

## Playing with Sound.

### Pedagogical notes on creation and instrumental playing.

#### Abstract

For centuries, the notes of musical notation were the medium of memory, learning, instrumental practice, and aesthetic creation for Western European art music. In contrast, the phonographic and digital media of the 20th and 21st centuries are media of acoustic waveforms, their generation, storage, transformation and performance. The tonal pitches of musical notation become technically writable and readable sounds, while their media enable the creation and instrumental performance of auditory material. With their compositional and instrumental functions, they not only change the cultural practice of auditory design. They also break into traditional domains of teaching and learning and require a contemporary renewal of the content, concepts and goals of teaching and instrumental performance.

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*"What kind of education might be offered to a new generation of musicians who need to understand electronics in order to create an interface, computer programming to define the sound and music of their instrument, and music theory to design the compositional aspects of the instrument?"<sup>1</sup>*

When it comes to music education in the digital culture, increasing efficiency and optimization is often the primary interest: "Can the learning effectiveness of music lessons be increased by using new (digital) media?"<sup>2</sup> Looking at thousands of YouTube tutorials, this question seems rather rhetorical and easy to answer: probably yes. However, music teaching of a different kind takes place there; it does not require a university, a school, or a classroom. The breadth and depth of what is offered also exceeds what is offered in schools and even universities. From tutorials on Beethoven-Sonatas to "Twelve Tones" to ironically broken instructions on vaporwave production, everything is available there.<sup>3</sup> Just as Wikipedia has degraded the bourgeois knowledge of the great printed encyclopedias from a scientifically secured current source to a document of a bygone era, the sources of Web 2.0 are dynamizing knowledge about music and its practice. Music forms that focus on sound

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<sup>1</sup> Magnusson 2019, 240.

<sup>2</sup> Platz et. al. 2021, 82. (all German language quotes are translated to English by the author).

<sup>3</sup> Beethoven - Moonlight Sonata | EASY Piano Tutorial, <https://www.youtube.com/watch?v=HOlrOjrjE5>; Vihart, Twelve Tones, <https://www.youtube.com/watch?v=4niz8TfY794>; Frankjavcee, How To Make Vaporwave, <https://www.youtube.com/watch?v=N2bbwnPckZg> [last accessed 11/03/2023].

benefit from this in particular, in interaction with the music practice of the "unauthorized" who acquire their knowledge and practical know-how outside of schools and academies.<sup>4</sup> The new forms of learning and playing under the sign of sound no longer correspond to an established musical understanding of notated works and their performance. The question of music education and practice in a digital culture thus becomes urgent. A look at the "Handbuch Musikpädagogik" shows, however, that there seems to be such far-reaching and unreflected agreement about the "music" to which the handbook refers that the question of what this music is addressed only marginally in a few articles. A contribution oriented towards cultural contexts of music accordingly states a distance from reality, in which

"... music education remains strongly in an understanding of music, according to which objectifications in the sense of 'works', primarily of the so-called 'high culture', as well as a certain form of analytics remain dominant."<sup>5</sup>

The changes also affect the understanding of musical education and general education. Education is shifting into areas that are hardly covered institutionally and requires a reorientation of its methods and goals. Even though a broad discussion about musical education has hardly started yet, there are - alongside to the background of a general critique of education - critical voices calling for a debate:

"Especially in the context of behaviorist learning goal orientation as part of curriculum reform, the concept of musical education appears not only as historically obsolete, but also as didactically dangerous."<sup>6</sup>

With regard to the consideration of "mediality in music pedagogical fields of action", a "gap between private and institutional use"<sup>7</sup> of digital media opens up, which, according to own experience and confirmation by colleagues, applies not only to school institutions, but also to artistic learning programs and universities.

As justified as the initial question about the learning effectiveness of digital media may be, it obviously falls short of integrating these media even marginally into teaching and learning. This brings us to the topic of my contribution, which does explicitly *not* follow the question of the efficiency of new media in music lessons and puts aside the multi-media board that was purchased for a lot of money. Instead, it is about a concept of instrumental playing in a culture of digital media that follows current social values and contemporary music practice. Here, not only the methods but also the objects are addressed in order to connect changed contents and goals with the respective media used. From this point of view, a pedagogical media concept only makes sense if the *double role of the media*, in which they form both content and methods, is taken into account.

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<sup>4</sup> Kleiner 2008, 14.

<sup>5</sup> Geuen / Stöger 2018, 75.

<sup>6</sup> Vogt 2018, 178.

<sup>7</sup> Ahlers 2018, 364, 369.

## Technical Writings of Sound

A closer look at the problems outlined above requires a historical perspective that goes beyond digital media and begins with the establishment of technical sound writing ("phonography")<sup>8</sup>.

"Since the advent of recorded music in the late 19th century, technologies have contributed to configuring the ways in which music is written, recorded, produced, marketed, and listened to."<sup>9</sup>

For centuries, musical notation was the medium of memory, learning, instrumental practice (every pianist knows the "Czerny"<sup>10</sup>, every guitarist the technical exercises of Francisco Tárregas), and aesthetic creation. With phonography and digital media, the cultural practice of composition and auditory design is changing. *Notes* become *sounds* that can be technically written and read, and media serve to shape and instrumentally perform auditory material. With their compositional and instrumental functions, they break into traditional domains as described above and call for a contemporary renewal of the concepts and goals of teaching and instrumental performance.

Traditional instrumental playing starts from a constellation that was shaped in Western European art music:

work (idea) -> notated work -> performance&interpretation.

An idea of a work is written down in the form of notes and made sound in a human act of reading and understanding. The performance is the necessary sonification of the notated 'work' and at the same time the interpretative realization of the musical text. An established cultural practice of musical performance thereby spans a spectrum of appropriate or 'correct' performances of the work and ensures for the coherence and interpretation of meaningful elements of the score. It is only here that the individual musical experience - the music - of the respective recipient is created from the perceptual offer and the situational framework.

With the technical writings of sound, this chain has become, at its core, inappropriate. Phonography (analog and digital) presupposes a 'performance', but is itself a writing of technical execution and thus of the sonification of an only technically readable

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<sup>8</sup> The term "phonography" here refers - as a general principle of sound recording - to all phonographic devices without regard to their carrier media such as cylinders, records or tapes. The term "phonograph", on the other hand, usually refers to cylinder recorders as opposed to Emil Berliner's gramophone, which worked with discs.

<sup>9</sup> Nowak 2016, 1.

<sup>10</sup> Czerny, Carl: Op. 500. Vollständige theoretisch-practische Pianoforte-Schule von dem ersten Anfange bis zur höchsten Ausbildung fortschreitend, und mit allen nöthigen, zu diesem Zwecke eigends componirten zahlreichen Beispielen. In 4 Theilen. Wien 1839.

phonographically 'notated' music. Already this "second order"<sup>11</sup> performance, i.e. the technically medial performance of a preceding performance, transforms it into a medially arranged space of action with its own parameters (i.e. "HiFi" or "MP3"<sup>12</sup>).

With the sonic reproduction, the weight of interpretation and execution true to the work shifts. Comparable to the relationship between painting and photography, a correct and faithful reproduction/performance of a work, once it is available in a reproduction medium, is no longer the sole purpose of an artistic action. On the other hand, it becomes interesting to relate one's own recording to existing reproductions. The ideal of pure sound, of the greatest possible accuracy, is relativized, since it is technically no problem to reproduce structures and tones perfectly in terms of sound or to produce them (for example, by means of a synthesizer or sampler). Glenn Gould, whose recordings reflect the medial situation of phonography early on, consequently does not regard his audible humming along as an unpleasant disturbance, but uses it as his own trademark. Interpretation, 'sound' and media reflection take on primary importance. Faithfulness to the work and historical performance practice become re-enactment with event character.

The own performance practice of the phonographic media thus always has a performative character of its own, beyond the reproduction of past recordings. The reception situation can take on the most diverse configurations, from everyday use of the cell phone to stage production of the media involved (loudspeaker concert!). If the aforementioned media environments are to be used for composing and designing beyond mere re-execution, it is necessary to devote oneself to the technical devices, to 'play' them - their 'sound' - and to free them from the function of 'reproduction'.<sup>13</sup> „The second-order performance emancipates itself as an independent aesthetic artifact from its supposed function of representation."<sup>14</sup> Learning to play the record player, which already bears playing in its name, in this sense means the appropriation of a technical procedure for reading technical writings. This playful use of a media-technical apparatus is quite similar to traditional instrumental playing, whose sedimented practices and bodies of knowledge can be reflected upon and taught. The difference lies in the fact that it deals with a sign level of notation, which can no longer be accessed directly mentally and manually, but only through technical devices.

The materiality of a technical sound inscription, which leaves its traces in shellac or vinyl, does not allow direct human reading due to its microscopic reproduction of acoustic waves. László Moholy-Nagy 's vision of writing and reading the sounds of this script directly - by "Ritzschrift" - remained an unattainable utopia.<sup>15</sup> Nevertheless, we can play these recordings, by means of the pickup of a turntable or, in digital culture, through program-

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<sup>11</sup> The technical medial performance of a preceding performance, cf. Großmann 2006, 3f.

<sup>12</sup> Sterne 2012.

<sup>13</sup> Among the pioneering works of a reception-oriented design are John Oswald's "Plunderphonics" (1985).

<sup>14</sup> Großmann 2006, 4.

<sup>15</sup> Moholy-Nagy 1922.

controlled access to files and interfaces, through samplers and digital audio workstations. In addition, there is the generative automatic of digital programs (i.e. MaxMSP), which can directly calculate sounds as waveforms, output them and make them sound via transducers

## **Sonic Writing**

Thor Magnusson, who concludes his volume on the "sonic writing" of phonographic and digital media with a chapter on "New Education for New Music," puts the role of the virtuoso up for discussion:

"The model of the 'virtuoso' performer can no longer be the purpose of music education. In future music education, it might not be for everyone to dedicate time to reach an expert level on an instrument (although playing one is essential for everyone, I would argue). When computers can spew out thousands of notes per minute or per second, should we wish, the idea of reaching Franz Liszt's piano skills is transformed: while it is still a noble goal, our musical languages have surpassed the need for such skill."<sup>16</sup>

The idea that virtuosic playing and training are obsolete challenges the traditional notion of 'mastering' an instrument. However, for stage presence in a live situation - as the debates about laptop performing show - virtuoso playing is still an important factor that can be repositioned by new concepts of instrumentality (see below). Another important argument for a new understanding of instrumental playing is mentioned almost in passing by Magnusson:

"Music is a highly collaborative social form that focuses on cohesion, not competition (like sports), and the modern technological context presents opportunities for highly interdisciplinary work methods." (ibid.)

This refers to a re-evaluation that is oriented towards contemporary social and cultural values. A comparable disciplining of young people in particular, down to the motor level, takes place today only in competitive sports. There, illnesses, early invalidity and overstraining are among the common consequences, as they are also known from 19th century virtuosos. Playful music-making is hardly possible in a competitive culture determined by discipline and hierarchical subordination. In addition, there is the necessary balance between the inherent dynamics of the highly developed digital program structures and the artistic confrontation with these sedimented bodies of knowledge. The idea of a playful and at the same time total control of digitally controllable instruments hardly does justice to their complexity and own agenda.<sup>17</sup>

In the generation or transformation of cultural production (or aesthetic artifacts) by means of digital technology, the computer is involved not only as a computer but also as a me-

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<sup>16</sup> Magnusson 2019, 241.

<sup>17</sup> Cf. Großmann 2021, 75.

dium. In doing so, it contributes - in the sense of the "double role of media" mentioned above - its implicit sedimented knowledge, its options and reductions. Media artifacts are never just representations, but remediations within a specific technological and cultural framing.<sup>18</sup> If these processes are not aesthetically reflected and made productive, we are dealing with a blind object-tool relation that sees the computer as nothing more than an office machine for the administration of sounds and their microcomponents.

### **Liveness and Instrumentality**

The discourse on stage performance and instrumentality also reacts to the changes described above. The conventional notion of live performance is challenged by performances with "semi-finished music"<sup>19</sup>, with technical apparatuses in which some of the music may be inscribed both structurally and sonically. This is especially true for a performance with digital media, whose interfaces as well as the actions of the performers are often intransparent for the recipients. The discussion of laptop performances and programmable button interfaces (MPC, Ableton Push, NI Maschine) is almost symptomatic of the new situation.<sup>20</sup> A discursive reflex to this new hybrid situation, in which first- and second-order performances intermingle, is Philip Auslander's idea of opposing a dichotomy of live performance and recording with a gradual "liveness"<sup>21</sup>. At the same time, the character of musical instruments changes, seeming to be situated between technical medium and instrument. A sampler, for example, is first and foremost a mapping medium that transforms, manages and reproduces sounds; a digital audio workstation runs on a computing office machine called a computer. In this situation, the conceptual dynamization of the instrument towards a gradual property of "instrumentality" is also accomplished.<sup>22</sup> Both ideas combine in an interrelation of live character and performative instrumentality. Every performance or interactive sound installation will have to deal with this discussion in order not to naively remain in traditional positions.

### **Consequences**

The consequence of this development is a different profile of requirements for musical education, instrumental performance and music production. To this changed complex situation only some remarks can be made here, which should stimulate further thinking. There are consequences in the following areas:

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<sup>18</sup> Bolter / Grusin 1999.

<sup>19</sup> „halbfertige Musik“, Großmann 2021, 61.

<sup>20</sup> Großmann 2006.

<sup>21</sup> Auslander 1999.

<sup>22</sup> Cf. Croft 2007; Sanden 2019; on fundamental categories of instrumentality see Hardjowirogo 2016.

- Playing 'old' instruments differently

A tendency that can be observed for a long time is the *individualization* and *boundary shifting of the interpretation framework* against the background of a huge series of already strongly profiled interpretations that are available as records. The entire canon of 'classical' music is already part of our (western) cultural memory in the form of technically recorded interpretations. To know these interpretations and to take up one's own, as unique as possible, position belongs to the basic requirements of an environment shaped by records. Also *Multimedia-networked presentations* of traditionally played instruments are a consequence of digital media convergence. Videos available on YouTube or other platforms can develop a new dynamic of reception in interaction with stage performances. One example are the streamed "house concerts" of pianist Igor Levits, which during the pandemic years 2020/21 linked his social media presence to a book publication and other media formats.<sup>23</sup> Another direct consequence of the orientation towards recordings is the conscious shaping of the sound and the micro-rhythms of one's own playing, even for 'classical' performers. An individual sound - for example through touch or miking - is now part of the individual interpretation and gives it a corresponding effect. Characteristics of the groove, such as swing, 'laidback' or 'straight', which were initially relevant for jazz or pop productions, are finding their way into the consciousness of 'classical' instrumental playing through the ubiquity of recorded music.

- Using, testing, modifying, developing other tools/interfaces

The individualization does not only concern playing style and interpretation, but also the instruments themselves. Electronic and digital instruments are capable of their own individual *parameterization* of their sound. Their control via MIDI or OSC also allows any desired layering of various sound generators and thus the creation of *complex sound layers*. Digital program control can also include *sequenced soundstructures* or *pre-programmed rhythms*. The result are instruments whose sound can be designed in a completely flexible way and in which automatically running structures can be inscribed ("playing with something that runs"<sup>24</sup>). The focus of instrument use shifts from playing tones to sound and rhythmic design. New instruments are also created through the *misappropriation of media devices* (e.g. the Technics SL 1200 record player) and through the development of digital interfaces whose surfaces are oriented towards new playing practices, such as the *16-matrix* of the MPC<sup>25</sup> or the *running light programming* (e.g. the TR808).

- Acquisition of techno-cultural knowledge of auditory design

From the described reorientation of instrumental practice follows directly a necessary *understanding of technical generation and shaping of sounds* (e.g. synthesis forms and effects of time-based or level-based transformation). In this context, it is not sufficient to

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<sup>23</sup> Levit/Zinnecker 2021.

<sup>24</sup> Butler 2014.

<sup>25</sup> Cf. Großmann 2013a.

focus only on the functions, but also to follow the long-developed *aesthetic strategies of technical-auditory design*, for example in DJ Culture or *musique concrète*. Part of techno-cultural knowledge is a conscious perception of the machine as an "actor" of sedimented knowledge<sup>26</sup>. Such design knowledge leads to an *explorative and collaborative approach* to music machines and program environments and avoids naive reproductions of already established works. Working on phonographic material, its transformation and recombination (i.e. sampling) also entails changes in the idea of work and authorship. Parallel to the dynamization of categories such as 'liveness' or 'instrumentality' discussed above, a *gradual conception of authorship* seems to me appropriate. To the extent that categories such as montage, collage, and sound shape musical artifacts, this 'phonographic work' will be on equal footing with the traditional authorship of working with sounds.

Some of these consequences are by no means totally new and there is no difference in principle to traditional instruments. Classical instruments like the violin or the organ are also agents of sedimented knowledge. In digital culture, however, these bodies of knowledge take on an incomparably more formative role. In particular, programs and their parametersets contain and represent complete knowledge models of musical cultures.<sup>27</sup> At the same time, they make structural concepts and role models of common playing (such as the string quartet or the "garage band") that have been developed over centuries generally accessible. The above-mentioned "consequences" are first of all remarks intended to provide topics for focused reflection. Instrumental pedagogy and music education need appropriate widening and, in some areas such as virtuosity and control, rethinking to make relevant contributions in digital cultures. Otherwise, there is a danger that school and academic institutions will remain in a ghetto from which the sound of the present is heard with incomprehension.

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<sup>26</sup> Cf. Latour 1996.

<sup>27</sup> This also includes abbreviated and clichéd notions of 'exotic' cultures. Cf. Ismaiel-Wendt 2016.



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