

'Real Sound,' Readymade, Handmade: Musical Material and the Medium Between Mechanization, Automation, and Digitalization as an Impression and Expression of Reality

An Implicit Call for Real Interdisciplinarity

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The point of departure and the central subject of the following considerations are 'real sounds.' These are the real noises and sounds *before and outside of music* in both inanimate and animate nature and society, from thunder to bird calls to machine and traffic noise. The way real sounds can be understood develops and shifts throughout the history of the music, technology, and media of the 20th century. Terms and concepts such as 'atmo'(sphere), even on the level of the industrial technical reproduction of the soundscape, lean toward the realm of noise, while 'original sound' in audiovisual montages primarily refers to the use of actually spoken words, but it can also mean all of the components of a film's soundtrack on-screen, i.e. within the depicted scene.¹

In the following, I will attempt to shed more light on the category of 'real sound' or real tones and their artistic contexts between traditional, electro-acoustic, and digitalized music with somewhat novel configurations and perspectives.

1 According to Szabó-Knotik within the framework of a meticulous analysis of the film *Amadeus*: The usual function of music as 'background' or else as an off-screen 'counterpoint' is infrequent. "All other music is directly provoked by Salieri's narration or by the plot of the film; even when the audience rather than the stage is on screen, the operatic music functions as *original sound* in the sense of 'belonging to the scene.' In extreme cases, even the relationship of image and music is reversed to such an extent that the mention of music requires images that serve only to illustrate it—one could also say to 'visualize' it." Szabó-Knotik, *Amadeus* 30f.

These real sounds are, 1.) first of all, simply real tones between sounds and noises in 'exterior' reality. They are a part of acoustic reality. They are used less often as an unconventionalized component of a musical work than 'realities',² i.e. quotations from reality. Natural and societal sounds are normally assimilated into music and not adopted as a raw reality. Nevertheless, the incorporation of acoustic nature into musical culture does occur. A prime example from music is the scream, the uncadenced interjection in contrast to the cadenced interjection as an epitome of music according to Hegel's *Aesthetics*.³

Real sounds are 2.) subject matter to be processed that is external to music. Stylized by specific poiesis, they are conveyed in the musical mimesis. They have been a component of some music from its very beginning and remain so in many older and newer types of music, usually with a program-music dimension. This is the broad field of sound painting, or music as painting.

Film is thus blazing a trail for the change in that 3.) the entire soundscape that exists before and independently of art manifests as real sounds. This is because *music* existing *outside* of the film, which is prefabricated from the standpoint of the film, i.e. which is a readymade in the parlance of Duchamp's concept, becomes a component of its real sounds. The music heard at the recording locations as part of their acoustic local colour adds to it in the film; in other words, the on-screen music within scenes, and even the off-screen music, if it appears as a discovered, prefabricated musical object.

This is one of the bridges to the technically re/produced musical real sounds in discrete music, as is prototypical in 'musique concrète.' In this technical-medial determination, real sounds are 4.) readymades. They are preexistent and independent of their treatment in other subsequent works; in contrast to type 3, the real sound relates (only) to its integration into the new work or film. As such, it would become possible to convey them medially in film, radiophonic works, and later in television or video works as components of the soundtrack and to integrate them into independent

2 In a broad sense that, in contrast to the term used in translation studies, it is not culturally specific; 'realities' in this instance are material facts, i.e. sonically objectified, tangible, processual facts in reality, before and outside of art, including their medial embedding, transformation, resolution, in other words musical pieces as a whole or in parts, 'live' or fixed in technical reproduction by analogue or digital means, similar to the realities of 'reality studies' in the historical sciences; they could also be called real world objects.

3 See Hegel, *Ästhetik* Vol. II, part 3, chapter 2, 1.b.

music of the concert or musical theater type and into newer film and pop music.

A portion of medially conveyed nature is blended into music with real sounds. The readymade, the 'objet trouvé,' the found object, corresponds to them as a pictorial counterpart to the real sound in the visual arts. It is something similar but not identical, though, since the readymade is tangible, while music is essentially processual. Real sounds are not things, yet they can or could be presented and exhibited discretely by technical means. For this reason, an actual musical readymade exists only by means of the technical reproduction of sound, essentially since 1877 with Edison's phonograph, and on a mass scale with the advent of talking films using sound-on-film systems (Tri-Ergon process) and tape recording on the radio. The readymade is usually limited to objects from social reality, generally even only things industrially produced, from Duchamp's *Fountain* to Warhol's *Brillo*.

Duchamp places the urinal on a pedestal, thereby monumentalizing and museumizing it. He also tilts his *Fountain* by 90°. In so doing, he applies a kind of contrapuntal gimmick, which is then only made compositionally productive when serialized.⁴ So he is doing nothing at all. The poesis is not entirely eliminated, though. He does not leave the real thing as it was but rather firstly eliminates its utilitarian function; secondly, with his signature as "Mutt"⁵ he transforms it into a work, albeit a simulated one, and thus defines art by virtue of his existence as an artist; and thirdly he transposes this work into the artistic context of an exhibit.⁶ A minimum of poesis is thus essential for

4 More on rotation and mirroring processes such as this in Springer, *Das verkehrte Bild*; for row rotation, see Eimert, *Grundlagen der musikalischen Reihentechnik*.

5 See Tomkins, *Marcel Duchamp*. The pseudonym is a type of portmanteau: Duchamp condenses company name 'J.L. Mott Iron,' where he purchased the urinal (214), and amalgamates it with the name from the comic strip *Mutt and Jeff*; the R. stood for Richard, which in French slang meant 'moneybags.' In the discussion at the time, the object was often referred to euphemistically-obfuscatingly as "bathroom accessory" (217) or even "drinking fountain" (219), possibly precisely because of the title "Fountain." What Tomkins characterized as "bigotry" was also still relevant later. "Psycho (1960) broke numerous taboos. Yet this is not directly about the depiction of violence [...]. *Psycho* (is) the first American film in which the flush of a toilet could be seen and heard—which at the time was enough to make censors blush." "7 Filme, die Tabus brachen." <https://wiestderfilm.de/7-filme-die-tabus-brachen/>

6 For more on the major controversies surrounding the exhibition in New York in 1917: Tomkins, *Marcel Duchamp* 212ff.

mimesis—even conceptual artists must at least write down the concepts that they do not execute.

The readymade is similar to the real sound in its origin and materiality. However, it differs fundamentally by virtue of its aesthetic functionality. For in the visual arts it is an isolated ‘real thing as a work.’ This is not the case in music, since the difference between useful object and art object does not exist—a piece of music could not be used as a urinal were one to reverse the independence of the work against its use.

The presentation of bird song as such, like the nightingale in Ottorino Respighi’s *Pini di Roma*, can be imagined institutionally and aesthetically at best in exhibits or museums, but not on the concert stage. Furthermore, even in reality, animal noises like the nightingale song are not functional—for humans—like the urinal of *Fountain* is, and thus already analogous to art. In music, the readymade is an ‘object in a work.’

Semiotically, real sounds are indexical signs that originate causally from that which is designated. This makes them especially significant for the question of the mimesis of reality.

From the outset, noise in particular is more unambiguously a part of reality than art-like sound *and* it demonstrates reality as an acoustic signal for something that exists and is acoustically perceptible. It occurs in this double function in music as well. It is indexical at its core, even if not exclusively. The origin of such art of a technical nature is hard to deny. Pierre Schaeffer attempted to do so with “‘reduced listening’—the hearing of sound without reference to its source, cause, or meaning”—which George Antheil was already seeking in the 1920’s as the ideal listening mode for his *Ballet Mécanique*.⁷

The complement and counterpart to the ‘readymade’ is the ‘handmade.’ I will permit myself to slightly re-accentuate and expand ‘handmade’ so as to be complementary to the established term ‘readymade.’ What is meant here is what is *created in art and as art*, specifically and in a manner intrinsic to art and music, and is not reproduced. In each case, it is newly *produced* and does not already exist before and outside of art. It is the realm of that which is classically called poiesis, ‘making.’ The traditional ways to convert real sounds into musical sounds are, as poiesis and mimesis at the same time, musical onomatopoeia and ‘tone painting:’ depiction and expression, but *not* ‘impression.’

7 Epstein, *Sublime Noise* XII f.

In view of the processes and methods of technical re/production, there are four technical principles or main forms, for each of which I have proposed figures from Greek mythology as a way to characterize them.⁸ The decisive basic form of technical re/production is the ‘true-to-life,’ ‘realistic’ soundscape *reproduction* of the ‘phono-graphy’ type: the *Echo principle*, named for that nymph who can only ever repeat what is said to her. Significantly earlier historically, at least since the time of Hellenistic antiquity, the *production* of sounds with instruments occurred in the form of automatophones or mechanical musical instruments, such as the musical clock or the barrel organ. The *Syrinx principle*, named for the nymph who was transformed into a reed, from which Pan makes a flute for himself and thereby calls to mind the vanished girl.⁹ Finally, the fourth basic form is relevant for a perspective of ‘digitalization;’ it was already begun in the ‘analogue,’ in sampling, computers, etc., in the objectified, present- and future-determining integration of reproduction and production (thus the term re/production), of Echo and Syrinx—the *Daedalus principle*. It is named after Daedalus, the mythical inventor of the labyrinth for a monstrous combination of man and bull, the Minotaur; Daedalus was also the inventor of flight in order to escape from imprisonment, and as a sculptor and painter he created extremely lifelike works that appeared to be real and alive. The connection among the four basic forms should be considered even more systematically, particular in light of the new syntheses brought about by ‘digitalization;’ and it should be made productive for future research.

All of this—the modalities of production and reception as well as the historical development of the system—is ultimately also motivated and modelled by different and diverse social and individual needs, although they are not included here.

With the axis of production versus reproduction (handmade versus ready-made, Syrinx versus Echo), a polarity comes into play that applies equally to mechanization, electrification, automation and digitalization. It is the same with the four-tiered configuration of mimesis and poesis, supplemented by aisthesis and catharsis—which are not discussed here—i.e. representation,

8 More on conceptuality and object: Heister, “Mimetische Handlung und menschliche Natur.”

9 Less important for our question is the third basic form, the entirely different principle of ‘long-distance transmission,’ such as telephone or radio: the Hermes principle, named for Hermes, messenger of the gods with winged shoes, and the guide of souls to the hereafter, as well as the god of knowledge, thieves, and merchants, including the ‘banksters.’

production as well as perception and effect. The readymade is a real thing without poiesis and with minimal mimesis. Handmades, on the other hand, are intended to be poiesis without mimesis from the point of view of the denial of references of art to reality.

The closest thing to an identity of depiction and the depicted is the more or less ‘automatic’ impression¹⁰ as a mechanical symmetrical reflection, be it a fossil in slate or a record album from the negative matrix. Nevertheless, there are differences here, too, as a result of material or technical blurring, as in the multi-stage ‘printing’ process of records, in casting and molding processes from hollow molds, etc. Yet in conscious, intentional reflection, there is a subjectively co-determined choice of criteria, which depends upon the motivation and the objective of the comparison—and which is not merely arbitrary, but also factually bound. Art is subject-mediated ‘expression,’ not the ‘impression’ of the real.

Often enough, however, expression and reality, art and life are identified with each other and thus confused for each other.

Structurally, it is always a matter—more specifically for art as mimesis—of confusing similarity for identity. In the face of such misleading identity, similarity forms a kind of compromise between identity and difference: The one Something is like and, at the same time, different from the other Something. This second Something is here primarily reality, in each case concretely in extracts.

Real sounds are such extracts. They represent reality as *pars pro toto*, but they *are* no longer reality as soon as they become art. Incidentally, the versatile futurist painter Luigi Russolo was aware of this difference.

Real Sounds as the ‘Object’ of Musical Representation (Mimesis) and Production (Poiesis)

Before the age of mechanization and automation, real sounds were important in music not so much as a material component of music, but rather as its object, which was and is still appropriated sensually and ideologically by means of mimesis and poiesis. From the very beginning, in music as well as in spoken language, the process understood in a broad sense as sound painting has played a role for material and material development and for mimesis

10 Information and numerous aspects, Didi-Hubermann, *Ähnlichkeit und Berührung*.

through the filtering and abstraction process of taking real tones as *pars pro toto* for the thing or fact and transforming them into the respective musical material and idiom. Above all, it is determined in a way specific to the musical culture and epoch.

Musically, onomatopoeic stylization extends not beyond that in spoken language, but rather in a different direction: That which is noisy is translated into pitches; the natural sound as a whole is fitted into the respective idiom. In spoken language, onomatopoeic mimesis is generally limited by the principle of phonemes in general and by their respective individual linguistic characteristics in particular. Fuzziness in musical language is comparable. Sound painting likewise experiences a refraction and filtering, through styles, idioms, and the like, by the respective historical status of the material and its system, in particular pitch and rhythm systems.

In Rimsky-Korsakov's satirical fairy-tale opera based on Washington Irving's and Pushkin's *Le Coq d'or* (*The Golden Cockerel*, first performance: 1909), the title character appears in numerous forms. In keeping with his status, he is supposed to act as a warning watchman and spare the incompetent rulers further worry. His crowing has two variants. The first is the calming call.

Figure 1: Rimsky-Korsakov, *Le Coq d'or*.¹¹

The Voice of the Cockerel
Stimme des Hahns

Ki-ri - ki! Die Luft ist rein!
Cock a - doo! Cockadoo - die - doo!

fp *cresc.*

The three-tone core of the crowing is incorporated wordlessly into the orchestra as an echoed reply. The second variant is the warning call. It is similar, simply transposed, shifted to other pitches.

The mimesis of real sounds also includes the musically rather peripheral phenomenon that real *noises* are *imitated* as deceptively similarly as possible, not reproduced—a classic example is the wind machine in the theatre, which

11 Rimsky-Korsakov, *Le Coq d'or*. http://ks.imslp.net/files/imglnks/usimg/4/49/IMSLP586095-PMLP45601-Coq_d_Or_Score.pdf

12 Ibid.

Figure 2: Rimsky-Korsakov, *Le Coq d'or*.¹²

Allegro assai $\text{♩} = 132$
 Die Stimme des Hahns The Voice of the Cockerel *allarg. poco* *a tempo*
 Ki - Fi - ki! Nehmt euch in Acht! Schlä - fer, aus dem Schlaf er - wacht!
 Cocks - doo, cocks - doo - dle - doo! Dan - ger lies in wait for you!

75 *f* *p a.* *f* *cresc.*

has frequently been employed for ‘sound painting’ since Rameau, even in independent music, with that glissando, which then made a career in new music out of the system of discrete pitch orders for exterritorial continuous noise; for example in Strauss’s *Eine Alpensinfonie* (*Alpine Symphony*).

Figure 3: Richard Strauss, *Eine Alpensinfonie*.¹³

Windmaschine. (108)
 $\text{♩} = 1$
p *p* *p* *cresc.* *dim.*

Figure 4: The thunder machine also comes in here.

(124) Donnermaschine. (125) *fff* *tacet.*

The wind machine was also used in film, albeit with a slightly shifted main function, namely not as an ‘intonarumori,’ i.e. a ‘sound generator’ in the sense of Italian Futurism, but to simulate air movement. The airplane propellers originally used for this purpose were certainly very loud and smelled quite bad. The former was welcome during its use in George Antheil’s *Ballet Mécanique* (1924, with Ferdinand Léger and Dudley Murphy). The stench and noise were ameliorated by large fans—electrification replaced mechanization here

13 Strauss, *Eine Alpensinfonie*. <http://ks.imslp.info/files/imglnks/usimg/6/6a/IMSLP151664-PMLP12189-StraussR-Op64.TimpPerc.pdf>

as well; the “unavoidable wind noise is usually reduced by diverting the air-flow through sail canvasducts.”¹⁴ Only with the advent of sound film did the noise specifically also become a component of the soundtrack as wind, which was as elementary as the sounds of water (especially rain) or fire.¹⁵

Effects like this could also be produced with the Moog synthesizer from the 1960s onwards, although it was primarily designed for sounds. This electrification represents an early transition to the automation of sampling.

All of this is handmade—a traditional and still essential process of music as art, primarily instrumental, but also possible vocally with the traditional mimesis of real tones.

Nothing fundamental changes in futuristic noise music. Blinded by the loud racket of propaganda with the objectives of the New, the Futuristic was ignored, such as the fact that Luigi Russolo’s ‘intonarumori,’ the ‘noise makers,’ were still producing instrumental sounds as musical material. From the point of view of poesis they are traditional, only mechanical, neither electrified nor automated. ‘Noise makers’ are nothing but a particular form of musical instruments that, like body slaps, drums, sistrums, maracas, rattles etc., simply produce percussive sounds but not tones. A similar, converse argument applies to the numerous already electrified new musical instruments specialized for the production of *tones* since the end of the 19th century, such as the Theremin, ondes Martenot and Trautonium, but that also produce sounds. Be it noises, sound mixtures or tones—none of these instruments exceeds the bounds of musical instruments. Although they offer a much richer spectrum of sounds, tending almost to the orchestral, by combining several musical instruments, this also applies to the pre-electric mechanical musical instruments controlled by pin rollers, pin plates, perforated plates or perforated strips, such as the barrel organ, pianola, or all types of orchestrion, which usually contain their own instruments to produce sounds. A transitional form is the reproducing piano, the Welte-Mignon, first introduced in 1905, which was pneumatically controlled by punched tape, thereby permitting the recording, notating, and then playback of a particular interpretation, i.e. it corresponds to the Echo principle and already includes essential components of automated ‘impression.’ A digital potentiation was then represented by the Bösendorfer SE290 computer-controlled grand piano in 1986 and the Yamaha Disklavier

14 See “Windmaschine (Film).” [https://de.wikipedia.org/wiki/Windmaschine_\(Film\)](https://de.wikipedia.org/wiki/Windmaschine_(Film)); cf. Giesen, *Lexikon der Special Effects*.

15 E.g. Butzmann and Martin, *Filmgeräusch*.

in 1987. However, the sound ‘impression’ occurring here is not one of the universal soundscape, but only of the piano sound.

Attempts to incorporate other sensory areas such as smell into technical re/production, such as those following the model of Huysmans’s smell organ in *À rebours*, go one step further. For example, Leon Thermen (1896-1993) in the Soviet Union of the 1920s strove to combine music with color, gesture, smell, and touch.¹⁶ This is an extreme manifestation of the tendency of the avant-garde, which is almost always at least latent, to create a ‘Gesamtkunstwerk.’¹⁷ Initial attempts at an olfactory film or olfactory cinema have existed at least since the 1940s, but have always failed, probably ultimately because of the limits of both sensory physiology and anthropology as well as art ontology and thus practical limitations.

Based on his experience in a concert, including with Balilla Pratella’s *Inno alla vita – sinfonia futurista*, Op. 30 in Milan in early 1913, Russolo wanted to extend the spectrum of sound production beyond the abilities of the orchestra. The parallels to the search for new sound generators are evident, especially in the field of microtonality, which was already expanding before the year 1900. Russolo first expressed his manifesto *L’arte dei rumori* in the form of a letter to Pratella in 1913 and published it in 1916, along with other texts, in a book with the same title.

The sound of the Futurists stands specifically for the ‘modern, technical, industrial, urban world.’

It is remarkable, however, that Russolo, in his well-known classification of sounds into six types, prominently includes traditional types on the one hand, like the aforementioned wind in his “family of sounds” 2 as “whistling,” “howling;”¹⁸ on the other hand—and this is really innovative—he includes the instrumental production of specific vocal sounds as the sixth type: “Voices of animals and humans: calling, screaming, shouting, howling, laughing, wheezing, sobbing.”¹⁹

Russolo’s impressive description of—what at that time was—an urban soundscape contains an astonishing number of natural sounds:

16 Cf. Smirnov and Price, *Sound in Z* 46.

17 Cf. e.g. *Der Hang zum Gesamtkunstwerk*.

18 The well-known score by Russolo, *Il Risveglio della città* (1914), often includes glissandi. The oft-cited page of the score e.g. “Luigi Russolo: ‘Intonarumori.’” <http://www.medienkunstnetz.de/werke/intonarumori/bilder/z/>

19 Russolo, *L’arte dei rumori*.

“To be convinced of the amazing variety of sounds, it is enough to think of the crash of thunder, the whistling of the wind, the rushing of a waterfall, the gurgling of a stream, the rustling of leaves, the trot of a horse as it moves away, to the wobbling of a cart on the pavement, and to the broad, solemn, and white breath of a city at night, to all the noises that wild animals and pets make and all those that the human mouth can produce without speaking or singing. Let us pass through a great modern capital city, the ears more attentive than the eyes, and we will find pleasure in distinguishing the swirls of water, air and gas in the metal pipes, the murmur of the engines, which undeniably snort and pulsate like animals, the knocking of the valves, the reciprocating of the pistons, the screeching of the mechanical saws, the bumping of the trams along their rails, the crackling of the whips, the crackling of the curtains and flags. We will discuss orchestrating the din of the merchants’ shutters in our concept, the doors slamming open and closed, the babble of voices and the shuffling of the crowds, the various noises of the railway stations, the ironworks, the weaving mills, the printing works, the electrical centers, and the underground railways.”²⁰

What is new about Futurism in relation to music is not the use of sounds as such—that is ancient—but its revaluation (and overvaluation in relation to the sounds) on the one hand and its semantic accentuation as an expression of the industrial world on the other hand, with a specific accent on aggressive to military sounds between racecar and mitrailleuse. These, too, are not unfamiliar in music to this day, but they have not played such a prominent role—similarly, onomatopoeia prefers the sounds of guns, rifles, military orders as exemplified in Marinetti’s poem glorifying war, *Il Bombardamento di Adrianopoli* (1912). Following the sentence: “Nor must we forget the completely new sounds of modern war,”²¹ Russolo’s list of the components of urban sounds leads into an enthusiastic essay on this poem, which depicts “in wonderful *parole in libertà*”²² the orchestra of a great battle.”²³ These are fine examples of that barbaric aestheticism which already had a glorious history at that time and to which an even greater future opened up in the 20th century,

20 Ibid. The passage is shorted in Asholt and Fährnders, *Manifeste und Proklamationen der europäischen Avantgarde*.

21 Ibid.

22 These *parole in libertà*, words in freedom, are preferably free of syntax and human sense.

23 Ibid.

continuing into the 21st. Russolo, with music as his sound weapon, thus also wants to “generously share tonal slaps in the face.”²⁴

This revaluation, without the intensification of Italian Futurism, sparked a trend in music beginning in the 1920s. The new, positive evaluation of real sounds is shown, for example, in Honegger’s *Pacific 231* (1923) for an orchestra with traditional instrumentation. Although he was an ardent fan of locomotives (as was Dvořák, incidentally), Honegger found the objectives embarrassing; he insisted that his *Mouvement Symphonique* No. 1 was a study of tempo acceleration and deceleration merely by the diminution or augmentation of note values without tempo changes while also being a chorale variation. The railway, as handled in Honegger’s traditional mimesis, is not one of the truly new real tones.

Compositionally, the noises come to themselves as independent material, so to speak, and thus become futuristic composition only with Edgard Varèse’s *Ionisation* (1931), probably the first work for percussion orchestra alone. Here, too, the composer attaches importance to the fact that this is not mimesis. The technical innovation of electroacoustic music after 1945 does not change this aesthetic position. However, the range of the spectrum of the sounds produced in this way does change. As one of its pioneers, Varèse used the term “organized sound” “for what he predicted as the future of music, when electronic instruments would be liberated from the dictates of conventional music to produce any type of sound.”²⁵

One consequence of this is then a compositionally available continuum between noise and sound, sinusoidal tone and white noise.

Thus the *acoustic* reality content potentially increased, but not the *aesthetic-artistic* content; the opposite occurs, in fact. “Before the advent of electronic music, musical imitations were necessarily constrained by the limitations of musical instruments, whose timbres did not necessarily approximate nonmusical sounds with any precision. Thanks to sampling and synthesis, however, electronic music can produce mimetic representations that are virtually indistinguishable from their real-world counterparts.”²⁶

This was largely not realized, though. To the extent that music becomes painting at all in this context, then it is mainly as abstract, non-objective,

24 Ibid.

25 Demers, *Listening Through the Noise* e.g. 174.

26 Ibid. 172.

non-figurative painting—once again as the aforementioned distinction from the technical reproduction of real sounds.²⁷

Arseny Avraamov's *Symphony of Sirens*, 1922 and 1923. Real Noises and Sounds in a New Type of Open-Air Music

Arseny Avraamov's work *Simfoniya Gudkov* (*Symphony of Sirens*), which premiered in Baku on November 7, 1922, the 5th anniversary of the October Revolution, then in Moscow in 1923, takes a completely different approach to the use and design of real sounds with a remarkable interweaving of new and old.

The foghorns of the entire Caspian fleet took part, all the factory sirens, two batteries of artillery, several infantry regiments, a machine gun unit, numerous hydroplanes, and finally choirs, to which all of the spectators contributed. The celebration is said to have been very impressive; it is not surprising that this 'music' could be heard far beyond the city walls of Baku.²⁸

Avraamov had arranged the open-air symphony, which was divided into movements or 'acts,' even including an intermission, to be site-specific, carefully programed in space and time and with choreographed movements of the masses. "Human crowds sang workers' and revolutionary anthems in chorus as they moved to and from key nodes of entry and ceremony in the city: from the shipping docks to the ferry docks, from the ceremonial square to the Transcaucasus Railroad terminus, and from the military academy, factories, and music conservatory."²⁹

As with the coupling of music and image in film, considerable synchronization problems obviously occurred in augmented form due to the pre-electric, pre-digital mechanical control system.³⁰ Fülöp-Müller calls the work a

27 Demers criticizes the identity illusion associated with this: "Although any act of recording necessarily involves some editorial decisions on the part of the recordist, many field recordings also aspire toward an unmediated representation of reality." Ibid. 170. And apodictically Sterne: "Recordings do not reproduce sound, they represent sound." Sterne, *The Sound Studies Reader* 218.

28 Fülöp-Müller, *Geist und Gesicht des Bolschewismus* 163. Further material on this subject can be found *inter alia* in Smirnov and Sterneck.

29 Wendel, "The 1922 'Symphony of Sirens' in Baku" 549. The traditional location is thus included.

30 Ibid. 553.

“factory whistle symphony.” The performance in Moscow also reportedly did not produce “especially pleasing results:”

“On the one hand, the modulation capability of the ‘instruments’ that were used was not exactly great, on the other hand [sic] the ‘compositions’ performed were much too complicated. Although the ‘conductors,’³¹ positioned on high command towers, regulated the use of the various sirens and steam pipes, which were located very far apart, by waving flags, it was not possible to achieve a uniform acoustic impression; the distortions were such that the audience was not even able to recognize the ‘Internationale’ that was so well-known and familiar to them.”³²

Efforts to “improve the modulation capability and tonal purity of the ‘monumental instruments,’ as well as the accuracy of joint conducting” continued during the formative phase of the 1920s. Fülöp-Müller previously reported on “noise orchestras” with “engines, turbines, sirens, horns, and similar noise instruments,” with which “noise orgies” were held in the Moscow Trade Union Palace, for instance, i.e. not as open-air music, followed by “noise symphonies, noise operas, and noise festivals.”³³ He attributed these tendencies to the “period of economic war communism,” while the events in Baku and Moscow were in line with the reconstruction, including “electrification,”³⁴ which according to Lenin’s formula, when added to “Soviet power,” was supposed to result in “communism,” progress through the unity of economic and political development.³⁵ Both types form a notable combination of avant-garde and otherwise rather anti-avant-garde ‘proletkult.’

In her fairly comprehensive account, Wendel deems the event “Soviet internationalism”—hence the city on the periphery, the industrialization of the country, the Russian-Soviet and other avant-gardes, and the ‘Gesamtkunstwerk’ tendencies. The *Siren Symphony* was “one of the first realizations of a

31 A picture appears on page 160 of the conductor directing with signal flags, which appears frequently in literature; this is Avraamov. Fülöp-Müller, *Geist und Gesicht des Bolschewismus* 160.

32 Ibid. 163.

33 Ibid. 162.

34 Ibid.

35 “Communism – that is Soviet power plus the electrification of the whole country” (as stated at the 8th All-Russian Soviet Congress on 22 December 1920). Wallis, “Elektrifizierung.” http://www.inkrit.de/e_inkritpedia/e_maincode/doku.php?id=e:elektrifizierung

socialist Gesamtkunstwerk, defined otherwise as a radical unity of the arts, technology, urban space and human labor. [Avraamov's Symphony of Sirens] belongs to a genre of avant-garde practices that synthesized disparate artistic modalities and modern technologies in the form of mass spectacles, theatrical performances, and music and filmic compositions."³⁶

In the context of the festive occasion, everyday sounds are part of reality, yet at the same time they are symbolic references to it through the particular context. Because of the open-air character, everything that makes noise tends to be used for acoustic reasons alone. Industrialization as a catch-up development was as vital for the early Soviet Union as it remains today for the so-called 'developing' countries. Since people are a decisive productive force in this context, Avraamov also used sounds and words beyond noises. The fact that military sounds, speaking of 'Soviet power,' also belong to this is regrettable but understandable, since the phase of civil war and foreign intervention had only just ended.

The open-air concert as a festive event thus does not simply repeat the sounds of the urban landscape but condenses them, selects and accentuates socially relevant components that were important for proto-socialist industrialization as forward-looking landmarks, complemented by politically progressive music, thus actively changing and concentrating the sound of a new, proto-socialist city. Everything was handmade, and in particular in the pre-electrical stage of mechanization.

Respighi's Nightingale in *I pini del Gianicolo*, 1924. Technically Reproduced Sounds and Noises in Music

'Real sounds' bring the world of things most immediately into the music, but still convey it through the material and methods of music. The innumerable birds that 'sing' in music, presumably in all eras and regions, are not songbirds but artificial and artistic imitations of this special form of animal communication with its mating, advertising and warning calls.

1.) One exception as a readymade is Ottorino Respighi's programmatic musical work *Pini di Roma* (1924): There, in the third movement, *I pini del Gianicolo*, a 'real' nightingale appears on the concert stage, albeit not in the flesh

36 Wendel, "The 1922 'Symphony of Sirens' in Baku" 565.

but in a technically reproduced form: Its singing is played on a record in the concert hall.

Figure 5: Ottorino Respighi: Third movement, *I pini del Gianicolo*, the nightingale song from record is overlaid, from 13th bar before the end of the movement.

★ N° R. 6105 del "Concert Record Gramophone: Il canto dell'usignolo."

Respighi wanted to present these real sounds as 'real' as possible. The 'authenticity' is underlined by the probable 'authentic' recording location, which is identical to the area described in the sentence: "The nightingale was recorded in the yard of the McKim Building of the American Academy in Rome situated on Janiculum Hill."³⁷

Respighi's pioneering act of technically reproducing animal sounds as 'real sounds' and incorporating them into musical works has found many imitators in an expanded form, especially since the lasting structural crisis from 1971 onwards and growing environmental awareness.³⁸ One work that became especially popular was the musically traditional and simply arranged *Missa Gaia/Earth Mass* from 1982 by soprano saxophonist Paul Winter with Paul Hall, Jim Scott, Oscar Castro-Neves, and Kim Oler.³⁹ Original sounds that can be heard include "the voices of wolf, whale, eagle, harp seal, Amazonian musical wren, Russian loon."⁴⁰ In addition, however, the composers transform the animal sounds into musical material and incorporate them into it: "In *Sanctus*,

37 "Pines of Rome." https://en.wikipedia.org/wiki/Pines_of_Rome

38 Several examples in "Biomusic." <https://en.wikipedia.org/wiki/Biomusic>

39 "Missa Gaia/Earth Mass." https://en.wikipedia.org/wiki/Missa_Gaia/Earth_Mass

40 "Missa Gaia – Earth Mass." <http://www.paulwinter.com/projects/missa-gaia-earth-mass/>

the whale songs describe the vastness of heaven and earth [...]. The howling of the wolf becomes a *Kyrie* melody.”⁴¹

2.) Another type of musical use of animal-biological real sounds are “sounds made by humans in a directly biological way [...] created by the brain waves of the composer [...] by neurofeedback [...]. An Electroencephalophone [...] was first designed by Erkki Kurenniemi in the 1960s. David Rosenboom, the Brazilian composer Eduardo Reck Miranda or Alvin Lucier followed. With the help of modern digital technology, it is even possible to elicit music from a plant, a bonsai tree, as a musical instrument, thus—almost—directly transforming nature into art: “To determine the key I used the lowest note I could play and recorded the rest around it. Besides playing the leaves, I used bows of different sizes, a piano hammer and a paint brush. As far as microphones I used my Røde NT6, a customized stethoscope and tiny MEAS piezo transducers. I played all the sounds and rhythms only with the bonsai, I didn’t use any synthesizer or samplers to create or modify the sounds.”⁴²

Diego Stocco intervenes in the process in which nature is supposed to be and creates art in such a way that he incorporates arbitrary components into the indexical and iconic relationship between plants and music. He *produces* sounds, so it is the *Syrinx* principle, not the *Echo* principle. The plant serves as a musical instrument; its sound is not re-produced.

Kurt Weill’s *Tango Angèle*, 1927. Technically Reproduced Musical Pieces as Musical-Dramatic Material

A further stage of the described relationship is to make technically reproduced music into a component of music and musical theatre instead of the ready-made natural sounds of inanimate nature or animals. Kurt Weill achieves this with a record played within the scene. He was not the first to do so, however.

A counterpart to Respighi’s nightingale reproduced on record is the prospective hit song *Tango Angèle* in Kurt Weill’s one-act opera buffa (1928, libretto: Georg Kaiser) *Der Zar lässt sich photographieren* (*The Czar Has His Pho-*

41 “Missa Gaia – Weltmusik zur Weltklimakonferenz.” <https://www.evangelisch-beuel.de/wordpress/?p=1130>

42 Self-commentary by Diego Stocco, “Diego Stocco – Music from a Bonsai.” <https://youtu.be/qvyHHX6hNkY>

tograph Taken). This tango is also a real sound in the form of the readymade, in the theatre on stage, analogous to film.

Figure 6: Kurt Weill, Tango Angèle.

Tango Angèle (Grammophon)

(Diese ganze Grammophonmaschine ist sehr zart und leicht zu singen.)
(Die f. Angèle hat es jetzt nur noch darauf abgesehen, sich unbemerkt aus dem Staube zu machen)

Zar (erstarkt) *pp*

Ku - sik

The situation seems simpler than it is: A piece of music from a record is played on stage.⁴³ This is incorporated into a complex game of illusions, however.

A group of conspirators lures the tsar into the renowned Angèle photo studio. The camera is rigged up in such a way that, instead of taking a picture of the person to be portrayed, it triggers a pistol that shoots him dead. All conspirators are ‘excellent copies’ of the studio staff.⁴⁴ When the conspiracy is uncovered and the police arrive, the false Angèle puts on the record—supposedly to ‘undress’ out of sight, but in reality to remove her disguise and escape. The aesthetic bridging of the preparation for the act of love masks the sounds of escape.

The music thus acts as the classical ‘retarding moment’ for the drama, which in turn justifies its long duration, in this case, the side of a shellac record. The piece within the piece is musically not very distinctive, since Weill also uses elements of the Foxtrot and other fashionable dances. However, he

43 This can also be considered intermediality. Cf. *inter alia* Mücke, *Musikalischer Film – Musikalisches Theater*.

44 Weill, *Der Zar lässt sich photographieren* 10. Since the subject here is not to improve the technique of assassination attempts, it should only be noted that Kaiser’s protagonists proceed rather awkwardly and amateurishly according to the motto “Why make it simple if it can be complicated?”

saves “saxophone and jazz sound”⁴⁵ for the tango and, moreover, the gramophone sound itself provides a distinctive tone quality.⁴⁶

It is dramaturgically motivated incidental music, theatrically functional, not a component of mimesis, as in the case of Respighi. The tango is not a foreign work, though, but a piece of music by Weill. Thus it is a fictitious, ostensible readymade, while in fact it is a handmade, art within art rather than reality in art or, outside of the theatrical context, not a quotation but a pseudo-quotation. With this ambiguity, he inserts himself into the play with identities by ‘switching persons’⁴⁷—which implies differences. Many in the play are not who they seem: The second, “false Adele” is not a photographer, but, like her two assistant characters “the false assistant” and “the false boy,” she is part of the group of conspirators, a pseudo-ancient “male choir in the orchestra,”⁴⁸ so to speak, who rarely comments on what is to be seen and heard anyway, but doubles it. Ultimately, the tsar is not really a tsar either, and is discreetly referred to in the list of persons as “Tsar of *.”⁴⁹ An actual joke results from the fact that this tango, recorded in early 1928 for UA, was Weill’s first record release and became a hit, so reality is catching up and realizing that which art fiction had only insinuated.

45 Weill, n.d., cited by Kogelheide, *Jenseits einer Reihe 'tönender Punkte'* 128.

46 Ibid. 129; music sample 128.

47 Weill, *Der Zar lässt sich photographieren* 14. Like the preceding one-act *The Protagonist*, the *Czar* deals with “tensions between the false and the true, between deception and honesty, pretense and reality. The ultimate artistry for the protagonist is to lose himself in the role he plays; the Czar’s great desire is to escape his role of functionary.” Eaton, “Director’s Notes for a Kurt Weill Double Bill” 10f., cited by Geulen, *Von der Zeitoper zur Broadway Opera* 167.

48 Cook, “‘Der Zar lässt sich photographieren.’” 91ff. refers to parallels in neoclassical operas by Wellesz, Milhaud, Prokofiev, and Stravinsky’s *Oedipus* (1927).

49 The doubling of Angèle into the proper and ‘the false Angèle’ anticipates the divisive doubling of the main character of *The Seven Deadly Sins of the Bourgeoisie* (April/May 1933) into Anna I and Anna II. Bertolt Brecht takes the comedy motif very seriously, of course. The division of the person expresses the reversal that human virtues have become ‘market economy’ sins.

Walter Ruttmann's *Weekend*, 1930. The Totality of the Soundscape as a Soundtrack Without a Film

Ruttmann's *Weekend* is an eleven-minute radio play in the spirit of 'New Objectivity.' Ruttmann, originally a painter, then a filmmaker, used the sound-on-film method here. The radiophonic work, an invisible sound film, consists of mounted sound film recordings using the Tri-Ergon process, which was the only way to cut image or sound tracks with precision before tape was available. It is a purely acoustic counterpart to Ruttmann's purely acoustic silent film *Berlin: Symphony of a Metropolis* from 1926.

The starting point there are individual film sequences, which, as in the advanced handling of real sounds, become a whole through montage. For example, in a self-commentary from 1927: "Every day the shots were developed, and very, very slowly, visible only to me, the first act began to take shape."⁵⁰ This means: "The post-production is claimed to be the actual and creative process of film."⁵¹ Contrary to the actual facts, Ruttmann staged himself as the sole 'auteur.' As the title suggests, music, particularly as rhythm, is the common denominator, integrator and model:

"He makes the category of the symphonic his own without further ado, all his central formal terms are equally musical terms, and he prefers to describe his montage technique with musical metaphors. Cinematic practice and technical action are presented as being permeated by music; even thinking about film is deeply immersed in music. All of this is essentially part of the romantic, music-focused artistic phase that is typical of Ruttmann. As a consequence, Edmund Meisel's accompanying music is then merely the expression, rendering audible what is already at the core of the images and the sequences of images as sound and rhythm."⁵²

The advance notice of the radio play *Weekend* in early 1930 describes very precisely the components and progression of the scenes. The work-free weekend, for example, is set against the working week in a semi-documentary form:

"Ruttmann's photographic radio play

In the following we present the progression of the radio play outlined by

50 Cited by Prümm, "Die Montage als alles durchdringendes Prinzip der Stadtsinfonie" 62.

51 Ibid.

52 Ibid. 64.

Ruttman, which acoustically reproduces the events of the weekend from the end of work on Saturday to the resumption of work on Monday.

WEEKEND

1) Jazz of work

Material:

Typewriters Telephone bell Cash register

Various machines Hammering Saws

Files Forging Dictating Commands

Progression:

a) Cheerful, almost entirely musical jazz of working sounds; rhythmically heavily arranged counterpoint

b) Simpler counterpoint: the individual sounds are more distinctly characterized in their materiality.

c) The groaning machinery of work: weariness, agony of work, exhaustion. Machine *ritardando*.

2) Closing time

Clock strikes. Other clocks strike like canons, factory sirens: far – near – near.

Liberated final cadence of the typewriter. Desks are closed. Drawers, roller shutters, scissor grids closed, bunch of keys clanging, doors slamming into the lock, keys creakingly rotated.

In between human voices: giggling girls, laughing men, shouts: 'Goodbye!' etc., echoing: hurried steps in the staircase. [...]”⁵³

Frisius, in his very detailed analysis extending to the level of sonograms, emphasizes the technical advancement *and* the unusual realism of the work:

“*Weekend* is the first radically experimental composition of montaged sounds. This production anticipated tendencies that would only be taken up again decades later in French ‘musique concrète’ and in the West German ‘New Radio Play’—for example, by Pierre Schaeffer and Ferdinand Kriwet. In Ruttman’s audio film, Schaeffer’s early ‘musique concrète’ and Kriwet’s audio texts, approaches to the content-related selection, combination and

53 *Film-Kurier*, Berlin (No. 41), 15 February 1930. Cited by: “Walter Ruttman, ‘Weekend.’” <http://www.medienkunstnetz.de/quellentext/96/>

processing of sounds are evident, as they remained largely singular until the end of the 20th century.”⁵⁴

The real sounds of the urban, industrial soundscape appear completely and acoustically vivid in an imageless soundtrack. The artfully assembled, quasi-documentary radio play without a plot is an audio image. It is a glimpse of the later independence of independent musical works in ‘musique concrète.’

Historically, the soundtrack of the film even includes the imitation/*creation*, also called Foley after the name of a pioneer of ‘sound-making,’ before the mechanical-automatic real sound recording, which only became conveniently possible with the electric microphone starting in 1924.⁵⁵ Aesthetically and artistically as well, the Syrnix principle of imitation/*creation* has priority over the Echo principle of ‘lifelike’ reproduction.

Due to recording problems, even in the age of electrification, artificially produced sounds are used for film noises in addition to or instead of the real or ‘original’ sounds. These artificial real sounds often seem more real than the real sounds. Similarity by similarity, such as the imitation of the clattering of horse hooves by rattling coconut shells, for example, merges⁵⁶ into similarity by otherness, even dissimilarity. Gunfire can be represented by beans crackling against the lid in a cooking pot, for instance. So there is an analogy in the sense of biology. And what was indexical becomes iconic in this way.

54 See “4. Analyse erfahrungsorientierter Musik,” in: Frisius, *Forum Analyse*. <http://www.frisius.de/rudolf/texte/txhorend.htm>. A broad embedding of the work into various artistic and ideological currents is undertaken by Hagen, *Walter Ruttmanns Großstadt-Weekend*. http://www.whagen.de/PDFS/11010_HagenWalterRuttmannsGro_2005.pdf

55 See inter alia Stinson, “Real-time Sound Effects: The Foley Way.” <https://www.videomaker.com/article/7220-real-time-sound-effects-the-foley-way/>; Prendergast, “The Aesthetics of Film Music.” <http://web.archive.org/web/19970516041845/http://citd.scar.utoronto.ca/V/PAB93/course/readings/prenderg.html>; “Game Sound Design.” <http://www.filmsound.org/game-audio/>. A practically endless list of links at “Theoretical Film Sound Texts.” <http://www.filmsound.org/theory/>. A long alphabetic list with tips on sound production: David Filskov, “The Guide To Sounds Effects.” <https://www.epicsound.com/sfx/>. For example, for horse hooves, in addition to the obligatory coconut halves, “by beating two potatoes in a 3-beat rhythm in a pan filled with sand, rice, and crushed crackers. Pitch adjusted to suit” or more simply “cup your hands and clap them against your thighs to the running horse rhythm.” Product placement is a free extra: “Works best when you’re wearing denim pants.”

56 Cf. parody by *Monty Python and the Holy Grail* (1975).

Pierre Schaeffer's *Étude aux chemins de fer*, 1948. Technically Reproduced, Compositionally Reprocessed Sounds as Music

Real tones as readymades are the unstylized, preexisting material of the 'musique concrète' produced by Schaeffer and others since about 1945.⁵⁷ However, they become stylized and assembled into the raw material of the composition. In contrast, they are not used in 'electronic' or 'electro-acoustic' music by Herbert Eimert, Henri Pousseur, Karlheinz Stockhausen, and so on. However, both originally antagonistic currents soon converged. Stockhausen's *Gesang der Jünglinge* (*Song of the Youths*) from 1955/1956 represents the synthesis. In Pierre Henry and Pierre Schaeffer, as well, the instrumental is then supplemented by the human voice, first in the jointly produced *Symphonie pour un homme seul* (*Symphony for One Man Alone*, 1950).

Schaeffer preferred real sounds from the realm of transportation that are more traditional than the racing cars and airplanes or the military means of destruction in Futurism. *Chemin de fer* then appears in several of his titles. He mainly uses industrial real sounds taken from reality—'found audio footage.' These sounds are not 'exhibited' or performed in isolation, but are processed as musical material, assembled to form larger contexts and composed as a work. But the ideal was not similarity. Schaeffer's earliest concrete works used recognizable sounds, although Schaeffer advocated 'reduced listening' as a way of bypassing external associations to focus on a sound's inherent qualities. A point of contention in post-Schaefferian electroacoustic music is whether materials can be mimetic or should adhere to the modernist ideal of abstraction.

His decision was against mimesis, and his successors liked to imitate him in it. He wanted real sounds, but not mimetic relations to reality. It was important to him to remove sigmatics and semantics as far as possible: "the sound object (*objet sonore*) is sound isolated from its means of production or notation as well as the state of mind of the listener. Schaeffer's conception of the sound object is a reduction, a bracketing out of external information in order to arrive at a pure phenomenological experience. The concept of the sound object has held wide sway among post-Schaefferian electroacoustic musicians."⁵⁸

57 See *inter alia* Schaeffer, *Musique concrète*.

58 Demers, *Listening Through the Noise* e.g. 174.

The sources of the sounds should also be deliberately faded out in the reception, contrary to the spontaneous listening experience, in a form of listening that is correctly called ‘reduced listening’: “Schaeffer’s term for listening that ignores the source and origins of sound. Schaeffer advocated reduced listening for his ‘musique concrète,’ a genre that often relied on recognizable footage of everyday sounds such as trains. Several composers, including many of Schaeffer’s own students, have criticized or rejected reduced listening for placing unrealistic expectations on listeners.”⁵⁹

The Winstons’ *Amen, Brother*, 1969. Sampling—Technically Reproduced Pieces of Music as Musical Material

‘Sampling’ in this context represents a collective term, perhaps even as a basic term for a wealth of procedures that are applied by the collage and montage processes that has been heretofore outlined, but which first became predominant with the synthesizer and then again with a qualitative leap in many segments of newer pop music. To name but a few between quotation and plagiarism: Pre- and transitional forms such as covers or mashups—basically each time a new interpretation or/and the traditional parody process in digital form—recycling, remix, copy and paste, looping, ‘plunderphonics,’ ‘appropriation literature,’ etc. We could call all of this music ‘second-handmade.’

Probably one of the most used samples is an excerpt from *Amen, Brother* by the American soul band The Winstons, released in 1969 as the B-side of a single and a modest commercial success. Only with its re-release in 1986 did the piece come into the focus of the pop musicians of the time. “The four bars of ‘Amen, Brother’ quickly became known as the ‘Amen Break.’ The producers extracted the drum solo, slowed down its tempo, played the file endlessly over and over again and let rappers loose on it [...]. As a result, complete micro-genres were based on the four bars by the drummer Coleman. According to the statistics from the website Whosampled.com, the mini drum solo appears in more than 2,400 songs to date.”⁶⁰

59 Ibid.

60 Sievers, Florian. “Die hohe Kunst des Copy and Paste.” <https://www.fluter.de/geschichte-des-samplings>

The technical prerequisite for rampant sampling was the availability of inexpensive digital samplers from 1987 onwards.⁶¹ In this way, preexisting music and not just real-world noises function as readymade and real sounds. On the one hand, Duchamp's concept of art was setting a precedent, while on the other hand, and probably more importantly, it was the development of the soundtrack in film—and in reality. The proliferation of the readymade received another huge boost in neo-liberal postmodernism since the late 1970s. Sampling,⁶² Appropriation Art⁶³ and similar currents and genres use as material something that is already art and no longer extra-artistic reality.⁶⁴ In this respect, real sound and Readymade are an analogy above all else. For it is something that has already been artistically formed, which is now being transported into the new context as material and language.

In 'Plunderphonics,' which is more of a trademark of composer John Oswald than a term, sampling obtains a challenging element of cultural criticism, seemingly progressive in the name of freedom and democracy, but rather backward-looking because it is ultimately a violation of copyright law to be able to plunder rights-free authors without questioning the 'market economy.'

From a digital standpoint, 'analogue' then retrospectively seems 'vintage' and like the nostalgic 'retro.' Thus, the use of quotation-like methods in more recent electroacoustic music sometimes takes a peculiar turn: "Electronica often propagates metaphors linking different types of sounds with larger concepts. For instance, the sounds of synthesizers, especially vintage instruments of the 1960s and 1970s, frequently evoke science fiction and futurism."⁶⁵

In another variant, sounds of past media, in this case the record, serve as a kind of ennobling of music by historical dignity. Yet the old is then usually similar at best, reproduction is a construction, and identity is an illusion: "Phonographic noise such as the pops and scratches of a record player's needle

61 Ibid.

62 Ratcliffe, "A Proposed Typology of Sampled Material within Electronic Dance Music" attempts an enlightening typology. It could be differentiated and expanded. For sampling in hip-hop, see Kautny, "Talkin all that Jazz."

63 In general, but especially in relation to currents in the 1980s in the USA, see "Appropriation." <https://www.tate.org.uk/art/art-terms/a/appropriation>

64 Cf. Döhl and Wöhler, *Zitieren, appropriieren, sampeln*.

65 Demers, *Listening Through the Noise* e.g. 171.

can serve as a metaphor for the age of the underlying music, even if those noises were artificially constructed rather than innate to the material.”⁶⁶

The handmade of instrumental playing itself supports or else substitutes for and simulates digitized pedals for electric guitars in real instrumental playing: “The amps have the ‘sought-after old sound’ with an extremely high dynamic range. The only concession to modernity is a ‘post phase-splitter master control,’ which allows for a great *vintage distorted sound* even at moderate levels. The circuit reacts extremely *honestly* to everything you input and responds exceedingly well to all kinds of effect devices.”⁶⁷

It is a winding, spiral path from mechanization to electrification to digitalization, zigzagging between the mechanical, almost automatic impression of the real on the one hand and the technical re/production of the real on the other, i.e. in the interplay between the Echo and Syrinx principles, of ready-made and handmade. The kicker is that, even before digitalization, the ready-made principle had been generalized through sampling and collage in such a way that the difference between genuine, documentary real sounds, processed real sounds, and preexisting handmade sounds had been blurred.

Composing Goes Beyond Collaging

Real sounds, as actual noises, are not entirely aesthetically and artistically equivalent to art noises, art sounds and artificial tones, nor are preexisting readymades, which are transformed as readymade quotations that are already within the art. The handmade, the composition, regardless of whether by hand and head or with a computer, whether ‘analogue’ or ‘digital,’ is ultimately what is essential in terms of art ontology and aesthetics.

Relatively novel would be to not only declare *interdisciplinarity*, but to practice it and to understand the references of music to reality, inter alia in social, cultural, literary, theatrical, art, cinematic, image, neuro- and technical sciences, biological, anthropological, psychological, psychoanalytical, economic, sociological, media, semiotic, linguistic, epistemological, and generally aesthetic methods, to incorporate findings and develop them independently in a way that is specific to music.

66 Ibid.

67 Advertisement: *Kammler*. <http://www.kammler-cabinets.de/>

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