverly thought out plan. Not only since the classical avant-gardes has the artist's love been growing for various improvisational and combinatory strategies between cut-up, collage, écriture *automatique* and manifold recipes for excluding or at least countering the strictest individual interest and intentions. *Let the material take the lead.* It is a form of relief, even of relaxation – and often of forced insight into actually relevant contexts, side aspects or qualities of the emerging work. The precision of the material takes the lead. What is stored in these artefacts – they may be found or just generated – suddenly lifts its disguise, for a second maybe, just for a bit.

The research practice of Marianthi Papalexandri-Alexandri is thus a practice of manifesting a concealed storage, a celebration of this tacit storage that is manifested in sonic affordances. The relevance of this concept for the field of sound art in this case is apparent: The artist tickles and questions, so to speak, this alien artefact to the point where it seems to answer her, to answer ostensibly unasked questions which then become interesting to her, questions about noises and reflections, mechanics and resonances, relations to her own corporeal practices and her individual bodily idiosyncrasies. Her inclinations to certain materialist strangenesses lead her to the next steps in research, steps that finally open up the closed storage space of this instrument. The tacit knowledge of the flute becomes sounding, the sonic affordances do play out. These tacitly stored bits of sound are actualised in the process of her exploring and skilfully misusing the instruments. Her misuse, though, is more often a re-use, and as such you could say that Papalexandri-Alexandri re-invents an old instrument. Her *Papalexandri-Alexandri flutes* are indeed strange new artefacts of a hitherto unknown world, a tacit world, a world where it is not really clear whether these things are musical instruments at all. Maybe they are more clinical tools – or devices of some engineering research? Maybe they are unintelligible constructions of an even more unintelligible alien culture, a culture and its xeno-practices we may only be confronted with in some distant future millennia.

Morten Riis: Retrieving Practices as Storage

Morten Riis' *Steam Machine Music* is a mechanical instrument made mostly of vintage *Meccano* parts. The steam engine, which is the machine's heart piece, activates a number of different sound generators: two music boxes, each of which transport a paper punch card in a constant loop, a drum machine made of rotating metal parts and a zither, whose strings are activated by pulley wheels from a *Meccano* construction set. In fact, all the mechanical parts of the machine become audible with a constant rattling sound, including the hissing of the steam engine, drawing attention to its highly unpredictable, fragile and almost hazardous character. The

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monophonic punch card melody that emanates from the music boxes is clear and plain, thus creating a counterpoint to the frenzied noises of the machine's hisses, rattling and pulsing rhythms. The beginning of *Steam Machine Music* is determined by a number of well-choreographed and still not completely controllable actions that make the machine run – so rather than following a score, the machine itself somehow acts as a score. Its mechanical and physical properties inherit specific affordances which have been designed and must be tended to and mended by the operator of *Steam Machine Music*. The delicateness of these first actions, pouring water into the machine body and lightening the gas flame, is emphasised as an almost-silence that is already part of the piece. And it also emphasises the limitations that the operator faces in being able to control the subsequent steps when the steam machine begins to operate and comes to life. The punch card is another score that has been placed within the machine. Its imprinted symbolic code, cut circular holes that are spread across a piece of white cardboard with some drawn lines that imitate lines of a stave, waiting to be activated. Although the punch card has been designed with care, it is only potentially a generator of sounds or melodies, as it is completely dependent on the workings of the physical machine. Although the machine is sonically constituted, so to speak, its actual sounding is part of a whole set of physical, material and corporeal techniques and practices – and the life of the machine:

> 'I am very interested in the material's own sound. You could talk about the voice of the machine itself and trying to let that voice speak. Somehow you could also talk about maybe the ghost of the machine or something. It's something that is there but it's hidden from us and I just try to excavate it or bring it out in the light. But it's already there but somehow we don't really see it and the relationship to trying to make some kind of composition or try to structure it in a musically meaningful way'. (Maier & Riis, 2015)

This is highlighted by the artist Morten Riis when he talks about the relation between storing and sounding in the steam machine:

> 'I was trying to work with on one hand how to store information and how that information is then executed by a machine. So I mean the music box is a good example and a good way to investigate how we store sound information because the music in this example is stored on a paper punch card, which in itself doesn't do anything – so you need some kind of machine that could translate these holes in the paper punch cards into something that sounds'. (Maier & Riis, 2015)

The sonic affordances of this aesthetic artefact now lie in its capacity to store information that can potentially activate sounds:

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> 'I've been working with that instrument for the last three years now. So you learn to listen to "Ok: now in two seconds something is going wrong". You can hear that in the tempo or in the certain way it screeches or something. It's also a way to diagnose technology, which actually is an old way of diagnosing technology and to some extend like car mechanics today [where they] even use this method of listening'. (Maier & Riis, 2015)

> 'This notion of failure or rupture of the sound of the machine itself is also an important sonic characteristics of the piece. There is a lot of machine noise or something that you would normally say is ... "That's not music, that's just the machine trying to play music"'. (Maier & Riis, 2015)

What is striking about Riis' work is the way he conceives of himself simultaneously as a performer and a repairman – as someone who is making aesthetic decisions while diagnostically listening to the sound emerging and at the same time struggling to keep the performance running. In this way, the artist addresses those aspects which may partly have been lost in the digital world of computerised music production:

> 'I am both a performer but I am also a repairman at the same time. So the machine can run on its own for maybe like thirty seconds or something and it needs me to do maintenance on it. And actually our computers today also need maintenance but we don't know how to do it if our computer breaks down we just throw it out. So the notion of the digital repairman we don't have that anymore. I mean if you take your broken mac computer to the shop they say "Oh it will cost you maybe 80% of the original price to repair it", so you have to just buy a new one and leave. So this whole repair man character is somehow gone out of our history, because we don't understand our technology so we can't repair it and despite being so embedded in digital culture we don't understand it'. (Maier & Riis, 2015)

It is in this context that Riis' notion of craftsmanship is emphasised – not only as a willingness to understand the technology that is so all-encompassing in everyday life and popular culture, but as a source for his artistic research and practice:

> 'First is the knowledge or the notion of craftsmanship that you actually have to learn something and you build something in the real world. But also: What does it mean that our machines are actually physical? What does it mean that the program needs to be executed by a physical machine that has the possibility to break down and fail? And that's something that is not exclusive to mechanical technology; but it's also something that applies to every piece of technology including digital technology'. (Maier & Riis, 2015)

The Grooves in Aesthetic Storage

The archiving practices of Morten Riis are artistic practices that re-purpose various engineering practices of repair such as dismembering, transforming, enhancing

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and rebuilding. His punch cards for instance are abused punch cards. In his artistic practice he explores the surprising archival potential of a dated storage medium such as punch cards (or in other cases music cassettes). He realises their potential by exploring and developing new, unusual retrieving practices for extracting from these storage media data that had never been stored there intentionally in the first place. Though he does use the old punch cards for playing back music, understanding himself as a repairman he does not rely on some perfectly running automation that may never need maintenance. The opposite is true: It is the utter necessity of intervening, of repairing, of rebuilding, of bypassing that constitutes his individual artistic practice. This element in his work also decidedly distinguishes his artistic work from the work of a historian of technology with a more custodian-like or collector's approach. Riis does not intend to restore and retain an invented, pure, historical state of these storage media. Instead, he explores and transforms these traditional storage media to generate new and unforeseeable kinds of sound events and listening experiences. The preserving issue of a storage medium is therefore turned by Riis' practices into an artistic issue of producing sound art and music. The medium is an instrument: It does not even pretend to merely transmit – it purposefully generates sound. The grooves in such a work are not some actually stored grooves or pins or magnetisation patterns; they are grooves that arise from the confrontation between an unsuspected storage medium and an originally unintended, analogue and mechanic nexus for translating the stored information into sound.

In the sense of an experimental engineering bricolage, Riis' research activity is to be regarded as *artistic research*. The engineering sciences and their culture of invention, of improving and of repairing, of cleverly bypassing or tuning, speeding up, are crucial to Riis' work. Whereas from the perspective of physics or other natural or technical sciences the engineering sciences are often disregarded as of minor importance, providing only a service that is useful to more complex research fields, this order is reversed in his work. The engineering practices of technicians and engineers, of which artists also make use, become the core issue in the case of Riis. Again, an improvisational tweaking and testing, playing and trying out of an analogue device is the way to proceed; and in his explorations the artist does come across incredibly tiny results, some nano-grooves in his improvisational sessions with such a machine, guiding his further explorations. Some ways of repurposing such a machine are neglected, while others may seem more weird or absurd, even scary and unnerving – yet they seem to provide a potential for further enquiry.

The actual storage practices and techniques that Riis finds, chooses and applies may be categorised in the following way: a) material practices of repairing, maintaining and craftsmanship, b) diagnosing listening (Bijsterveld & Supper 2015), c) enjoying rupture, failure and glitch. His artistic research practice starts out – much like Papalexandri-Alexandri's – with quite individual and personal inclina-

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tions towards a certain material responsiveness: in his practices the exploring of a material's, a machine's need or affordance to be repaired, to be maintained and to apply a certain craftsmanship to get and to keep it going. The physical and material character of such a storage medium or its machine for retrieving is explored and cherished – even in its most arbitrary and maybe even neglectable aspects. In a second step, after exploring these qualities, his auditory sense becomes crucial: He decides on certain aspects of his artistic work mainly from the point of audition in a diagnosing listening (Bijsterveld & Supper 2015): This is the main reference point from which his decision on usage, altered usage or rejected usage is made. The sonic definitely takes the lead here. Finally, in the endlessly following steps, he seems to evaluate the quality of the sound produced from the listening joy around ruptures, failures and glitches in the sound or music produced. Coming from a tradition of composition referring to internal structures laid out and developed in a score in reference to historically and contemporarily important structures of other scores, this rather immanent approach may seem weirdly unreflected and too self-limiting. On the contrary, it is this sonic immanence in listening that has characterised the artistic practices of sound artists for decades now (Kahn, 1999; Auinger & Odland, 2007; Toop, 2014).

In this form of immanent listening the sonic affordances of a machine are manifested. In artistic approaches to sound such a focus on the actually produced, even the most minor sonic cracks and clicks, breaks and drones, layers and threads can guide the musical production. The artist follows the sonic affordances and as such he follows the sounds generated, as if he was not the author, the inventor, the host of these sound events – but just a witness to a process unfolding before his ears, non-intentionally. This artistic narration of artistic practices being non-individual, material and of an objective character comes close to antique narrations in composition, minus, of course, the traditional spiritualism or Christian metaphysics grounding the composer's struggle and transfigurations in the process of writing the score. Yet precisely this subtraction of a metaphysical self-puffing, of a reinterpretation of writing score into an almost spiritual and evangelical practice makes a huge difference. Sound production is materialised; it is joyfully profaned and trivialised into mere play, though serious play.

The research practice of Morten Riis is a practice of carefully re-establishing and re-using a forgotten or old-fashioned form of storage. An exploration of a storage turned tacit by manifesting sonic affordances. The audience is presented with sound events following his joy of repairing, of maintaining, of diagnosing listening to glitches and ruptures: the grooves of glitches. The tacit knowledge of a punch card then becomes sounding; the sonic affordances of these storage media play out. These tacitly stored bits of sound are actualised in the process of his exploring and skilfully misusing a storage medium. His misuses are therefore re-uses: Riis

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re-invents outdated storage media. His *Riis punch cards* turn out to be surprisingly common and familiar artefacts – though probably still unknown to many listeners. Tools and practices for storing and retrieving are retracted from a tacit world and brought back again into the everyday business of engineering and maintaining. Riis stole this technology from some aliens, deceased in prehistoric times maybe, and now they can be part of our lives again. An alternative history of present, living media.

Sonic Affordances in Tacit Grooves

In our research of aesthetic artefacts as analogue archives, we explored the specific artistic practices, theoretical approaches and practice-based reflections of two artists: Marianthi Papalexandri-Alexandri and Morten Riis. While the analysed works by Papalexandri-Alexandri focus on traditional musical instruments like flutes or violins, the works by Riis focus on dated, analogue storage media like music cassettes or punch cards. Both artists apply to these material objects various individually developed and idiosyncratic artistic research practices. They apply these practices to the individual specimen as well as to general types of flutes or punch cards. While Papalexandri-Alexandri's practice emphasizes a) contingent, material responsiveness, b) proportions in the visual, c) triggering sonic affordances, Riis' practices focus attention on a) repairing, maintaining and craftsmanship, b) diagnostic listening, c) enjoying rupture, failure and glitch. These distinctions point at one major difference in their artistic strategies which are almost complementary with reference to analogue archives: Papalexandri-Alexandri turns traditional instruments into alien archives, and Riis turns dated storage media into unforeseeably strange new instruments. Both achieve their goals through practices that start with the specific use, the specific material culture and the familiar history of these original artefacts, be they instruments or machines; and they transform these artefacts into genuine, artistic mutations of their own kind in which specific *tacit grooves* are retrieved and articulated or newly inscribed by their articulation. How Riis and Papalexandri-Alexandri mutate their artefacts is subject to their highly individual and idiosyncratic interests, likes and obsessions; But there is one aspect that is common to both artists and concerns the respective "original" artifacts they explore: Through their specific artistic practices, both artists investigate the sonic affordances of these artifacts, which then serve as raw material for new sonic ideas.

With the concept of sonic affordance we like to introduce to the discourse of sound art a theoretical tool for describing physical aspects of materials sound artists work with and which provoke their sonic imagination and provide a inspiration for an emerging sonic artwork. Referring to the discourse on affordance, perceptual theory and interaction design (Gaver, 1991 Gibson, 1977), we believe this concept

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provides a precise, yet open description of qualities in source materials that are pivotal for artistic work – the raw materials that these sonic affordances are made of might be gases, aerosols, liquids, vibrations, series of electric signals or even objects. Artistic practices such as material experiments, exploring intrinsic qualities, or even the dismembering and repairing of materials, are to be regarded as artistic analyses of sonic affordances. Therefore, what is stored in analogue archives as instruments or in instruments as analogue archives is not sound itself. Instead, the erratic affordances of these aesthetic artefacts are derived from a highly responsive craftsmanship of aesthetic exploration into sound. A *tacit knowledge* (Polanyi, 1966) in the truest meaning of this concept is explored: inaudible sound, embodied in an apparatus and its materiality.

> 'What I would say is common is the need to search for, to expand the notion of sound, expand on the bodily and the physical, and performative behaviour, to explore an external object or material which is asking the performer to rethink, to revisit the instrument'. (Maier & Papalexandri-Alexandri, 2015)

In that sense, Papalexandri-Alexandri and Riis to exemplify the concept of sonic affordance as a general analytical term in sound studies and sound art theory. Both artists operate in the realm of sonic affordances: the tacit grooves stored in instruments/apparatuses.

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Notes

1 In this article we ignore the long tradition of prepared musical instruments; however, the analytical approach to Papalexandri-Alexandri's work that we propose here may also be useful in research on those musical practices in general.

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