

The Instrument as Medium

Phonographic Work

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“Hello! My name is Rhianna and welcome to my little space dedicated to binaural sounds, whispers and relaxation:)” writes ASMRMagic on her channel info on YouTube. Shiny varnished fingernails touch a mysterious technical object, which forms the center of the video and can be identified after a short irritation as a stereo audio recorder labeled with big letters of a well-known manufacturer of audio devices (Figure 23.1).¹ Its silver microphone capsules are gently touched with the nails, stroked with fingertips, while strange, unusual as well as familiar noises evolve in the recipient’s headphones, such as those produced when the head, scalp, ears, and bones are directly touched. But, of course, it’s nothing but an amplified microphone we hear, right? Is Rhianna playing an instrument?

Instruments as tools, media, and agents of sound design are deeply connected with performative strategies. They are partly intentionally constructed, partly derived from other sound-generating objects and contexts, misappropriated, modified, expanded, optimized. Primarily they serve the creation or modification of sound, no matter if they are physical objects or complex technical configurations. But the categories of intentional shaping sounds depend on the background of composing and hearing, each constituted in its own universe of cultural practice, including the understanding of what a musical instrument is. From a media point of view, an instrument is a medium in two respects: on the one hand it serves as a sounding device to mediate between an individual performance and the listeners, on the other hand it is itself part of a (more or less technical) media configuration. Both aspects are closely interwoven and entail a number of consequences, which will be discussed here with regard to the relationship between instrument and media change.

To understand the emergence of new sound instruments in our context, it is helpful to overcome the limitations of thought that arise from the history of European art music. The Western European cultural tradition of the instrumental production of sounds is almost opposite to the concept of sound art. It follows the tradition of abstraction from concrete sound in favor of melodic and later harmonic structure. Here an instrument is necessary to



Figure 23.1 ASMR Tascam Mic Tapping.

make the signs of time and pitch of the written score (re-)sound. More precisely, the sound of an instrument is an accidental property of the tone, which is defined by its frequency, its pitch. Not until the twentieth century, with its emancipation of noise, did the paradigm of pitch leave the “universe of tone,” which contrasts with the “universe of sound.” The development of technical media of sonic writing, most of all the *phono-graph*, which for the first time made it possible to record acoustic events in their own sound, had a decisive influence on this change.

Media Perspectives: From Sound to Tone Art to Sound Art

With melodic sign language Guido von Arezzos (eleventh century), who connected the finger limbs (“digitalis”) with tone syllables and these with defined tone steps, the countability of discrete tone pitches, the extension of rudimentary musical writing, and the construction of scales, a new era of musical learning and composition began. This marked a first and decisive milestone toward the musical literacy of Western European art music. The price for its elaborated compositional practice on the basis of an abstract system of signs—the score—was, pointedly formulated, the reduction of sound to pitch. The focus of shaping and composing (and listening to) this “art” music of the church, the courts, and, later, the wealthy bourgeoisie shifted through the literacy of musical notation from sound perspective to tonal structure and its artful creation. The prototype for this practice of rationalization and reduction is the “motivic-thematic work”²² that originated from Joseph Haydn’s string quartets. This term stands for a compositional technique that forms themes and musical structures from the core of small motivic elements through variation and continuation.

This powerful principle of development and variation has influenced composition—as a calculatory principle—up to the middle of the twentieth century, from the serial

technique of Arnold Schönberg to the application of stochastic methods by Jannis Xenakis. Even when Schönberg wanted to lend greater prominence to the parameter of sound with the idea of a “Klangfarbenmelodie” (timbre melody), an abstract model of defined steps and their systematic organization and variation remained the guideline for composition: the “Klangfarbenmelodie” was transformed into a “Klangfarbenreihe” (a series of timbres) in the serial music of the 1950s. Sound and, later, noise were certainly new areas of musical composition to be conquered at that time, but traditional notation and classical instruments were hardly the appropriate means for a differentiated shaping of the entire sound spectrum, including real sounds. Also at the beginning of the twentieth century, the efforts to aestheticize the sounds of a new industrial environment led to onomatopoeic orchestral works (i.e. Alexander Mosolov, *Iron Foundry*, 1926/1927) or—in the case of the Italian futurists—to newly designed noise instruments (Luigi Russolo’s *Intonarumori*).

Phonographic devices such as phonographs and gramophones,—as technical media—in contrast, write and reproduce not “music” but acoustic vibrations, before any meaning and beyond cultural barriers.³ “There were no notes” was what a female visitor said after attending a *Musique Concrète* event with Pierre Henry.⁴ Phonography represented a radical new beginning in musical creation, for which I use the term “phonographic work” (“phonographische Arbeit,” both as a verb and as a noun),⁵ as opposed to “motivic-thematic work” mentioned above. This type of creative sound work can be experienced in the pioneer experiments of *Musique Concrète* or the exploration of the record player as an instrument by John Cage. The French engineer Jacques Poullin constructed instruments to manipulate phonographic reproduction on the basis of the tape recorder (the *Phonogène* and the *Morphophone*⁶), Cage modified the record player’s pickups (*Cartridge Music*, 1960), and Nam June Paik literally used the magnetic recording head as a mobile scanning device for prerecorded tapes (*Random Access*, 1963). All this has long been history, but shows the fundamental change in the materiality of “writing” music and sound. At the same time, acoustic vibrations, resonances, and concepts beyond an established understanding of music can become sound art.

For *Musique Concrète* pioneer Pierre Schaeffer, who was concerned with the “transduction” (or the “relaying,” see below) of real sounds into the world of music, an examination of the role of phonographic instruments in the process of musical creation followed almost as a matter of course. In the experimental situation of exploring new “concrète” sound objects, it was clear that the instruments for their creation would play a special role.

That is to say, one takes external sounds, and harnesses them to ensure their transduction. The instruments adapted to this effect are: the microphone, or, more widely, the membrane that is sensitive to acoustic vibrations and reconstitutes them, through conversion, into another shape—mechanical for the first gramophones, electric thereafter; and the recording and playback machine. Each of these steps has contributed to modify our perception of sounds, and where the need arises, to transform the sounds themselves. For that, one must first become a “phonographist artist.”

[...]

The first act of “relaying” by the concrète musician is related to the machine . . . the artist converts these machines of reproduction into instruments of reproduction. It is here that we interpose the idea of reinvention: throughout the twentieth century the artist has shown how he can transform the machine into a basis for creation. When the gramophone changed its status from being an apparatus for reproduction to an instrument of production, an artist has, by thought or deed, reinvented the apparatus.⁷

What Marc Battier states here about the early approach of *Musique Concrète* to media technology applies not only to instrumental playing but also to installations, sound sculptures, and multimedia works as well as changing listening to a new sound art. In order to become a “phonographist artist” in the sense suggested above, a deep understanding of phonographic transmission and storage is required. At the same time design and listening processes within media configurations are to be explored beyond questions of technical operations. The artistic insight into the implicit knowledge of media configurations is the basis for a “phonographic work” that reinvents electronic audio media as instruments for the creation and shaping of sound. Especially in the field of sound art, this includes all stations of technical media use and its cultural appropriation, from recording, transmission, amplification, and reproduction to storage. For all these areas, a new spectrum of “classical” sound artworks of the twentieth century already exists (to which we shall return later).

Coming back to the initial question: The universe of tones in the succession of Guido von Arrezo’s writing of discrete pitches was challenged by a universe of sounds with a new expanded practice of shaping acoustic waves. Since the middle of the twentieth century a widespread appropriation of phonographic technology and electronic sound generation as creative tools has taken place, both—as described by the example of *Musique Concrète*—in the experimental field as well as in pop music production. In his famous essay “The Studio as Compositional Tool” (1983), Brian Eno describes the difference between the traditional way of composing and the new approach of composing by means of the electronic studio:

You’re working directly with sound, and there’s no transmission loss between you and the sound—you handle it. It puts the composer in the identical position of the painter—he’s working directly with a material, working directly onto a substance, and he always retains the options to chop and change, to paint a bit out, add a piece, etc.⁸

While here a pop music version of experimental phonographic work—somewhat similar to Schaeffer’s view—is given, hip-hop and techno go much further in the appropriation of recording technology and electronic manipulation. On a path that leads from Jamaican toasting and live mixing via the New York Bronx to mainstream pop music, phonographic work also claims the field of archives as creative territory. This way already recorded sounds of all kinds, from pop productions to historical soundscapes, become part of a new practice of “organizing sound.” Phonographic work thus attains a historical and cultural-social dimension,⁹ which allows a direct aesthetic reappropriation and reflection of culturally formed and sonically captured artifacts.

Media Configurations as Sound Instruments

Keeping this background in mind it is much easier to understand the role of the media in “classical” sound artworks. Only a few prototypical configurations will be presented, also I do not want to neglect an instrumental dispositive that has received little attention until now: The simplest but also most courageous instrumentalization of media technology is its use as an everyday, “found,” object of sound generation. In such a composition or installation, the media device is nothing more than an object whose sound is some kind of media acoustic event. This very clear and simple media instrument dispositive remains a special case to this day, in which only the sound of the media apparatus is required, while the determination of the sounds themselves is dispensed with. A pioneer for this use is again John Cage, who incorporates media apparatuses into his concept of indeterminacy. Like the sounds of “a truck passing by,”¹⁰ the sounds of everyday media exist as optional spaces of hearing. In *Imaginary Landscapes No. 4* (1951) the handling of the station selector, the volume control, and the tone control are precisely determined by a score. But a predictable sound result is not possible and not desired in this way. As an installation *33 1/3* (1969) with 12 turntables and 250 records installed in an exhibition works in a similar way: Any combination of putting on records by the visitors is possible and welcome. Such installations create a texture of media sound that, in a McLuhanian sense,¹¹ brings the medium, and not its content, to the ears. Something similar happens in new pop music, for example in the micro-sampling practice of Marc Leclair (aka Akufen), who places radio samples of fractions of a second above a house background.¹² These “reference-less” snippets give the impression of a radio texture as a specific characteristic sound.

Well-known works of sound art often combine the new awareness for listening with interventions in real, urban, or rural environments. The electronic and later digital media are ideal instruments for the manipulation and spatial shifting of sounds of any origin. In this context “classical” media dispositives emerge and are combined, such as amplification, recording, loops, multichannel spaces and the generation of static continuous sounds as sine waves or drones.

An outstanding example is Max Neuhaus, who covers the spectrum from a jazz drummer to the concept art of listening (as pioneer of the “sound walk”¹³) and, later, electronic sound interventions in urban spaces. The new ways of deep listening at sound-walks lead to sound interventions with specially designed and constructed sound generators such as those at Times Square (NYC 1977) or—less well-known—at the *Suspended Sound Line* (1999) sound bridge in Bern’s (Switzerland) Lorraine quarter. Such installations are an instrument of the drone in the urban or rural environment, for sound irritation and expansion, similar to the resonance tubes of Sam Auinger and Bruce Odland (*Blue Moon*, NYC 2004) or the “Rhine sounds” (*Rheinklänge*, Bonn 2013) of Christina Kubisch.

Alvin Luciers *Sitting in a Room* (first performed 1969) is also a famous example of a transparent and straightforward structured media situation with an initial input by a performer and subsequent independent sound generation by the “media agents” microphone and tape recorder. A performer speaks a sentence into a microphone, a tape

recorder records the signal. The recording is played back into the room, the result is recorded, played back again, recorded, etc. until only some kind of drone remains. This set-up is particularly significant for the discussion of the instrumentalization of media, since here a specific ambivalence of reproduction and the self-constructed sound of the medium occur. What do we hear in this installation? The pure sound of space or the sonic artifacts of the technical recording medium? Of course neither the one nor the other, but an independent artifact, which is formed by the concrete situation and by the specific configuration.

Media Dispositives

The sound performances and installations mentioned above contain several instrumental media dispositives. For example there is *amplification*: Even if it seems as if only a “real” sound is made louder here, amplification generates its own reality. Like a camera, the microphone focuses on a section of the physical world and transforms it according to its technical properties. This turns it into an externalized sensorium that directs perception and even makes inaudible phenomena audible. Since signal intensity and the overtone spectrum are important elements of auditory spatial perception, amplification always also includes the creation and transformation of space. As physical closeness, spatial factors also determine subjective experience and social relationships. Accordingly, one of the historically most important functions of amplification is the creation of (illusory) intimacy. Crooning from the 1920s onward produced the first great pop stars of the radio era through the previously unknown immediacy and nearness of singing to the listeners. The crooner’s singing transforms the appellative-theatrical gesture, previously necessary for volume balance with larger ensembles, into whispering that suggests intimate physical closeness.¹⁴ The principle is quite similar to the ASMR video mentioned at the very beginning of this chapter, which is also based on the amplification dispositive. For our question, it is not important whether there is actually a perceptual phenomenon such as ASMR, the decisive factor is the auditory construction of proximity, combined with a visually arranged staging of the situation in the video.

The sensorium of amplification can also be used for self-awareness and for focusing on own subjective action. Jessica Thompson’s *walking machine* (2003) amplifies the sound of one’s own steps by means of a mobile set-up, enabling the user to experience the urban space in the rhythm of their individual walking. The principle here is simply a change in the balance between inside and outside, between personal subjective action and environment.

And there is *recording*: Recording makes acoustic events spatially and temporally available and thus also repeatable. Recording devices are always also time machines, as they have to track the curve of the amplitude of sound waves in time and restore it during playback. Already from these properties the design options of the recording dispositive emerge. Pitch and timing changes as well as reverse effects result from changes in playback

speed and direction, loops just are multiple ceaseless repetitions. Unlike amplification and transmission, which have a strong spatial component, time conservation gives recording a documentary and archival aspect. Both dispositives, recording and amplification, mostly occur closely connected, but with different weighting. The Luciers performance mentioned above essentially uses recording for repetition. It provides the “memory” for the previous version and forms, together with the precisely balanced amplification and reinjection of the spatial sound, the dynamic progress of the sounding result. On the other hand, archives are always associated with references that can become a part of a personal biography. Sound archives of all kinds, music, personal recordings, etc. allow playing with their sound quality as well as with references. Kirsten Reese, for example, uses archive material and combines it with visuals and amplified traditional instruments. In her performance *Messages* (2008/2016), the “media instruments” integrate memories and past situations into a directly perceptible aesthetic experience.¹⁵

Special questions concerning its documentary quality arise in the broad spectrum of field recording, which, at first glance, seems to provide a pure reproduction of the real soundscape. Here, too, both dispositives are interwoven and produce a mix of their specific properties as a result. An interesting example for that can be found in the field recording practice of the Harvard sensory ethnography lab (SEL), which follows the approach of artistic research.¹⁶ Ernst Karel’s work on the sonic atmosphere of scientific research laboratories (*Heard Laboratories*, 2010) focuses on the sound of technical equipment and working situations. Although the recordings were merely cut and not processed with effects, the listener experiences a deep immersion in which the violence of the mechanical processes becomes perceptible. The amplification creates a hyperreal aural space that is both documentary and aesthetic-artistic in character, the recording gives it the character of an ethnographic document. The same applies to the moving image for the film *Leviathan* (2012), which was also made in the context of the SEL. The sensory role played by Karel’s moving microphone in the laboratories is taken over by GoPro-cameras, which observe the industrial fishing of a trawler at the level of the fish. The resulting nightmarish experience of an immersion in a hitherto unknown brutal world of killing arises from the new perspective of a media technology sensorium.

And of course the analogue storage media also have a specific *materiality*, which form their own sub-dispositive especially for their performative handling. Countless examples of the sculptural and performative use of the materiality of analogue storage media can be found in the entire field of sound art. As a pioneer Nam June Paik presented various interactive objects in his exhibition and solo show *Exposition of Music—Electronic Television* (Galerie Parnass, Wuppertal, 1963), including the *Schallplatten Schaschlik* (“record shashlik”) and the already mentioned *Random Access*, in which the material of the record and tape can be experienced playfully and aesthetically. Christian Marclay, who is a “phonographist artist” in the best sense of the term cited above, and who calls himself a “record player,” addresses in works such as *Record without a Cover* (1985) and *Footsteps* (1989) the sound of damaged records and thus shows the inherent sound of the medium’s materiality.

In addition to the storage media themselves, such as records and tapes, the loudspeaker, the interface to the acoustically audible sound, also has its own specific characteristics, which can be used for specially designed instruments (e.g. Cathy van Eck, *Square Head*, 2013), loudspeaker orchestras (e.g. François Bayles *acousmonium*, 1974), or sculptural arrangements.¹⁷ This even applies to digital media whose storage media do not generate their own sounds, but are dependent on such interfaces to the world of acoustic sounds.

Digital Media

The algorithmic generation and transformation of audio data, the networking, and the expansion of the sensorium are leading the way to a digital practice of sound art. Media devices are not unfamiliar anymore. From the first portable record players, transistor radios, ghetto blasters, and Walkmans, to iPods, personal identity and mobility have been closely linked. Portable media devices embody lifestyle and personal acoustic reality. The smartphone as a permanently networked sensorium is the final stage of hybridization for the present, while visionaries are already raving about brain-to-MIDI interfaces combined with deep-learning algorithms. But the situation is not completely new. With the exception of the paragraphs on materiality, my contribution deliberately did not distinguish between analogue and digital configurations. Although digital media actually open up a new spectrum of options, their dispositive foundations have already been laid in the analogue phase. The microphone as a technical sensorium remains relevant, but is extended by a range of other sensors. The mapping of digital code to digital sound devices enables the sonification of sensor data of all kinds, such as movement, geographical location, temperature, etc. But the already addressed relation between the “real” and technical media remains problematic: Dispositives of amplification are transformed into dispositives of data mapping.

Also the electronic instruments of the analogue phase are changing, they are becoming specially programmed computers under long-established and familiar hardware surfaces. At the same time, hardware becomes flexible and programmable into personal instruments (*Nord Modular* Clavia Digital Musical Instruments, Sweden). Since the mid-1990s a further trend has been the integration of software instruments (VST-plugins¹⁸) into digital audio workstations (DAWs). Experimental programming environments such as *MAX* and *Pure Data* are meanwhile embedded in common audio software, so that even algorithmic processes can be implemented by every user.¹⁹ This makes the processing of sensor technology including mapping, sound generation, and algorithmic transformation available on everyday computer hardware.

Yet, as the process continues, the writing of generative code itself becomes performative practice. Phonographic work becomes programming. The increasing fusion of rational knowledge, performative corporeality, and compositional strategy can be seen in live coding. The Dutch artist Marije Baalman, who performs with sensors and live programming, describes her artistic work as follows:

During the live coding within the performance, I am aware of the framework I built and in which I make changes. I recall the limits of easily modified code and what possibilities it offers to the me as the mover. Thus, there is a tight connection between my embodied knowledge of moving and listening, and my engineering knowledge of how the technology enabling the performance works.²⁰

Popular Culture: The Omnipresence of Sound Art

The emergence of phonographic media as creative instruments has—especially in the field of pop production—shifted the balance between “tone art” and “sound art.” When ordinary pop festivals call themselves “Soundart,”²¹ this takes place against the background of fundamental changes in the making of musical artifacts: Instead of melodic-harmonic development, the aesthetic differentiation of complex structures now takes place in the area of rhythm and sound. The new materiality and media integration of sound fundamentally question the traditional autonomy of musical creation. From the point of view of an elaborated theory of melodic and harmonic structures of Western European art music, the melodic lines and harmonic progressions of the various genres of popular music are very simple and hardly original. A large part of pop music can be composed from a few cadenzas that are repeated over and over again. Also the rhythm in the sense of notated structure is not very innovative, with 4/4 beats and simple, partly syncopated divisions of 4 and 8, most pop music productions seem to be far behind the state of the musical material of the “classical” music. But if someone tries to play a charts hit on the basis of a piano score, they will very quickly notice that the complexity of this music is to be found in another musical dimension. It is not only the inability of the instrument to produce the appropriate sounds that manifests itself here. As a result of media convergence, globalization and postcolonial hybridization, popular music questions the adequacy of the traditional notation as such, which is deeply connected with Western art music.

In contrast, the capabilities of phonographic work with micro-rhythmics, sound editing, sound generation and sound processing are highly complex, elaborate, and innovative. The media-technological instruments allow and promote design strategies that differ from the play of conventional instruments as performers of a score. The ability to integrate any existing sound (including “real” sounds and noises) into “ordinary” musical experiences, to introduce new interpretations using sampling and remixing of archives of already existing music, and to synchronize and integrate other media environments, distinguishes such devices fundamentally from traditional musical instruments. Media integration also has an effect on theoretical discourses. Kodwo Eshun describes the rhythmic quality of breakbeat sampling in terms of animation film techniques: as “motion capturing.”²² In addition—especially in the digital domain—there is a new level of rationalization of design processes that take place beyond conscious perceptibility, but generate differential qualities in the listening experience (e.g. in the micro-rhythmic organization in the grids of digital

audio workstations). Pop music has long been exploring, in its own way and with broad success, the fields formerly reserved for the experimental avant-garde.

A striking example is the “autotune” effect, which, while using the technical mechanisms of serious computer music, was initially seen only as a boring correction method to simulate a flawless vocal intonation. But in an alienated use of its artificial character, the autotune effect in pop music plays an important role in the aesthetic exploration of man-machine hybridization and techno-cultural reality. It thus continues the line of “posthuman voices” that Alexander Weheliye identifies with the “cell phone effect” and the “vocoder” in R&B.²³ Autotune shows the phonographic dialectic of pitch and sound in a way that can hardly be overheard: It seems to be a tool for the re-tonalization of music, but instead of generating pure pitches, it is valued and used for its specific sound.

Sound art, with all its sonic conquests of the twentieth century, thus becomes the mainstream concept of a changed cultural practice of shaping and listening. Phonographic work (in a much wider sense than, for example, the title “art of record production” suggests²⁴) integrates the new design procedures beyond notation, the emancipation of dissonance and sound as well as the transformation and recontextualization of media archives. It bridges the gap to the performative instrumentalization of media technology in interactive installations, to sensor technology, algorithms, and sonification.

Chapter 23

1. *ASMR Tascam Mic Tapping W/ Scratching (NO TALKING) Gentle Close Up Ear to Ear Sounds* by ASMRMagic, 1 h 01 min; ASMR = “Autonomous Sensory Meridian Response,” August 21, 2019.
2. Which was coined by German-speaking musicology as “motivisch-thematische Arbeit” as a main paradigm of classical composition.
3. Salomé Voegelin uses the term “phonography” in the opposite sense, as (verbal) writing down of individually experienced sound in a given environment. Thus, the technical-mechanical recording of the acoustic waves by the phonograph is juxtaposed with a phonography of sound constructed in the process of hearing (Voegelin 2014, see note 3, 177).
4. *The Art of Sounds* (2007).
5. Großmann 2016a, 2016b, 395ff.
6. Both instruments are currently experiencing a comeback in the field of modular synthesizers. The US-based *Make Noise Co.* developed an analogue-digital *Phonogene* for its *System Concrète* and a *Morphagene* as a “next generation tape and microsound music module.” <http://makenoisemusic.com/modules/morphagene>, March 30, 2019.
7. Battier 2007, 190, 195.
8. Eno 1983.
9. See Sterne 2003.
10. “Is a truck passing by music?” Cage 1961, 41.
11. “The medium is the message,” McLuhan 1964, Chapter I.
12. Akufen, *My Way* (2002).
13. Max Neuhaus, *Listen* 1966.
14. One of the first crooners in the late 1920s got the nickname “Whispering” Jack Smith.
15. *Messages*, Performance für Archivklänge, Kassetten, verstärkte Flöte, verstärkte Objekte, Diaprojektor. (Performance for archive sounds, cassettes, amplified flute, amplified objects, slide projector) 2008/2016 UA April 9, 2016, Auditorium, Stockholm.
16. Sensory Ethnography Lab (SEL), Harvard University, <https://sel.fas.harvard.edu/>, March 30, 2019.
17. See van Eck 2017.
18. VST = Virtual Studio.
19. See Butler 2014.
20. Baalman 2017, 227.
21. Soundart Festival, July 20, 2019, Electro. Trap. Maintal (Frankfurt, Germany). <https://soundart-festival.de/>, March 30, 2019.
22. “Motion Capture is the device by which they synthesize and virtualize the human body.” Eshun 1998, A176.
23. Weheliye 2002. It is no coincidence that autotune plays a special role in productions like Kanye West’s album *808s & Heartbreak* (2008), in which identity and history are addressed in a specific sound of synthesizers, drum machines, and vocal processing.
24. See Frith and Zagorski-Thomas 2012. In fact, the focus of the publication and the now well-established conference series is far wider than the relatively narrow title.