

Musicking assemblages and non-human becomings: Mapping morphogenetic processes and distributed agencies in Wolfgang Buttress' the Hive

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Abstract

The paper introduces the concept of musicking assemblages to account for the agency of non-human actants in a project by contemporary artist, Wolfgang Buttress, that involved creating a musical soundscape together with bees. Collapsing distinctions between popular music, contemporary art and scientific research, the project exhibits musicking not as a result of human action but as emerging from intensive flows of matter-energy circulating between a multiplicity of actants, both human and non-human. Consequently, it presupposes a materialist ontology that breaks with anthropocentric hierarchies and encourages us to rethink popular music as always already involving 'becoming with' non-human others, in a way that overcomes the division between culture and nature, as well as its epistemological corollaries.

Introduction

The press release described the album as 'imagining the sound of British summertime as heard by one of the most important members of the animal kingdom – the bee' (Rivertones 2015). Recorded by an enigmatic collective called Be, it actually featured 40,000 honeybees jamming with the musicians. 'We had a joke in the studio that they were the best band members we have ever had', said Kev Bales, one of the musicians who participated in the recording (in Jonze 2016). He and his fellow Spiritualized member, Doggen Foster, were approached by an artist, Wolfgang Buttress, to create a soundscape for his installation, the Hive, which was to become a centrepiece of the UK Pavilion at the World Expo in 2015. Its theme focused on the plight of the honeybee, highlighting the gradual demise of pollinators and its possible consequences for the planet. The recorded music was broadcast inside the installation and released as a stand-alone album, entitled *One*, in 2016.

The project effectively blurs the boundaries between popular music, contemporary art and scientific research in a way that challenges some of the established presumptions in the study of popular music. Despite a considerable degree of diversification within

the field, the prevailing approach is to conceive music as a signifying phenomenon, which entails a preoccupation with socially produced meanings (Szarecki 2019). However, representational modes of thought cannot account for how bees and humans can make music together. The most extraordinary feature of Buttress' project is that it afforded non-human actants a level of discretion and control that is rarely encountered in the world of popular music. First off, the musicians improvised to a live audio feed of the bees, responding in real time to their sonic activity. This cross-species cooperation could not involve linguistic communication, instead relying on the complex dynamic of affecting and being affected by one another. Furthermore, the vibrations from the hive influenced the music being played inside the installation, triggering particular sound samples when the bees acted in a certain way. Therefore, the project foregrounded the capacities of animal participants not only to constrain human will and design, but also to exercise agency, exhibiting particular propensities or tendencies of their own that actively co-shaped the music. Consequently, Buttress' project vividly demonstrates how making music is firmly embedded in the material world, emerging from and being transformed by what can be termed forces, intensities or affects that are distributed across the ontological spectrum (Jasen 2016).

In this paper, I will attempt to scrutinise the dynamic interminglings of human and non-human agencies by analysing Buttress' project as a musicking assemblage. This will entail applying new materialist conceptual apparatus to the processes of making and deploying music within the art installation in order to map out the material-relational dynamics underlying these processes. In contrast to tracing, which aims to 'describe a *de facto* state', mapping 'is entirely oriented toward an experimentation in contact with the real' (Deleuze and Guattari 1987, p. 12). As such, it is not simply about identifying connections and mediations between human and non-human entities involved in the project but, more importantly, about inferring the intensive morphogenetic processes that facilitate the emergence of the assemblage. The following analysis, then, is an ontological one, comprising a conceptual attempt to highlight the agencies of material–energetic forces that run above, below and alongside human and non-human entities, by attending to four major areas of concern: (1) what relations are assembled within the musicking assemblage; (2) how do they impact and impinge on one another; (3) what are the capacities produced thereby; and (4) what kind of micropolitics is involved, that is, how power is disseminated and deployed via material agencies within and across the assemblage (Fox and Alldred 2017, p. 45).

The argument will proceed in three stages. First, drawing on textual and audio-visual sources, including interviews with Buttress and other artists involved in the project, the album, its booklet, and dedicated website, promotional materials and press coverage accompanying the premiere of the installation at the Expo in 2015 and its relocation to Kew Gardens in London in 2017, as well as video recordings made at the latter location, I will attempt to describe Buttress' project in more detail, demonstrating how its ever-shifting, multisensorial character necessitates an approach that conceives music as a relationally and materially contingent unfolding phenomenon (Eidsheim 2015). Second, I will introduce the concept of musicking assemblages, by rereading Christopher Small's (1998) well-known idea according to new materialist theory. While the assemblage concept has been frequently invoked in the study of popular music (e.g. Born 2005, 2011, 2019; Nesbitt 2010; Prior 2018, 2021), its meanings are not consistent between different iterations and not necessarily congruent with the aims of my project, which primarily incorporates insights from

Manuel DeLanda's (2006, 2016) assemblage theory. Although his reading is grounded in the founding work of Deleuze and Guattari (1987), which has been adopted in music studies with increasing frequency (e.g. Buchanan and Swiboda 2004; Cambell 2013; Hulse and Nesbitt 2010; Macarthur et al. 2016; Moisala et al. 2017a), he also makes a series of significant modifications to the concept that I will attempt to explicate and put to use. In particular, DeLanda's work calls attention to how flows of single matter-energy coagulate into dynamic, relational assemblages, in which heterogeneous components – human and non-human, animate and inanimate – affect and are affected by one another. This will allow me to account for the co-constitutive presence of the bees in Buttress' project, arguing that their activity did not merely provide a context for human action, but comprised a transformative, creative force in an emergent musical event. Finally, I will focus on material–energetic flows that traversed this multispecies cooperation, examining whether the circulation of sonic intensities within the musicking assemblage contributed to overcoming or perpetuating the division between humans and bees, and what kind of power mechanisms were involved in this.

Making music with bees

The music heard on the album was originally conceived as a soundtrack for an art installation. Wolfgang Buttress, a Nottingham-based artist, was commissioned to design the UK Pavilion at the World Expo in 2015. Held in Milan, the event had an environmentally oriented theme of 'Feeding the Planet, Energy for Life', welcoming projects centred around sustainability, technology and nutrition. Buttress' proposal envisioned visitors walking through an orchard and a wildflower meadow before entering the Hive, a large aluminium structure, which would 'pulsate, buzz and glow according to signals from a real hive' (in Boffey 2014). The idea was to provide an immersive experience that would raise awareness of the honeybee's importance as a pollinator, responsible for 30% of the world's food and yet threatened by pesticides, lack of biodiversity and climate change.

The centrepiece of his project was a 14 m sculpture made from 32 layers of hexagonal geometry modelled on a honeycomb. A rotational twist in the structure conveyed an impression of movement so that, from the outside, it resembled an immense swarm. Visitors could also go inside to observe a display of 1000 RGBW LED lights that pulsated and glowed according to signals received from a real beehive. This was arranged by Martin Bencsik, an associate professor in the School of Science and Technology at Nottingham Trent University, whom Buttress recruited to help with the project. By measuring the vibrations generated inside the beehive, Bencsik developed a unique method to automatically monitor the well-being of the colony without the need to open the hive. His research involved using high-specification accelerometers to pick up intentional and unintentional vibrational signals produced by the bees. The former include, for instance, the familiar humming sound created by the simultaneous rapid wingbeat of thousands of bees, but also crackling noises resulting from individual bees moving around on the honeycomb, and short, sharp noises emitted when a bee cleans the bottom of an empty cell with its mandibles. The latter pertain mainly to forms of communication between bees, like the short pulses called 'begging signals', because they are used to request a sample of food from another honeybee, the 'waggle dance' signals, first

decoded by Karl von Frisch in 1927, that convey information about direction and distance to a food source in the outside world, and the 'tooting' and 'quacking' signals that comprise a vocal exchange between new-born virgin queens.

Bencsik's research was incorporated into the design of the Hive. Specific signals were relayed via bone conduction devices installed below the sculpture, near the columns supporting it, so that the visitors could experience it corporeally, through vibration, mirroring the communication processes occurring among the bees. By biting onto a wooden straw and inserting it into the device, which contained a small motor vibrating with appropriate frequency, the signal was conveyed into the inner ear through the jawbone. Furthermore, the recorded signals became a part of the Hive's soundscape, along with a live audio feed from a beehive located in Nottingham, and a musical accompaniment triggered by the activity of the bee colony.

This was Buttress' first project, as a professional artist, to involve an original soundtrack. He was genuinely fascinated by the hum of the beehive and felt that it needed to be a part of the immersive experience he was trying to convey. Therefore, he approached two members of Spiritualized, Kev Bales and Tony Foster – also known for their work with Julian Cope, Mark Lanegan and Depeche Mode's Dave Gahan, among others – to work on the soundscape for the pavilion. As Buttress recalls: 'I had known Tony and Kev for a while. My old studio used to be next to Tony's. I would see Kev down the Forest games. Because of the music that they're involved in, Spiritualized and Julian Cope, that kind of Krautrock drone, I thought they would be great people to talk to about how we could express this sound' (in Klotschkow 2016). His initial idea was just to create a musical accompaniment that would react to the sounds of the beehive. The recording session took place in Nottingham on 12 February 2015. It also featured Bencsik's wife, Deirdre, a classically trained cellist who performed in various orchestras, including playing first cello in *Simfonia Viva*, and Buttress' daughter, Camille, an up-and-coming singer-songwriter.

Bencsik came to the studio to introduce his research and play the recordings of bee signals to the musicians. His wife realised that the hum of the bees was in the key of C. Then, she and Camille Buttress started to improvise, trying to harmonise with the live audio feed from the beehive. These recordings provided the core sound for the album. Bales and Foster overdubbed other instruments, like piano, mellotron and lap steel guitar. Even Wolfgang Buttress, who had dabbled in music throughout his life, played some percussion. Furthermore, as Foster put it, they 'pulled in a few favours' and invited other musicians to take part in the project. Consequently, the Icelandic string-quartet *Amiina*, known primarily for their work with Sigur Ros on the albums *()* and *Takk*, provided a lush tapestry of strings. Martin Glover, the co-founder and bassist in *Killing Joke*, who later started to perform electronic music under the moniker *Youth*, played harmonium and Indian drone box. Spiritualized leader, Jason Pierce, also contributed by adding harp, harmonica and guitar parts. Finally, John Coxon, a long-time member of Spiritualized, as well as co-founder of experimental electronic duo *Spring Heel Jack* and renowned free-jazz guitarist on his own, manned electronics, guitar and melodica.

All these contributions, including the bee signals recorded by Bencsik, were edited and woven in together to create 'a pre-recorded library of stems', which were then broadcast inside the Hive via a 7.2 surround system, according to the activity of the real beehive. As Buttress explained: 'in the morning, when it's

quieter and calmer we have these live signals which are sent from the real beehive in Nottingham over to Milan, and at certain frequencies they open a noise gate and possibly a piano will start, or a little cello, or a violin. So, it's very calm and soothing, quite meditative. And in the afternoon, when the bees are busier, there's more frequencies, so a lot more opened noise gates, but we actually recorded all the musical stems in the same key, so even though we know they're harmonious, we never know what they're going to sound like' (UK in Hungary 2015). In other words, vibrational signals from the beehive, captured by accelerometers and streamed in real time, trigger noise gates at particular thresholds, activating playback of appropriate stems from the library. There is, then, a sense of fluidity to the installation, as the array of sounds and lights constantly shifts, responding to the activity of the bee colony. In Buttress' words, the Hive 'is always moving, just like nature which is in a fluid state', allowing visitors to directly experience its rhythms and get in tune with them (in Oakes 2019).

While the initial aim behind the recording session was to produce the soundscape for the pavilion, Buttress and the rest of the musicians were so pleased with the results that they wanted to document them in a separate medium, so that they could gain a new life after the Expo was over (LeftLion 2016). Consequently, an album containing the curated version of the Hive's musical library was released in 2016 by Caught by The River imprint, Rivertones. Following its premiere, the musicians involved in the recording performed a series of live concerts, in which they played the music from the album together with a live audio stream from the beehive. Accompanying visualisations were taken from Bencsik's academic research, as well as from his and Buttress' other collaboration, the *Bee Hive Cello* project at Langar Hall Hotel, in which a honeybee colony was installed inside a reclaimed cello, transforming it into a provisional beehive. The same year an expanded version of the album was released, entitled *One Plus* and featuring three additional songs. Furthermore, Buttress has incorporated the original recorded stems into his other artworks, like the BEAM installation presented at Glastonbury Festival in 2019.

As a whole, then, the musical facet of Buttress' project encompasses a number of instantiations that never sound quite the same. Consequently, the project problematises the very notion of a musical work as a discernible analytical object. DeLanda (2006, p. 28) calls this type of analytical constructs 'reified generalities', that is, abstract categories generated by extrapolating a set of enduring properties from a finished product and converting them into its defining identity. As Nina Sun Eidsheim (2015, p. 2) argues, music has often been approached in this way, reducing an ever-shifting, materially and relationally dependent phenomenon of sound to a static referent. However, the music broadcast in the Hive eludes such classifications as it has no immutable characteristics, constantly changing in response to the activity of the bees. In this sense, Buttress' project makes audible the various material agencies inherent in music's unfolding. Therefore, it is best approached not in terms of a singular work defined by a set of fixed properties, but rather in terms of concrete musicking assemblages that emerge via multiple encounters in which heterogeneous entities and forces, human and non-human, interact, affecting and being affected by one another (Assis 2018).

Immanence and agency in musicking assemblages

The concept of musicking was introduced by Small (1998) to reconceive music as action: what people do, as opposed to reified musical works. This entails a more

processual and relational account, pertaining not only to ‘those organized sounds which are conventionally thought of as being the stuff of musical meaning’, but also to ‘the people who are taking part, in whatever capacity, in the performance’ (p. 13). Consequently, the concept shifts our attention to the way music arises through a conjuncture of practices, acknowledging a wide variety of interactions that add up to a single event of music’s emergence. As such, it can be of value in conveying the inherently synergetic nature of Buttress’ project. Inside the Hive the musicking comes into being via a series of prior cooperative acts, including between those who took part in the original studio session as well as participating musicians invited in later stages, whose contributions are woven together and broadcast to visitors. Over 1 million people passed through the pavilion, lending their attention to the continuous stream of sounds that filled the air. At any time, then, music’s emergence was contingent on the musicking activities of all these agents.

However, Buttress’ project also points to the limitations of Small’s concept. In particular, the anthropocentric bias inherent in the notion of musicking prevents us from acknowledging the contributions of non-human actors, who play such a crucial role in the Hive. Small (1998, p. 10) envisions musical performance as ‘an encounter between human beings that takes place through the medium of sounds organized in specific ways’. From the start, then, musicking is construed as an exclusively human affair. The presence of non-human entities merely provides a context for human action. Thereby, their agentic capacities are rendered non-existent. In contrast, Buttress speaks of ‘making music with the bees’, who are treated on par with human musicians. He frames it in terms of having ‘a conversation, almost like a symphony between human and bee’ (in Hobbs 2016). For Buttress, then, bees are regarded as active contributors who cocreate the music as part of an interspecies cooperation. This requires expanding the notion of musicking beyond the domain of human action.

The concept of the assemblage provides one way of accomplishing this. In the field of music studies, it has been productively employed to acknowledge the multiplicity and variety of entities and forces that make up any musical event. Thereby, it allowed the contingency of musical composition (Campbell 2013), improvisation (Cobussen 2017) or performance (Nesbitt 2010) to be accounted for, by conceiving them not as symbolic practices exclusive to humans, but as emerging from transversal connections between a host of human and non-human actants. Thus, as Moisala et al. (2017b, p. 18) note, an important feature of assemblage thinking is that it ‘enables the acknowledgement of the active agency of matter and non-human entities and forces’, As such, it can help to better elucidate the nature of the bees’ involvement in the project.

The notion of assemblages comes from the work of Gilles Deleuze and Felix Guattari (1987). In an interview, Deleuze provided a succinct definition, framing it as ‘a multiplicity which is made up of many heterogeneous terms and which establishes liaisons, relations between them’ (Deleuze and Parnet 2002, p. 69). This suggests that the concept pertains to, in the first place, a collection of entities that are not uniform in nature or origin. It denotes a grouping of diverse elements, which may consist of persons, organisms, objects, spaces, qualities, expressions, behaviours, etc. However, not every aggregation of heterogeneous elements constitutes an assemblage. This is because the type of relations that connect them is of equal importance. In the assemblage, all the component parts retain their

individuality and distinctiveness, no matter how closely they are entangled with each other. There is no reciprocal determination between them; rather, they enter into contingent alliances that endow each element with relative autonomy. In other words, the assemblage is neither a set of predetermined parts that are fitted within a pre-established structure, nor a random collection of miscellaneous stuff (Wise 2005, p. 77). Instead, it is a conjunction that establishes a particular mode of relatedness, holding the distinct elements together and making them interact with one another. Therefore, as Deleuze puts it, 'the assemblage's only unity is that of co-functioning: it is a symbiosis, a "sympathy"' (Deleuze and Parnet 2002, p. 69). This entails a ceaseless interplay between the component parts. The assemblage encompasses not only a specific arrangement of concrete elements but also morphogenetic processes that bring together, connect and configure them.

This entails shifting the focus of analysis from actions of autonomous entities to relational dynamics of affecting and being affected. As such, the concept of the assemblage can help to expand the notion of musicking beyond exclusive privilege of human actors. However, while the phrase 'musicking assemblages' has been employed in previous studies (Leppänen 2017; Macarthur and Lochhead 2016), it was not critically interrogated. Both terms cannot simply be combined with one another, as they presuppose different and often incompatible premises about reality.

In DeLanda's (2006, p. 28) reading, the ontology of assemblages is 'flat', because 'it contains nothing but differently scaled *individual singularities* (or *hacceties*)'. In other words, the assemblage exists alongside its component parts on the same ontological plane. Despite operating on different scales, they can directly interact with one another. The interactions between the components afford the emergent properties of the whole. However, 'if the parts stop interacting the whole itself ceases to exist or becomes a mere aggregation of elements' (DeLanda 2010, p. 69). In this sense, assemblages and their component parts are immanent. Nevertheless, once the assemblage has emerged, it immediately starts to condition its components, acting as a source of limitations and opportunities. DeLanda (2006, p. 10) distinguishes between properties defining a given entity and its capacities to interact with other entities. Being a part of the assemblage involves the exercise of the component's capacities, but is not a constitutive property of it. Therefore, the assemblage does not determine the properties of its parts, which are always contingent on the interactions between their respective components, but it can discard or select some of their capacities.

DeLanda's reworking of Deleuzian concepts draws prominently on scientific theories of complexity which study the behaviour of open-ended, dynamic systems (DeLanda 2003). According to his reading, the actual states of the system emerge out of the virtual space of possibilities as a result of changes in intensity in the flows of matter-energy that bring the system closer to a threshold, beyond which its behaviour changes. Consequently, concrete assemblages, as actually existing, historically contingent individual entities, emerge out of virtual differences due to intensive processes of individuation: 'any assemblage is individuated by the processes of articulation that establish more or less permanent relations between its components' (DeLanda 2016, p. 140). To account for these processes, DeLanda invokes Deleuze and Guattari's (1987) concept of double articulation. First, raw materials are selected, out of a wider set of possibilities, and given statistical ordering. Second, they are consolidated into more stable form, producing a new, larger-scale entity defined by a set of emergent properties that express its identity.

Thus, the first articulation concerns the material processes of territorialisation, which sharpen the boundaries of the assemblage and increase its internal homogeneity, and the second articulation concerns the expressive processes of coding that solidify its shape via 'colour, sound, texture, movement, geometrical form, and other qualities' (DeLanda 2010, p. 32). Consequently, neither the assemblage, nor its components, can subsist without some connection to a material or energetic substratum (DeLanda 2016, p. 139).

This immanent ontology necessitates conceiving musicking not as a series of interactions between human actors, but in terms of transferable energy, 'pulsating through and across material and transforming as it adapts to and takes on various material qualities' (Eidsheim 2015, p. 16). Consequently, musicking assemblages will always emerge from the flows of matter-energy that run 'above, below and alongside' human subjects (Protevi 2009). We can approach this in terms of territorialising and coding of the 'sonic flux', which comprises 'a ceaseless production of heterogenic sonic matter', preceding and exceeding individual composers, performers, and listeners (Cox 2011, p. 155). Musicking assemblages, then, select and consolidate fragments of this flow into more or less discrete forms to produce what we conventionally call music. However, the processes of emergence pulse with energies that often are off sync with one another. Thus, forces of deterritorialisation and/or decoding operate within musicking assemblages as well.

Framed in this way, musicking necessarily involves a variety of actants, human and non-human, operating on different scales. As Jane Bennett (2005, p. 446) points out, some of them 'have sufficient coherence to appear as entities; others, because of their great volatility, fast pace of evolution, or minuteness of scale, are best conceived as forces'. Consequently, the very notion of agency needs to be radically reconsidered. Bennett (2005, pp. 456–58; 2010, pp. 31–3) carries out this task in reference to three interrelated concepts that inform the prevailing understanding of agency: efficacy, trajectory and causality. First, efficacy, indicating the productivity of agency, its capacity to bring about change, cannot be thought of as resulting solely from intentional actions of a human subject, but as always involving 'a swarm of vitalities' (Bennett 2010, p. 32) that converge together. This does not neglect human intentionality, but conceives it as coexisting with other strivings that it must adapt to. Thus, behind every 'single' act there is, in fact, a dynamic multitude of forces impinging on one another. The second concept, trajectory, refers to the directionality of action, which always involves a movement from some initial state of things to a new result. Consequently, it cannot be understood in terms of purposiveness or goal-directedness, pertaining rather to 'matter-energy tending toward some settlements' (Bennett 2005, p. 458). In other words, the self-organising capacities of matter are governed by virtual attractors which pertain to 'the long-term tendencies of a process: the tendency towards a steady state; the tendency towards a simple rhythmic state; and the tendency towards a complex but stable rhythmic state' (DeLanda 2010, p. 88). Thus, the variety of strivings inherent in matter tends towards certain outcomes that emerge from the differential of forces at play. Finally, the concept of causality must be extended beyond a linear sequence in which an active agent is isolated and positioned as the antecedent of the effect. Instead, we are dealing with emergent causality operating in 'circuits where affect and cause alternate positions and redound back upon each other' (Bennett 2005, p. 459). In other words, there is no central governing agency in assemblages. No component part has sufficient power to determine what eventuates. Rather, heterogeneous actants operate as quasi-causes, each with partial, overlapping

and discrepant degrees of power. This complex dynamic of affecting and being affected immanently structures the space of potential outcomes. In such a view, agentic capacities are always directly relational and distributed across the ontological spectrum.

There are several reasons why Buttress' project seems particularly pertinent to validating the concept of musicking assemblages. First off, the artists involved in it explicitly acknowledge the agency of non-human actants. The sonic activity of the bees modulates their mutual interactions, often exceeding human intentions. Additionally, the bees themselves constitute a multiplicity. As the proverb goes, *una apis, nulla apis* – one bee is no bee. Bees are always plural, unindividuated, *en masse* (Preston 2006, p. 7). Moreover, a colony is not just an aggregation of individuals, but functions as a single living entity. Bees work together, without a central planner, to create a functional unity, whose capacities transcend those of its composite parts (Seeley 2010). Thus, not coincidentally, Deleuze and Guattari (1987) invoke the swarm of bees as one of the figures exemplifying the logic of assemblages, and a photograph of bees features on the cover of DeLanda's (2006) first book on assemblage theory. Thirdly, Buttress' project goes further than most in trying to involve the bees in musicking together. While many artists have incorporated live or pre-recorded insect sounds into their work – for instance, Francisco Lopez, Dave Phillips, Graeme Revell, Mira Calix, Dave Rothenberg, etc. – Buttress and his associates relinquish some control over the process of music-making, handing it over to the bees. There is, then, a Deleuzian 'sympiosis' or 'sympathy' to this encounter of human and non-human actants, who become together through sounding.

The name adopted for the musical offshoot of the project, Be 'One', refers to the serendipitous coming together of various participants (in Klotschkow 2016). This was not a preestablished band with a series of cut-and-dried routines, but a contingent encounter between a contemporary artist, a scientist, a couple of musicians and the bees. The spatial territory of Nottingham acted as a formative milieu from which they were all selected and arranged into a formation, and the main concept behind the Hive consolidated their mode of interrelatedness. From the start, it was about expressing the 'real synergy between a bee and a man' (*sic!*) (Buttress in UK in Hungary 2015). However, their musicking did not simply involve executing a preconceived idea. According to Buttress, before the initial recording session they were considering creating 'some kind of approximation of what the bees were doing, but to actually kind of work with the bees, to actually kind of play with the bees, in the same key' opened up new musical potentialities (Oakes 2019). The agency of the bees, then, exceeded the initial intentions of the human artists and pushed the project in another direction. The non-human actants were like a collaborative partner with its own set of capacities that necessitated adaptation from all involved and, ultimately, co-shaped the outcome of the interaction. During the recording, then, the creative agency of human beings has not been eliminated or rendered irrelevant, but decentred. As Buttress explains: 'It's about listening rather than dictating. Trying to tune in and find harmony, where you're working with something rather than against it' (in Jonze 2016). In other words, neither he nor his human associates can be attributed with a governing agency over the process of musicking; rather, it was an emergent result of a collaborative effort between human and non-human actants. As such, it manifests the agency of the musicking assemblage.

However, things get more complicated on later stages of the project, as more human actants are brought into the assemblage. Successive instruments are

overdubbed, transforming the sonic agency of the bees into a passive background for human contributions. Admittedly, the bees' sound was still the key dimension of the music. As Bales recounts: "We kept saying: "Let's try putting this in," but we realised that the more space we left for the bees, the better it sounded. We kept cranking them up higher and higher in the mix' (in Jonze 2016). Yet, at this stage, the bees are not a collaborative partner anymore. They have no capacity to participate in the editing, mixing and mastering of the music. It could be argued, then, that once the initial recording session was over, the bees lost their part of creative control over the project. However, as the above statement from Bales suggests, their sonic presence still required readjustments, guiding the actions of others. This was accomplished through trial and error. Buttress mentions that at one point they 'tried some free-form Coltrane drums but it just took over' and they had to cut it out (in Jonze 2016). It is through these trials that the agency of the bees manifests itself. Their capacity to interrupt, modify or transform the creative efforts of human musicians reveals that there is indeed a swarm of powers behind every action. No one acts alone, but as part of reciprocal dynamic of affecting and being affected. Therefore, the music heard on the album should not be conceived simply as produced under the creative control exercised by Buttress and his associates, but as contingent on the interplay of human and non-human actants, forming a concrete musicking assemblage.

Finally, in the *Hive*, selected fragments of the pre-recorded musical soundtrack are broadcast according to the activity of the colony. By buzzing at certain frequencies, the bees trigger correlated sounds of the instruments. Consequently, as Buttress remarks, it is like the bees are in fact 'composing the music' (UK in Hungary 2015). The roles are reversed and the control over musicking is conferred back upon the bees. Most musical endeavours featuring non-human collaborators do not go to such lengths. Therefore, through this radical move, Buttress takes the next step in acknowledging non-human agency. Paraphrasing Bruno Latour (1999, p. 129), it could be said that Buttress acts so that the bees act alone. In other words, he creates the conditions for the agency of the bees to reveal itself, to become visible, or, more precisely, palpable, available to the senses. In the *Hive*, it can be corporeally felt via the immersion in the sonic-tactile energies transmitted by the installation. However, the bees' agency is also distributed. They do not simply compose the music, as Buttress would have it, because the algorithm created by Bencsik impinges on the effects of their activity. Therefore, to really take advantage of the concept of the musicking assemblage would mean going beyond the binary framework and accounting for the complex ecology of forces at work on every stage of the project. This could include investigating the agencies of musical instruments involved in the recording, studio space and equipment, architecture of the *Hive*, etc. (cf. Campbell 2013; Nesbitt 2010; Théberge 2017). Yet, since the relation between humans and bees is at the heart of the project, in the remainder of the paper I will focus on reconceiving this relation in a way that overcomes its binary character, by framing it not in terms of interactions between two extensive entities, but in terms of intensive processes of becoming afforded by the circulation of sonic energies.

Interspecies musicking and becoming with

To capture the dynamism inherent in assemblages we need to approach them not just in terms of relations between their component parts, but also in terms of their morphogenetic processes. In other words, to shift attention from being to becoming.

This entails a processual account in which a single matter-energy is coursing through ecosystems and undergoing phase transitions of various kinds (DeLanda 1997, p. 23). These intensive flows need to be recognised as real and primary, preceding any transient forms they coagulate into. Consequently, the interactions between components in assemblages may occur within zones of indiscernibility, where the components cannot be distinguished from one another, partaking in converging trajectories of becoming.

In the context of Buttress' project, the concept of becoming-animal introduced by Deleuze and Guattari (1986) seems particularly relevant. It pertains to the way human actants can transcend their humanness, by forming an assemblage with an animal. This cannot be accomplished through mimesis, as that would imply a shift between two fixed identities; rather, it involves tuning into the morphogenetic forces that continually make and unmake them in the first place. The result is a single 'block of becoming' that does not merge both entities into an individual hybrid, but instead 'runs its own line "between" the terms in play' (Deleuze and Guattari 1987, pp. 238–9). That is to say, becoming-animal always involves multiplicities, pertaining not to extensive entities, but intensive flows. It is molecular and imperceptible, expressing 'the affects the human and animal have in common' (Beaulieu 2011, p. 78).

Music constitutes one domain in which becoming-animal may occur. According to Deleuze and Guattari (1987, 1994), it is the practice that most fully reveals the continuity between art and nature. They introduce the concept of the refrain to describe any rhythmic motif that territorialises an organism's milieu, conceptualising music-making as part of this process. Similar arguments have been made by zoo- and ecomusicologists who studied musical capacities of various animals, challenging anthropocentric accounts of creativity (e.g. Honing 2019; Martinelli 2009; Rothenberg 2005, 2008, 2013). For instance, David Rothenberg (2013) suggests that there is a continuity between music and 'the polyrhythmic swirls of the entomological soundscape'. While insects are usually considered as humanity's ultimate other (Brown 2006), and thus further away on the spectrum of musicality than other animals, like whales or birds, he insists on their capacity to sync with one another, maintaining a regular pulse to generate complex acoustic patterns, as proof of their music-making capacities. Like Deleuze and Guattari, then, Rothenberg asks us to expand our notion of music to include non-human sounds, approaching the insect soundscape in terms of 'a musical order that comes not from a guiding musical intelligence, but from an emergent organisation that comes out of nature'. Consequently, the sonic activity of both humans and bees can be seen as carried out via a series of territorialisations and codings, whereby the sonic flow is immanently captured and organised within musicking assemblages (Cox 2018).

To a certain extent, Buttress' project can be accused of naive, mimetic attempts to impersonate the bee. The wildflowers in the pavilion, for instance, were placed at waist-high level to mirror bees' journey as they pollinate the surrounding meadow, before returning to the hive. Through such gimmicks visitors were supposed to 'be experiencing it like a bee' (Buttress in AbitareWeb 2015). However, imitation was largely limited to the visual register. The soundscape, on the other hand, blended human and non-human sounds in a way that does not invoke mimesis but attunement. Thus, it creates a zone of indiscernibility between humans and bees via the act of musicking. By buzzing with the bees, the musicians enter the hive and delve

into the swarm's trajectory of becoming. It is impossible to unequivocally determine who is playing the instruments or producing the sounds. The musicking expresses a propensity inherent to the bee-human assemblage itself (Bennett 2005, p. 461). At the same time, however, both entities 'enter into alliances *in order to do things*, but are not undone by it' (Baker 2000, p. 133). The assemblage selects some of their capacities, which are required for musicking, while discarding others. Their extensive identities, though, remain unchanged. Humans are still humans, and bees are still bees. Thus, after the musicking is over, Buttress can enter an interview-assemblage to insist on unique creative capacities of humans, despite his previous efforts to acknowledge the agency of bees (in Nottingham 2023 2017). Becoming-animal, then, refers here to a fleeting moment of intensity, whereby humans engage in sonic activity with the bees, allowing them to lose themselves in an anonymous swarm, but not necessarily with enduring effects. Furthermore, it is a highly asymmetrical process. For Deleuze and Guattari (1987), becoming is always minoritarian, so while entering the assemblage affords becoming-animal of humans, there can be no becoming-human of bees. This leaves the question of how are the bees affected by the joint musicking unanswered.

Donna Haraway (2008) has argued that the concept of becoming-animal remains anthropocentric because it does not presuppose the fleshy copresence of an actual animal, instead mostly pertaining to human beings' creative practices. For instance, in music, becoming-animal can involve 'transposing the sounds of insects into the sounds of a string quartet', which are electronically amplified and modulated. In this way a non-mimetic interaction between music and nature is established, revealing both 'to be open systems of difference engaged in a process of mutual becoming' (Cobussen 2011, pp. 3–4). In this example, both 'insects' and 'nature' enter the musicking assemblage as concepts, rather than unique singularities constitutively linked to the material-energetic substratum. This diverges from Buttress' project where the bees are actually present and influence the transfer of sonic energies. Haraway (2008) proposes the concept of 'becoming with' which pertains to actual encounters between humans and animals, in which both entities do not precede their relating, but are co-constituted by it. So, if Deleuze and Guattari conceive of becoming-animal as a way to 'unhuman' the human, Haraway's approach suggests that we were never human in the first place. This is because humans are inextricably entangled in a web of vital co-dependencies with non-human others, evolving in conjunction with a host of material presences. This entails shifting attention to shared histories of coevolution and cohabitation, focusing on the 'contact zones' where responsive, cojoined action can afford the 'partnership-in-the-making'.

Becoming with is not based on equality between human and non-human actants; rather, it presupposes an 'ongoing alertness to otherness-in-relation' (Haraway 2016b, p. 141). Buttress and musicians involved in the project have repeatedly expressed their fascination with and regard for the bees. Creating the soundscape required paying constant attention to their presence and actively responding to their sonic activity. However, this does not necessarily mean that the process of musicking involved reciprocal attunement. As Claire Preston (2006, p. 21) notes, honeybees 'have no known auditory equipment beyond the ability to sense surface motion and the oscillation of air-borne particles, and the purpose of these utterances is so far unknown'. In other words, while bees can sense vibrations through specialised sensors in their legs, they have no eardrums and thus their

sensitivity to sound is very limited, if any at all. Their capacities to be affected by musicking together, then, are infinitesimal. Rather, it was Bencsik's research that provided an opportunity for bio-transfiguration, that is, a direct intervention into the materiality of the bees' lived reality (Bakke 2015). The hive becomes a technoscientific assemblage. Spiked with accelerometers embedded in the honeycombs, it constitutes a hybrid entity, part-organism and part-machine. For Haraway (2016a), the figure of the cyborg enabled rethinking the relationship between bodies and technologies, posing them not as external and mutually exclusive, but as inextricably and co-constitutively entangled with one another. Consequently, she argued that the cyborg can be mobilised to propel either the expansion of cybernetic control or new possibilities for kinship. This has led her to the concept of companion species, as a parallel but more comprehensive category that calls attention to linkages, crossings and interdependencies between all manner of entities. As such, it extends relational ontology beyond the mergers of the machinic and the organic, to better elucidate contemporary technobiopolitics (Haraway 2016b).

Humans and honeybees are undeniably companion species, entangled in a complex history of 'becomings with' that dates back thousands of years (Preston 2006). While providing its detailed account is beyond the scope of this paper, it certainly casts a shadow upon Buttress' project. As Haraway (2008, p. 25) writes, entities interacting in a contact zone are co-constituted through their relations 'both before and lateral to *this* encounter'. The coexistence of humans and honeybees has been developing, to a large extent, within asymmetrical and instrumental framework of relations. In particular, as Catriona Sandilands (2014, p. 165) notes, 'Apiological research and apicultural praxis have come to coincide, at least since mid-nineteenth century, in a multispecies biopolitical web of relations in which honeybees' welfare as a *species* is increasingly tied to our own'. In other words, both beekeeping and bee study develop under biopolitical guidelines, whereby creating optimal conditions for bees to continue their productive work is subservient to the survival and/or benefit of the human population. To a certain extent, Buttress expresses this rationale, admitting that the primary intention behind the project was 'to highlight how important the honeybee is to us' (in Royal Botanic Gardens, Kew 2015). In his project, the decline of bees as pollinators is directly linked to the threat of food shortages, focusing on how it affects the life of humans. Furthermore, the project circumvents far grimmer realities of bee-human relations, involving, for instance, the long history of employing bees in military combat: from launching beehives at enemy armies in ancient times, to contemporary undertakings that aim to train bees to detect landmines, bombs or harmful microbial agents (Kosek 2010). Thus, by focusing on connecting humans with nature, conceived as a sphere of peaceful and harmonious coexistence, the project obscures how contact zones are always fraught with power, bypassing questions of ethical responsibility within the joint production of naturecultures.

On the other hand, there is a purposelessness in Buttress' visceral fascination with the hum of the bees. Contrary to communication signals studied by Bencsik, which are linked to bees' productive capacities, the buzzing sound indicates the very vitality of the hive. Therefore, the constant presence of the apian drone, which forms the basis of the soundscape, coexisting and fusing with human-produced sounds, transcends biopolitical rationale. Instead, it calls attention to the immanent transfer and transduction of vibrational energies between and across bodies that in-form their very becoming. In this context, the project expresses four

principles of zoe-aesthetics: (1) all life is embodied; (2) no body exists in isolation; (3) human and non-human bodies are entangled on multiple levels; and (4) technologies are inextricably interrelated with bodies (Bakke 2015). Pursuing sonic adjacency with the bees via technologies, even if ultimately unattainable, reveals an ecocentric sensibility, according to which non-human actants feature not as complementary but counterpart to humans, exercising their own capacities in the musicking assemblage.

While ecomusicologists have described many musical projects involving animal-made sounds (Doolittle 2008; Feisst 2014a, b; Ingram 2010; Rothenberg 2005, 2008, 2013; Sutherland 2014), the latter often serve merely as a background for musicians to play their instruments or as raw material to be manipulated and arranged by them. Such creative strategies, even if ideologically oriented to conveying ecocentric message, uphold anthropocentric modes of material relatedness. Buttress' project, on the other hand, involves a complex circulation of sonic intensities between musicians and bees that draws them in mutual becoming-with (Haraway 2008). As such, it makes audible our co-constitutive entanglement with non-human others and can contribute to guiding our imagination towards a more sustainable ways of coexistence. That is to say, the felt materiality of musicking triggers sensations that precipitate awareness of our becoming-with bees, while fostering attentiveness to both similarities and differences between us and other entities. The Hive, therefore, demonstrates that acknowledging non-human agency is not tantamount to dissolving all distinctions between the parties involved (e.g. Malm 2018). While the assemblage affords sonic zones of indiscernibility through the experience of vibrations, the process of musicking is contingent on differing capacities of human and non-human actants that reveal themselves in the design of the installation. By relinquishing some level of control over the music, Buttress and his collaborators made the agency of the bees audible, but only to affect the bodies of visitors and trigger a sense of entangled empathy. The Hive's message, then, is that we as humans are predominantly responsible for the environment, but we are not in it alone, and we need to work with non-human others, because neglecting their agency will only cause more damage.

Conclusions

In this paper, I have attempted to map out the hybrid dynamics of sonic agency pertaining to the musical collaboration between humans and bees, as part of Wolfgang Buttress' art installation, the Hive. Drawing on the conceptual apparatus of new materialist theory, I have analysed how the music for the project was created and broadcast within the installation, framing its emergence and deployment in terms of musicking assemblages that are afforded and traversed by the circulation of material-energetic forces. This allowed me to expand the notion of sonic agency beyond individual entities, be it human or non-human, to intensive, morphogenetic processes inherent in music-making.

Buttress' project demonstrates that musicking is always already embroiled in transformative processes evident throughout the material world. Its design features bees as active agents in the emergence of cultural forms, rather than simply being mediated by them (Jasen 2016, p. 36). Therefore, I have argued that assemblage theory, particularly in DeLanda's elaboration, allows us to address this relationally and materially contingent genesis of music. It provides an account of musicking as

involving the capture of sonic energies by concrete assemblages that establish relations between heterogeneous components. Since this always entails a double articulation, encompassing material territorialisations and expressive codings, this approach can account for physical as well as symbolic aspects of music, conceiving them as part of the same continuum of intensive processes. Consequently, it provides a way to overcome the divisions between culture and nature, human and non-human, mind and matter, etc., while acknowledging the complexity of relations that are embedded in musicking assemblages, including the asymmetries in power.

In my reading, DeLanda's assemblage theory can be of considerable value to popular music studies, because it foregrounds music's sonic materiality and its transformative capacities. While the concept of mediation has allowed music's constitutive entanglement with technologies, objects, material infrastructures and cultures to be demonstrated (Born and Barry 2018), assemblage theory brings our attention to morphogenetic processes that inhere in matter, but are ordinarily hidden in its final products. It draws out forces, flows and intensities that afford musicking, but precede any individual subjects or objects to which they might be attributed. This allows for a theorisation of sounds as having independent existence, beyond the endless chains of mediations, conceiving them not as quasi-objects but temporal and durational flows – pure becomings – that are not reducible to any of their actualisations (Cox 2018). In this sense, the interspecies collaboration between humans and bees in *The Hive* was contingent on material–energetic transmissions of sonic forces that traversed their very distinction. Arguably, the project is situated at the fringes of popular music, passing into the territories of contemporary art and science. However, it is this liminality that makes audible the intensive processes of becoming inherent in naturecultures (Haraway 2016b) in such a vivid and comprehensive way. Music always involves 'becoming with', and, consequently, my analysis of Buttress' project can inform studies of analogous processes in other contexts and help to push popular music studies towards greater engagement with materiality, beyond relations between already-formed entities.

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