

ACCESSIBILITY - SUSTAINABILITY: HISTORICAL CHANGES AND CURRENT THREATENING SHADOWS BEHIND

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Abstract

The development of reproduction technology in the 20th century and the rise of streaming platforms have had a devastating impact on both, accessibility and sustainability in our music cultures and especially in music education. Furthermore, various side effects accompanied or even triggered this development. Both terms were the twin themes of the 10th anniversary in 2023 of the PGVIM International Symposium. This text is adapted from a keynote address for that conference.

Keywords: sustainability, accessibility, spotify, sound pollution, perception of music

Introduction

The main theme of the 10th birthday of the PGVIM Symposium in 2023 hosted by the Princess Galyani Vadhana Institute of Music revolved around the concepts of "Accessibility" and "Sustainability". Both refer to the main targets of the founder of this institution, Princess Galyani Vadhana.

How can both new and traditional music be made accessible to the widest audience without compromising authenticity and individuality? How can traditional and contemporary musics be sustained and further developed, when the current exposure to music is almost limitless, but limited at the same time?

Reflecting on those questions, I started by looking for connections between this topic and the global shifts in the meaning of music, the social relevance (possible changes in perception and communication) and distribution concepts (access to key technologies etc.), as well as how those changes impacted the music practice itself. Finally, I came across one central issue: the role of music reproduction technology and its development, because it is strongly connected with the two terms on hand – sustainability and accessibility. As an introduction, I want to recall and describe shortly the unique and always changing role music has taken in our world, including some aesthetical implications.

Before the 20th century, music was essentially not different to other art forms. There was music connected to religious practice – probably one of the earliest forms of all. There was music as a social tool within a given society, including entertainment, social gathering and private activities as, for example, cradle songs. It was even a tool for ethnic identification. One may call it: music as communication and community practice in the widest sense.

During the 19th century, music emerged as an autonomous art form, while its counterpart, popular music, became a fully industrialized product. Today, the latter is mostly driven by digital technologies that started to permeate music since around the 1970s. To keep things simple, it is reasonable to state that all the forms of music mentioned above still exist. However, this also means that music was generally produced or practiced in specific situations or under special circumstances.

The paradigmatic change in the 20th century seems to have begun around the 1920s with the advent of reproduction technology and became particularly pronounced over the last 50 years.

Aesthetic consequences? I cannot avoid the impression that today, the quality of active listening to music seems to be withering away and is almost universally replaced by passive sound reinforcement. This trend has been evident over the past few decades with most of my own students. I acknowledge that this statement may be somewhat blunt or superficial, but it serves as a useful starting point to understand my real intentions. We can hardly escape the pervasive environmental pollution of sound, which I hesitate to call music—though many might disagree. In numerous situations, music has degenerated into mere “sounding wallpaper,” constantly surrounding us in restaurants, shops, public transport, and more. A special segment of this is known as “muzak.” And if that weren’t enough, many people further “alienate” themselves by walking around with small headphones or in-ear headphones. These function as personal wallpaper, isolating individuals from their environment, which can even become dangerous in everyday life.¹

Some years ago, a survey in German grammar schools came to the result that more than 65% of the pupils do their homework while constantly listening to music. (Die ZEIT, 2015/3) In my eyes, this is frightening. No other art form has been misused and degenerated in such a degree like music. As a result, music forms still considered as art face greater challenges today compared to other art forms. This common practice and the pervasive exposure to sound lead to an unconscious conditioning of the perception process² Nevertheless, this problem is not my primary concern

1 What I mean is that this individual sound reinforcement impedes the perception of acoustical surroundings. One may hardly hear acoustic signs of cars, bicycles etc. It even becomes worse with electric cars. As I own one since some months, I had already three “almost”- accidents with pedestrians, who did not recognize my car at all, because its sound was hardly perceivable, but also because of their personal sound reinforcement by earphones.

2 Albert E. Bregman: Auditory Scene Analysis, Cambridge. MIT Press, 1990

in this paper. However, it is essential to keep it in mind, as it represents one of the continuously threatening “shadows” in the background. At the beginning, and based on these pre-assumptions, I would like to mention three aspects in an exemplary way:

1. The Fallacy of Knowledge Through False Accessibility

Before the advent of electronic media and reproduction technology, one had to invest a significant amount of energy for in-depth study and practice to learn new things in music. Music was, so to speak, implanted or stored in the mental system through “audiation.” It was always possible to recall this music, as described by Edwin Gordon, Wilfried Gruhn,³ and others in their groundbreaking studies on music learning and understanding in the 1980s and 1990s. Today, the situation is mostly different. We know where we can find something, but we less know the “something” itself. We store the place in our mind but less the content of the object itself. Therefore, I call it a false accessibility.

2. The Problem of Quality Perception – Accessibility

Who still has a quality stereo sound system at home or in his/her academic teaching places? My current observation tells me that the existence of such equipment is decreasing. At best, people use headphones. Fortunately, PGVIM is still well equipped. But even at some music departments in Germany, I had to use the inbuilt speakers of my laptop during presentations because they no longer had a decent sound system.⁴ Even among musicians, it is common practice to use small in-ear headphones with a limited range and dynamic level daily, even though these devices are hardly suitable, even for popular music. Finally, I hesitate to mention the potential damage to the ears. Unfortunately, there is still not much in-depth research on this issue, at least to my knowledge.⁵

3 Edwin E. Gordon: *Learning Sequences of Music*, Chicago 1980 & Wilfried Gruhn: *Wahrnehmen & Verstehen, Untersuchungen zum Verstehensbegriff in der Musik*, Wilhelmshaven 1989.

4 Perhaps an interesting anecdote: in Germany, I still use my old SABA loudspeakers from around 1972. Still today they belong to the best I ever heard.

5 <https://www.morgenpost.de/vermishtes/article237131113/in-ear-kopfhoerer-hoer->

3.The Crazyness of Premieres in Contemporary Music – Sustainability

Perhaps this point sounds a little off topic but it is not. It is a good example of our problem. Today, for at least several decades, there has been an increasing tendency for festivals featuring contemporary music to present more than 70% premieres. However, around 70% of these premieres typically will not be performed for a second time.⁶ In other words, a type of music that is hardly accessible to most people will never achieve sustainability as a new music form but will instead disappear into the vast realm of acoustically stored works. I do not argue against the classical masterworks and their frequent performances. However, rather than classical music practice resembling a constant stroll through a museum, it is strongly hoped that new auditory experiences are valued as highly as the repetition of our classics. I just want to remind us that until the end of the 19th century, it was more or less customary if not compulsory for regular concert programs to include more new pieces than older ones (special contemporary music festivals did not exist at that time).

Short Historical Review

Before the 20th century, encountering a new piece of music was only possible through personal practice or attending a concert/performance. Each performance possessed its own singularity or uniqueness, even if a notation existed. The few existing and potentially reproducing music machines like the Pianola, Welte-Mignon

technology, and later Player Pianos did not alter the uniqueness of a live music

[schaeden-studie-ohr-hoerverlust.html](https://www.schaeden-studie-ohr-hoerverlust.html). Even my limited knowledge on the “biology-of-the-ear” tells me that it can hardly be a healthy way of listening to music.

⁶ According to a survey by “Deutscher Musikrat” at major festivals some 10 years ago. The controlled timespan after the premieres was five years. The results convey with my own small survey over the last eight years at the Donaueschingen Contemporary Music Festival. I must admit that there are also other reasons, as for example the often-unusual settings. A piece for flute, Japanese koto, trombone, Baroque violin and live - electronics is much harder to be performed again compared with a string quartet.

experience around the turn of the 19th/20th century. However, the situation shifted with the introduction of shellac records, followed shortly thereafter by vinyl records—signaling the emergence and influence of reproduction technology and industry. It was the sociologist Walter Benjamin, who recognized quite early that the appearance of reproduction technology would cause a fundamental aesthetical change in music perception. I have already used Benjamin's quote in my online - keynote from 2020, but I would like to repeat it again in this context:

What becomes stunted in the era of technical reproduction of the artwork, is its aura. The process is symptomatic; its importance goes far beyond art itself. One could say generally that the reproduction technology detaches the reproduced from its tradition. By multiplying the reproduction, that technology exchanges the unique one with its masses [...]. The question about what is the real or the original, does not make sense anymore. But when the measuring standard regarding the real or the original in art-production fails, the whole social function of art has changed. Before, the artwork was a kind of ritual, the new realm is mere policy.⁷

There is nothing more to add, except that the circumstances have become even more extreme and worse.

After the vinyl record, we saw the introduction of the cassette tape, followed shortly by digital storage options such as the DAT cassette and the Compact Disc, leading up to the current prevalence of streaming services. One could argue that such a development is extremely positive in terms of accessibility. Access to music of almost any kind becomes much easier and no longer requires high costs. Streaming platforms could even be praised as a socializing force for music distribution,

⁷ Walter Benjamin, Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit, in: Gesammelte Schriften I-2, Frankfurt 1974, p. 477 and 482. The article was originally written in 1933, when he had emigrated to Paris. It was published first in 1936 in Zeitschrift für Sozialforschung (Magazine for Social Research).

potentially benefiting less popular forms immensely. In theory, it could also minimize class-oriented approaches to music.

However, we all know that this was not and still is not the case. The separation in different classes, sub-groups until a seemingly “individual offer” has come into being. I will get back to that later. At least until the 1950s, shellac- and vinyl-recordings still had a kind of singularity, at least regarding their production. Early recording technology allowed for a maximum length or more or less three minutes and fifteen seconds. Editing was not yet possible. For example, jazz groups often had to start from the beginning when someone made a mistake or if a solo was considered weak in substance. It’s no wonder that most jazz solos of that time were thoroughly prepared. The “so-called” spontaneous character of improvisation has been a long-established myth. Just listen to early recordings of Count Basie or Duke Ellington playing the same pieces. Even if a solo is played by a different musician, there’s often an astonishing similarity to previous recordings by someone else. I don’t intend to criticize that. I just want to put this myth into perspective. It was a logical consequence of early recording technology and, ironically, also proof of live sustainability!

But the situation changed again with the advent of multi-tracking technology and overdubbing techniques. The album “Sgt. Pepper’s Lonely Hearts Club Band” by The Beatles from 1967 would not have been possible without these new technological possibilities. The same goes for the early recordings by Frank Zappa, like “Freak Out!” or “Absolutely Free.” Ultimately, it was Frank Zappa who went the furthest with a procedure he called “xenochrony.” Using advanced recording technology, he produced recordings based on live and studio cuts—both tutti and solo parts—from different performances spanning over 30 years.

All the other recording gadgetry available today cannot be fully explained here,

but it is clear that in the digital age, the possibilities for manipulation are almost unlimited. This might sound contrary to the criticism of reproduction technology, but it is not. Walter Benjamin noted a change in perception (and the loss of a key feature of musical artwork) brought about by new technology. However, this technology also suggested new creative possibilities, as demonstrated by Frank Zappa's work. It's important to remember that Zappa's primary concern was always the live performance, while a published recording represented another type of artwork.

What then could be the danger of new streaming services like Swedish Daniel Ek's Spotify? The main concern is that they can seriously manipulate the listening experience, even though this may not be immediately apparent. The popular notion that one can assemble their own playlists is somewhat fictional, as the available selections are determined by planned algorithms and intentionally do not encompass the entire scope of music. The streaming services certainly claim that they continuously extend their offerings. When in 2020 I was asked to put together a thematically specified list, preferably from Spotify, I had 80% to add from my personal recording collection. I did not have any problems with that. On the contrary, I was almost "happy" about it, because it confirmed my expectations! But it proved that streaming services like Apple, Spotify and others are basically mass - orientated. And let us not forget: a compact disc or a vinyl-record are objects that can be touched. It is something tactile, representing a value; not to speak about the accompanying booklet of a CD that provides useful additional information. A playlist is by far more abstract. A playlist may be more easily accessible, but it can be quickly forgotten, encouraging listeners to zip through the beginnings of songs without truly engaging. In contrast, purchasing a vinyl record, especially an LP, often prompted a deeper appreciation for the entire medium, as it subconsciously represented greater value. It means, one has listened in most cases to the complete compositions and did it perhaps more often because the valuable item was still at hand – sustainability!

Nevertheless, if we are honest, we have to admit that in today's popular music, the formal dramaturgy (formal structure) of a complete piece is rarely important – exceptions admitted. Sound and danceability are in the foreground. Seen from that point of view, the „ephemerality” of a standard Spotify-playlist is in perfect concordance with popular listening modes; and after an intro, a verse and a refrain, one has generally grabbed the most important of a song. Real improvised solo-passages like for example in old Santana songs⁸ or extended compositions like the ones created by Yes, ELP or Genesis can hardly be found in today's popular genres. Even a piece like Queen's "Bohemian Rhapsody" would not attract as many young people as it once did.

However, it should be different with classical concert music. It reminds me of some of my own pieces, which I eventually decided to share on YouTube after a long period of hesitation. From time to time, I check my account using analytical tools to see how people tend to listen to my pieces. Unfortunately, I discovered that about 80% do not listen to a single piece from the beginning until the end. Unfortunately, my compositional method means that a 10-minute piece does not reveal its main substance until after about three minutes. As a result, the listener's perception can be not only superficial but also incomplete and somewhat distorted. How can he/she access my music? How can sustainability grow in a listener if they do not experience the real thing? It's akin to going to a Michelin-star restaurant with an extensive menu, eating only a salad, and then writing an elaborate critique about the chef.⁹ Or, do I have to surrender and only compose digestible 3-minute-pieces?

Once again, we know where to find music, but we don't truly it. Our understanding is limited to what we already know. If we don't expand our capacity for storing

8 See Santana's album "Caravanserai" or "Brain Salad Surgery" by Emerson, Lake & Palmer.

9 Youtube tells You about the length of listening to a piece of music. In my case the average length of listening is 3 – 7 minutes. Mostly it is less, and only a minority listens to the whole piece. So far two pieces have never been listened to completely, but there are comments!

knowledge, our brains will struggle to differentiate music. We need to redefine the availability and accessibility of music, or at least critically examine current musical perception. Ultimately, this will impact sustainability, as nothing will leave a lasting imprint on our neural systems.

Here I see an important task on all educational levels, which is the “re-education” to be able and willing to listen to a piece of music in full length whatever length it has. We should create a kind of “slow-food” movement for music perception. If music education at an academic level becomes focused solely on supporting Olympic prize winners in competitions, I don’t see any sustainability in that approach. Competitions may be a relevant side effect for a few prodigies, but our main focus should be on developing tools and fostering awareness to promote art music in a comprehensive manner. We need to train people to appreciate and digest music according to the specific needs of each piece. In other words, a primary duty of an educational institution must be the ongoing cultivation of acceptance, understanding, and sensitivity toward the incredible diversity of music. This diversity also calls for different modes of reception and perception, regardless of how the music is made available.

I would also like to highlight the detrimental reduction of parametric sensitivity caused by certain types of music and the accompanying electronic devices. It resembles a kind of vicious circle. Most popular music tends to exist at a fairly static parametric level, with dynamic and rhythmic variations often absent. Sound is primarily used for identification, often relying on simple melodic elements that are easy to sing along with. Everything else is largely just packaging, often utilizing visual media as well. We all recognise this. But what happens to music that is more differentiated, featuring complex sound structures, various linear layers, and refined rhythmic elements? Let me answer that question with a short anecdote that happened a few years ago with one of my best friends, who himself is a

professional jazz guitar player. We had not met for a long time, and he asked me what kind of music I am doing now (we played together during our teens in the early 1970s). I gave him a CD with one of my beloved pieces of recent years, the “Kammermusik V” with an excellent recording by Ensemble MusikFabrik under Enno Poppe. Weeks later, I asked him whether he has already listened to the piece? His answer was: *“Yes sure! I must admit, it is not my world, but it sounds interesting. I only did not understand at all that 90-second break in the middle of the piece.”* As you can imagine, there was no 90-second break. It was a very soft passage of harp and bassoon playing. He just was not sensitized for such an extreme dynamic range and did not hear anything!

More About Streaming Technology

When in 2020, we all had to find our solutions in overcoming the Corona crisis, a colleague of mine and myself conducted a seminar at the Lübeck Music University. We called it “The Listening Hour”. In response to a specific topic (intentionally limited to all facets of Jazz, Pop, Rock and musics of the world), students and colleagues would prepare and present a personal playlist at every meeting. The playlist was sent around a day before. With only two exceptions, all playlists had been assembled with the help of Spotify, including a reasonable quote of repeated pieces. But we accepted that, as every student had to explain why a special song had been selected and nobody could know what the other would select. The two persons that did not use Spotify were myself and our jazz saxophone teacher of a similar age. No wonder that our playlists differed significantly from the others. 80% of our selections were completely unknown to the students. Later, my colleague and myself re-checked our playlists with Spotify. What we found out was, that almost 70-80% of our selections were not available there. This tells much about the young generation but also about Spotify’s self-declared unlimited resources. It leads also to the question, how much of the culture embraced by younger generations who draw their information from Spotify and others is pre-determined by those platforms?

I have already mentioned streaming services, namely Spotify. It would be impossible to analyze all the implications and also to compare it with other services that are currently available. Most people would perhaps argue that a service like Spotify is an enrichment as it provides better accessibility to any kind of music for all people. But is it really a win/win situation? Let us start again by turning back the clock to even earlier times.

The advent of the internet turned the concept of globally accessible knowledge into a reality. One would hardly deny that it has become the primary source for any kind of knowledge gathering. No wonder that some people also had the idea of becoming a global distributor for music. Historically it started with unauthorized services like Napster in the early 2000s. Later it turned into something new:

A subsequent cultural shift from ownership of recorded music to authorized access of vast music catalogues. Since 2012, this conceptual shift from ownership to access has been accompanied by Spotify's attempt to engineer a shift from access to context, in the sense of using music as such a context for developing a business model based on advertising revenue and subscriptions.¹⁰

The latter might not seem unusual. The old record industry advertised and sold records and CDs as well. However, the model here has much less production costs. It even does not require the replication of a physical product anymore. A single data file can now be downloaded endlessly. To be honest, the revenues from such downloads are negligible for most artists. It starts to be relevant, when one gets into the hundred thousands, and this works exclusively for a very limited number of popular music artists.

10 Eriksson, Maria et al., Spotify Teardown, Cambridge 219, page 153, MIT Press.

In practice, this has often amounted to a model, similar to ad-financed newspapers or television, wherein free programming allows the sale of audiences to advertisers.

For YouTube, Facebook, Spotify and many other services, this is what the shift from access to context has implied. Hence, understood as a market model, “free” was premised on the assumption that the exchange of value of cultural production itself could be neglected. Videos, books, music and personal data could be given away without charge, in order to enable platform-owners to capitalize on the markets they had created [...] In this view, Spotify has enabled advertisers to benefit from the presence of consumers, while consumers now benefit in their discovery of products and services from many advertisers. But what are the benefits for musicians – or cultural producers more generally – whose content is the incentive attracting both sides? ¹¹

For me, all that is a serious misunderstanding. If cultural ownership is regarded as a value by itself, then it should not be connected with other interests. I admit that this is perhaps a utopian demand, as commercially produced music is generally made to maximize incomes. And if it is supported by other advertisers with the same orientation, why not collaborate? Let us get back to our primary question: Do such processes support the accessibility to music? I strongly doubt it, as the secondary side effects are more dominant as one is aware.

Another issue is the sub-conscious guidance of Spotify users, although it is known that every 24 hours around 20.000 new songs are added¹². Already in 1971, Herbert A. Simon stated:

11 dto. Page 155

12 T. Ingham: A Million New Tracks are Uploaded to Streaming Service Napster Every Six Weeks, in: “Music Business Worldwide”, June 2018, page 10.

What information consumes is rather obvious: it consumes the attention of the recipients. Hence, a wealth of information creates a poverty of attention, and a need to allocate the attention efficiently among the overabundance of information sources that might consume it. The audience is constantly unable to make well-informed decisions regarding the consumption of copyright products.¹³

It means that the pre-selection services, for example at Spotify, are essential, but at the same time include the danger of guiding users into a certain, economically relevant direction. And with a certain sarcasm one may state that Spotify seemingly supports even sustainability – however, in which direction? Let me give you two examples, provided by the research team already quoted above.

The first example refers to an extended Spotify radio experiment with 160 bots as listeners, divided in two groups. The first group demanded “Dancing Queen” by ABBA as reference, while the second group chose a less popular radio channel, asking for a less popular piece of similar character, called “Queen of Darkness”, played by Swedish progressive rock band “Rag i Ryggen”:

If a radio loop started with “Dancing Queen”, it was played again by Spotify Radio algorithms after about 50 tracks. Bots listening to a radio station based on “Queen of Darkness” displayed a similar tendency, but with the difference that the song was not repeated as often as “Dancing Queen” and at longer intervals (regularly after some 70 tracks or so).¹⁴

In other words, the repetitive structure was common to both radio stations¹⁵, though Spotify radio had a significant shorter interval which is ultimately commercially more

13 Herbert A. Simon: Designing Organizations for an Information-rich World, Baltimore 1971, page 40.

14 dto., page 101

15 It is clear that this happens as well with other radio stations.

relevant, especially for the “big three” in music, which is the record companies Universal, Warner and Sony. No question that the existence of Spotify was only possible with the collaboration and approval by these three global players. And to avoid misunderstandings: Similar mechanisms can also be found in normal radio programs, at least in Germany. Interestingly, Spotify always argues with its unlimited sources of music, but in fact creates playlists with a very limited variety. Furthermore, the research team could not detect any changing reaction (suggested and modified playlists) depending on different bot characteristics and feedbacks (thumbs up, down etc.) Ericsson et al. write:

The claim that “the more you personalize, the better the music gets” should be perceived as a mendacious company claim used to attract listeners and stir commercial interest.¹⁶

This topic could be scrutinized further and perhaps almost endlessly. For this context, it is important to understand that neither accessibility nor sustainability are supported or extended by such streaming services. In opposite, conditioning processes through commercially orientated channeling and constricted selections limit the potential access to the diversity of music. By that, the ability of a diverse and differentiated perception process is unconsciously reduced and step by step impedes the digesting – as well as the acceptance – of unknown music, whether it is from other cultures or very old, or contemporary.

Consequences for Institutions of Music Education

A future music education must inevitably pay tribute to that dangerous perception situation caused by the massive intrusion of electronic media, namely streaming services in our life. If we do not want our students, and then again, the pupils in the classroom, to become acoustic perception robots, then we have to share

16 dto., page 102f.

alternatives with them. I do not have the ideal recipe here, but I strongly believe that musical experience via a diverse musical practice is a key activity in this regard. How to find a balance between a confrontation with a broad palette of music experience and the quality pressure to achieve highest esteem in musical practice, finding this balance will increasingly become a major task. And we should not allow electronic mass media to take over. While we should not ignore the technology neither, we, as educators, should feel responsible to educate people about the dangers and challenges caused by those new platforms.

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