On Human-Machine Relationship and the Notion of an Artificial Intelligence in Musical Practice

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As part of their creative practice, musicians today interact extensively with technology, that quite obviously appears to be deeply involved in processes of musical creation. The inclusion of electronic and digital devices in the act of creating, doing or performing music makes it difficult, even for trained eyes and ears, to comprehend from the outside who or what is involved at what levels in the emergence of sound and meaning. How is this sound created? Which musical ideas circulate on which paths? Who or what is connected to each other and how? What relationships are being formed? As a consequence, the involved musicians and their (physical) activity do not necessarily appear as the centre of musical practice, but rather as part of a complex, widely ramified and difficult to understand socio-technical structure with many actors.

Many musicians take for granted an aesthetic practice openly based on technically mediated collaboration and human-machine co-creation. Cultural techniques such as sampling, the incorporation of music machines (e.g. sequencers, drum machines) into musical practice and the use of presets and "half-ready music" ("*halbfertige Musik*", Großmann 2010) are a genuine part of various (popular) music cultures and contexts. In parts of the humanities, too, it is not new to consider social and cultural practices as the activity of assemblages in which agency is distributed between humans and non-humans, following various positions within science and technology studies, especially actor–network theory (e.g. Latour 2005). At the same time, culturally embedded ideas persist that conflict with this – at least, or especially, this is the case from a Western perspective, which is also my own. In the sense of an inherently white and male humanism, music – or art in general – is first of all seen as an activity that is exclusively human or as a product of the mind of the creator who in the creation of his work instrumentalises objects, which, however, remain external to the work (e.g. Hall 1992; Negus / Pickering 2004; Ewell 2020). Following this perspective, the autonomous musician subject appears as the pivot of musical practice.

This may partly explain the attention to and excitement about technologies labelled "artificial intelligence", which are currently becoming more and more

widespread in a variety of social contexts – including those of music. The attribution of artistic autonomy to technology conjures up a new kind of machinic counterpart that supposedly threatens the privileged position of humans. This implies an understanding of the relationship between human and machine as binary. Accordingly, the emergence of "intelligent" technologies is associated with questions about the equality of human and machinic creativity, about the liberation from musical work through technology, about the prospective superfluity of certain professions, etc. – accompanied both by unease and by more or less explicit, sometimes even delusional optimism about technology.

With this text, I would like to rehearse and suggest posing other questions than the aforementioned ones to music and sound technologies. From my perspective as an artist and educator and based on my academic background in applied cultural studies, I would like to try, as far as I can within this framework, to shift the discourse (or should I write: hype) around "artificial intelligence" in the context of musical practice towards a notion of human-machine hybridity and with a focus on the relationships that humans and things involved in music making enter into. In doing so, I draw on Johannes Ismaiel-Wendt's postcolonial-informed concept of MusickingThing studies (2016), which considers all technical artefacts involved in music-making – also beyond the category of "musical instrument" – as knowledge complexes and theoretical objects that interact with musicians on an equal footing.

I write from a white, male/gender questioning and able-bodied perspective and, among other things, along with deep learning software for translation into English, which is a foreign language to me.

What are you? / What do you know about music?

There are probably few electronic MusickingThings that have been written or said about as much as the "TB-303 Bass Line", a "Computer Controlled" synthesizer with analogue sound circuitry, iconised by the name "Three-Oh-Three". The myth attached to this machine, which is constantly reproduced by enthusiasts, journalists, scholars of culture and music, and for a while now also by the manufacturer Roland, can be summed up as follows: *the bass synthesizer, produced from 1981 to 1984, was a commercial flop – at least at the time. Its unique sound, however, revolutionised electronic dance music.* The thing arguably did not look revolutionary, neither then nor now. The visual appearance of the small device in its plastic case with a printed-on keyboard suggests affordability and portability rather than sound-cultural innovation and elaborate artistic expression. Correspondingly, the claims made in the accompanying owner's manual are modest: "The TB-303 is an automatic Bass machine which can memorize the Bass line of a musical piece and replay it automatically. […] [T]he TB-303 can create an appropriate Bass sound for the Bass line you have written." (Roland Corporation 1981: 4–6) The thing is presented as a serviceable automatic

machine that prepares to take over the work of a person playing the bass. The role intended for the user is to programme the machine to play melodies as well as to set an "appropriate sound" for them via the rotary knobs. What the machine imagines by "Bass line" is made clear in the owner's manual right at the beginning: Three short examples in Western musical notation are listed there that refer to musical clichés from country, pop and blues.

An image is circulating on the Internet that purports to be a page from a 1982 Roland brochure. It shows jazz pianist and composer Oscar Peterson sitting at a keyboard, wearing a suit and tie, smiling at the viewer. On the keyboard's sheet music holder are mounted and linked a Roland TR-606 Drumatix drum machine and a TB-303. The picture takes on a certain layer of meaning because it imagines a sound-cultural life for these machines that they were not meant to lead. The image can be found here, for example – https://www.synthtopia.com/content/2009/03/19/oscar-peterson-roland-pianoplus-tb-303-tr-606/

Who are you to me? / What am I to you? / What else do you know about music?

Speaking about the creation process of the music they released in the second half of the 1980s (Phuture 1987), which would subsequently be captured by the genre term "acid house", Earl Smith Jr. and Nathaniel Pierre Jones, the two founding members of the group Phuture, describe their interaction with their second-hand bought TB-303 while working on new tracks as being characterised by accident, coincidence and, initially, frustration. The device, for which they had no owner's manual, was awkward to programme and from time to time autonomously filled the memory for the bass melodies with "something crazy" (Smith in Rietveld 2018: 142) – with random, atonal sequences. At this point, the machine breaks its core promise of being able to store and play back bass lines; it subverts expectations of its serviceability. In the interaction with the musicians, it does something that goes beyond the programme of action that the developers have deliberately and systematically inscribed. It expands its scope of action by including exactly what is intended for the musicians: filling the sequencer with a sequence of notes.

The obvious and role-conforming reaction to this would be to consider this as machinic misbehaviour and, correspondingly, as a disturbance of the situation. The consequence would then be to leave the musical interaction with it until the disturbance has been eliminated in some way. Phuture, on the other hand, take up this somewhat amusical impulse of the machine and establish a deviant mode of interaction with it. While the machine stoically repeats the quirky atonal sequences, the musicians capture the tweaking of its knobs in their tracks, to let the already rather

awkward electronic mimicry of an "appropriate" bass sound dissolve through the squelching, chirping and screeching sounds of the low-pass filter.

Who am I to you? / What are you to me? / What do you know?

For many years, numerous imitations and variations of the TB-303 have been available, both hardware and software, from a wide variety of manufacturers. After a completely digital hardware version from 2016, the manufacturer of the original, the Japanese company Roland, has also released a software called "TB-303 Bass Line" in 2019 – 38 years after the first 303 was released. The software's skeumorphic graphical user interface directly replicates the interface of the music machine from the 1980s. Roland also promises similar faithfulness to its sound. "Utilizing Analog Circuit Behavior modeling the virtual TB-303 captures the hypnotic tone of the original hardware". (Roland Corporation n.d.) The software also has some additional functions. With a click on the button named "Randomize", the sequencer fills itself using random processes. In the context of the 303, this is to be understood as a sound-cultural reference. The manufacturer Roland is thus appropriating and channelling the sound-cultural dynamic that developed from the unlikely relationship between the human and the non-human members of Phuture. On the one hand, there is a sensory and responsive approach to what is found; on the other, there is a convention inscribed in the software.

THE 303 STORY :-) – https://www.roland.com/global/promos/303day/

The sonic result of the musical interaction with this MusickingThing may be to close to what happens in Phuture's tracks. However, the creative *modus operandi* is fundamentally different when you can tap into an "endless supply of classic 303 patterns" (ibid.) with the push of a button provided just for that. Via the "Edit" button, the interface of the software expands and allows to control the creation of random sequences on a finer scale. Although it is based on the idiosyncrasies of the original, the thing expands the user's control – even over the random procedure itself. In this sense, the addition of the extended random function paradoxically takes the acid-aesthetics-inclined user further away from entering into a relationship with the thing, as in the case of Phuture. In the prefigured relationship between musician and MusickingThing, the user is administrating musical ideas that have emerged from the circumvention or refusal of exactly such a prefiguration.

Who are we to each other?

What I would like to draw from this narrative is that in their musical practice and in the musical-intuitive negotiation of each other's idiosyncrasies, the human-ma-

chine assemblage called Phuture has explored a new kind of productive togetherness. Here, technology is not strategically misused: it is being interacted with on an equal footing. There is an extensive renegotiation of what the actors think they already know about the setting. The specific aesthetics of their tracks, in contrast to the software version of the TB-303, was not imagined/preset for any of the actors and obviously emerged in dependence on all participants (which undoubtedly include more than the ones mentioned, be it the cable synchronising the TB-303 with the drum machine, the room in which they produced, the tape they recorded on or DJ Ron Hardy who, according to the legend, persistently played their track "Acid Tracks" in the club, despite the crowd's initially reserved reaction). Even though we can only speculate about what the human members of Phuture heard in what the TB-303 uttered and what made them take this seriously as a musical impulse: As unexpectedly and coincidentally as the acid spilled out of the machine, as little coincidental was the act of employing it. Nor is it coincidental that this happened in the context of a vibrant club and subculture that was predominantly Afro-diasporic and queer (Brown 2022; Thomas 1995).

For me, the creation of this music and the idiosyncratic relationship of the humans and non-humans involved overlap with how I listen to this music. One of its many layers of meaning for me lies in that in this music, "the experience of a 'life among machines' is aesthetically worked through", to use an expression by Malte Pelleter (2020: 94) following Gilbert Simondon (2017). This music knows something about our experiences in digital life worlds and our human subjectivities, which emerge not least from our entanglement with digital objects. For me, despite the historical distance and the perceptible age of its sound, in a way the music still holds this "sense of terrifying newness" (Eshun 1998: 95) through its specific "unnaturalness" as well as it performs and expresses "*pleasure* in the confusion of boundaries and for *responsibility* in their construction", to sample Donna Haraway's Cyborg Manifesto (2016: 7). It does so not *through* the machine, but *with* the machine on an equal footing. It does so with a machine, churned out by a transnational industry for music electronics, found and bought second-hand, according to the legend. It does so with a futurhythmachinic knowledge complex bought on special offer.

What I would also like to draw from this narrative: this music-making is not in direct association to technological innovation in a particular context and historical situation. To explore our technologically penetrated, computerised and algorithmised subjectivities, everyday worlds and societies through the means of music, to grasp them sonically, to critically reflect them or transpose them into sound futurologies and theorems is not dependent on "future-oriented" technology. Without the sound-cultural sensibilities and willingness to engage with each other that were at work with Phuture, it would have been a different story. The melody machine with its awkward mimicry of bass string instruments would probably have remained a shelf-warmer in music shops and would ultimately have led a sound-culturally aloof life in

flea markets and in rehearsal rooms and home studios of lovers of obscure musical objects. Instead, as part of Phuture, it has significantly influenced the sonic futures of not only electronic dance music.

At the same time, what a new kind of technical artefact imagines itself to be and what it seems to know about music on its (actual and metaphorical) surface may not help at all or even work against finding musical ideas that are in some way intriguing in relation to the socio-cultural context. In this sense, the complex sound-cultural lives of MusickingThings with their various stages can be regarded as a prime example of the science and technology studies finding that

> the process of designing technologies and societies is not straightforward, because technology is subject to considerable interpretative flexibility. Technology is shaped as a result of complex social processes in which, typically, diverse groups do battle over what the artifact should do, look like, and so forth. The possibility always exists that a technology and its outcomes could be otherwise. (Lohan / Faulkner 2004: 322)

Perhaps sound cultures always incorporate this "otherwise" at the moment of their actuality.

Who do we want to be to each other?

The new computerised MusickingThings that were produced and marketed widely in the 1980s as part of a globalised system of work – the TB-303 being one of them – were associated with specific expectations at the time. The availability and functionality of these things promised a democratisation of music production in several respects: through their affordability, more people should be able to have professional production tools at their disposal; through the possibilities of digital storing and automation, music production should be more accessible and there should be fewer musical and technical prerequisites (Théberge 1997: 72–90). Correspondingly, the rhetoric around electronic music making changed fundamentally. However, "[t]he notion of music technologies' democratising powers is a myth and a miscalculation: the tropes of broad access and effortless music-making feed off of labour happening elsewhere", as Lucie Vágnerová (2017: 251) notes with reference to the neo-colonial and patriarchal exploitation of women in Southeast Asia by the transnational electronics industry. I would like to add: the global capitalist framework of music and sound technology is first and foremost at odds with the idea of democratisation. (For whom was a brand-new TB-303 actually affordable at that time? Where was it available in the first place?) And: in patriarchally structured societies as we know them, the dominant, specifically male pleasure around technology also largely

excludes people with female and queer gender identities (Lohan / Faulkner 2004). Several structural inequalities and exclusions thus intersect here.

In many ways, the MusickingThings that are currently flooding the market under the label of "artificial intelligence" spark similar expectations today. Like the new possibilities for automation and the technical disposal of musical ideas back then, many of the current "smart" music and sound technologies promise, on the one hand, to simplify and streamline the workflow. On the other hand, they promise to provide a form of increased creativity and productivity as well as independence or superfluity of certain skills, experience or training in a previously unprecedented way. Considering the current discourse surrounding them, e.g. in online communities or the media public sphere, these promises seem to fall on fertile ground. Accordingly, the mere emergence of these technologies, currently mainly in the form of software and software plug-ins, is not only accompanied by questions about what this technology is capable of "achieving" and how it will change musical creation and (industrial) cultural production, but is also largely dominated by them. On the one hand, this reflects the expectation that looking at the technical artefact itself, detached from any musical and cultural contexts or forms of practice, already enables you to recognise musical futures. The ability to "design" music and sound-cultural life is thus ascribed to music and sound technology in a direct way. On the other hand, it expresses the fascination and joy for the technical functioning of the music machine in the hands of the human individual, which promises the increase of (musical) potency and productivity through technological progress. In this way, the double bind of musician and MusickingThing, which is based on the binary of human/tool and on the notion or phantasm of human/male control over and through the technical Other, is perpetuated. The mode of exploring the "artificial" Other – the promising new, supposedly intelligent music and sound technology – thus always includes an idea of exploiting it.

At the same time, the current hype about technologies framed as "intelligent" or "smart" is also accompanied by working through the question of what (quasi-)human qualities the technical Other possesses. In terms of music and sound technology, this is primarily about notions of creativity, originality and musical context sensitivity, all qualities that were traditionally reserved for humans. Can the machine be musical? Can it be original? Can it mimic convincingly? Can it even be the equal of the artist, composer, mixing engineer, mastering engineer, etc. in these respects? By framing MusickingThings as "intelligent" – be it a composing machine, an automated mastering service or a smart assistant to improve your songwriting or production –, a counterpart is conjured up that promises devotion and servitude to the human, but also seems suspicious and mysterious in a way due to its neither fully determined nor aleatory behaviour.

> *"It shouldn't be forgotten that the term Artificial Intelligence was coined in anxiety. It segregated human beings from machines by insisting on two forms of intelligence – artificial and authentic. This maintained the power of the latter over the former. This wasn't because of an inherent superiority but because of the difficulty distinguishing between them". – Louis Chude-Sokei (2022)*

"The automatic machine is the precise economical equivalent of slave labour". Kodwo Eshun (1998: 113) samples Norbert Wiener (1950) while linking the technological of Afro-diasporic sound cultures to the experience of enslavement and colonial racism. There are several authors who have worked on the complex intersection of colonialism, technology and sound culture (such as Eshun 1998; Weheliye 2005; Veal 2007; Chude-Sokei 2016; Ismaiel-Wendt 2016). Given the increased attention to "artificial intelligence" in the context of artistic and cultural production, I would like to take up this conjunctural thinking of technology and the continuities of violent demarcations that have accompanied the category of "human". Louis Chude-Sokei argues that

> how we have come to know and understand technology has been long intertwined in how we have deployed and made sense of race, particularly in the case of blacks and Africans in a world made by slavery and colonialism. The language of one is consistently dependent on or infected with thinking about the other. (Chude-Sokei 2016: 1)

In this sense, the notion of an artificial, intelligent Other is not to be understood as innocent. It is no coincidence that the questions that repeatedly arise in conversations about "artificial intelligence" and robots resemble those asked about the racialised, dehumanised and enslaved humans in the context of Western colonialism – they all indeed have a common cultural basis (ibid.). In light of these critical endeavours, the specific "technopoetics" found in Afro-diasporic sound cultures appear as self-conscious reconfigurations of the relationship between musician and technology. They queer the binary of human and tool in ways that establish musical practices beyond the universalisms of both humanism and white liberal posthumanism. Here, techno-aesthetic innovation does not run parallel but transversely to technical progress, which is generally thought of as linear.

These modes or models of human-machine interaction are culturally highly influential. They fundamentally changed how technical artefacts such as samplers, drum machines, turntables, mixers or voice-altering technology are viewed and listened to, not only for musicians but far beyond. Thus it is not surprising that these practices, at a certain point, feed back into the development and marketing of new MusickingThings, as shown above in the example of the 303 software that takes up a creative practice established by Phuture. The musical interplay as performative re-

configuration of the prescripted roles of subject, object, user, tool, is translated and transferred into a new kind of artefact, product, commodity, whose many lives are again not yet foreseeable. The moment we engage with music and sound technology, be it as artists, cultural workers, scholars, enthusiasts, educators or developers, we enter that feedback loop and influence the future lives of MusickingThings. Without overestimating our individual agency, it should be clear that the questions we ask or take up about (new) technologies and the expectations we associate with their disposal carry some weight. What do we perpetuate when we short-circuit musical creativity and productivity with a faith in technological progress? What do we perpetuate by taking up the framing of technologies as "artificially intelligent"?

> *"Master or slave, man or tool. Convinced that there are no other options, no patterns of behavior which exceed this double bind, the disciplines have been unable to perceive the emergence of intelligent machines". – Sadie Plant (1997)*

Following perspectives of science and technology studies, it seems appropriate to not view technological artefacts in isolation from their lifeworlds and socio-cultural contexts. Against the prevailing way of talking and thinking about these current technologies, I would like to propose in this sense – both playfully and seriously – not to use the attribution of "artificial intelligence" for specific MusickingThings-in-themselves, but to reserve it for aesthetic and cultural practices that develop other modes of how we come together collaboratively with machines. "Artificial" thus serves as a reference to human-machine togetherness and to everything that cannot be easily resolved as an equation of the creative agency of the individual actors. "Artificial intelligence" in the context of musical practice then corresponds to what Rolf Großmann (2014) and Malte Pelleter (2020), following Kodwo Eshun (1998), understand as "sensory engineering". The (at that time) somewhat unlikely interaction of the human and non-human members of Phuture can be seen as one of many possible examples of this from popular and especially Afro-diasporic sound cultures – but never a deep-learning composing automaton-in-itself.

Who do I want to be to you?

The critical theoretical engagement with the entanglements of music practice, technology, post-/humanism and colonialist continuities also feeds back into my own relationship with MusickingThings as an artist and educator. It fuels and/or explains the discomfort I feel when confronted with ideas of improvement, ease of work, independence and productivity through technology and technological innovation. I want to understand this discomfort as something productive. I want to use it as a starting point to question my relationship to MusickingThings and my associated projections and expectations – especially as a white individual who is socialised and

perceived as male. What's the quality of my relationship with the machine? With what intention and desire do I enter into this relationship? In what mode do we operate? To what extent does this mode reflect a relationship of master and slave? Whose labour is drawn upon and who benefits from it? What material and conceptual connections beyond the obvious ones are involved? To what extent do I actually want to engage in them or maintain them? I do not see working on these questions as a purely cognitive-analytical endeavour. Rather, it needs to be based on the reflection of aesthetic experience and pleasure, on auditory understanding, on the body-read sensations that come with collaborative involvement with these things that, like us, are inevitably entangled in contexts of inequality and exploitation of a social, cultural, neo-colonial and ecological kind. But not that I know how to do that.

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