

It is striking how few women seem to have been involved in this process of invention, as Palomino acknowledges (p. 111). Women were of course there, but mostly in supporting roles, Oneyda Alvarenga being a notable exception. Why were there so few women leaders of institutions? Well, we know why, and these are not problems specific to Latin America, of course. But there is probably more to be said about how the gender, race, or class of the main figures Palomino considers also inflected this history.

Finally, despite Palomino's caveat that his analysis is not about musical sound, the problem of genre might have been elaborated further as one in tension with transnational and regional work. Witness, for example, the complex politics surrounding the attribution of UNESCO intangible cultural heritage status to specific traditional forms of music-making as national patrimony in Latin America in recent decades. None of this, however, renders less interesting Palomino's thoughtful exploration of how, as he puts it, 'the music of this region only began to be perceived as Latin American when Latin America as an intellectual and geopolitical journey unfolded' (p. 205).

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Alien Listening: Voyager's Golden Record and Music from Earth. By Daniel K. L. Chua and Alexander Rehding. Pp. 272. (Princeton University Press/Zone Books, Princeton and Oxford, 2021. ISBN 978-1-942-13053-6, £25.)

I was holding my heart when I read in the first sentence of *Alien Listening* that the book began in 2016 on the back of a napkin, when the two highly esteemed authors met during a conference and shared their ideas about a revolutionary 'theory of everything' (p. 7). Immediately, images from the film *The Theory of Everything* (2014) came to mind, in which the brilliant theoretical physicist Stephen Hawking formulated his groundbreaking theory that black holes begat the Big Bang that created our universe, which will end in a big crunch. Why are Daniel K. L. Chua and Alexander Rehding evoking associations with this genius who grappled with 'travelling to infinity'? Why did they begin their book with a black dot, evoking an association with a black hole? Should

they really be ranked with Hawking, Einstein, and string theory in their attempt to formulate a revolutionary music theory (p. 209)? Or are they losing their marbles? A theory of everything is a 'hypothetical, singular, all-encompassing, coherent theoretical framework of physics that fully explains and links together all aspects of the universe' (Wikipedia). Even though string theory has been proposed as a qualifying theory, finding such a theory is still considered to be one of the major unsolved problems in physics. But is finding a theory of all aspects of the musical universe also a major unsolved problem in musicology?

The book's first part, 'Toward an Intergalactic Music Theory of Everything', seems to take as its point of departure the view that natural sciences (such as physics) are in a more advanced state than humanities (such as musicology) because scholars of the former can formulate precise laws about the universe, while scholars of the latter usually cannot. If the methods of the natural sciences are indeed superior, then what musicology needs to do to catch up is to adopt them. To some extent this has already happened. The increasing use of mathematics and data analysis in musicology, for example, may be a result of this attitude. Moreover, the way forward sketched in the book's first part is clearly an attempt to catch up by taking sound waves and vibrations as ultimate constituents of a new music theory. However, in the current debate on methodological issues, many musicologists argue that the methods of natural science are not necessarily appropriate for studying musical phenomena. They point out that musical phenomena are far too complex to study in this way: because musical phenomena often involve intentional actions of humans and metaphysical beliefs, a special type of understanding is needed, in which the subjective meaning that a musical action has, either for an actor or a receiver, needs to be accounted for in any method for its study.

Right from the start the book poses many questions. Is it a sign of arrogance to try to defend the view that the human subject is the centre of the musical universe, and is a 'posthuman' turn in the humanities really necessary (p. 60)? Or could the new ideal of an environmentally friendly human, who is aware of being merely a temporal manifestation of biodegradable matter, become the subject of a new kind of musical humanism? Should we exchange wholesale 'New Musicology' for newer musicologies, such as eco-musicology and exomusicology, or are we throwing the baby out with the bathwater if we define the human exclusively in terms of quantifiable matter? Would it be better to see these

new approaches as a valuable addition to more traditional approaches?

The authors claim that by offering 'exomusicology', that is, a kind of musicology which uses as main tool a 'thought experiment' that involves the music and culture of fictitious creatures such as an alien species, as a defamiliarizing frame for the study of music, they enable us to rethink music theory from the ground up, and they sketch a necessary way forward (p. 60). But in this regard, quite paradoxically, the book can very well be interpreted in terms of traditional musicology as a variation on *The Dream of Scipio*: when Scipio joins his deceased grandfather in the heavenly spheres in a dream, he realizes the relative insignificance of the earth compared to the stars, and learns that one must contemplate the heavens in order to realize the insignificance of many human affairs and to act rightly on earth. Accordingly, the authors argue that for a correct perspective on music theory, one should realize the insignificance of the whole current musicological enterprise and contemplate the Golden Record in space to theorize rightly about music from earth.

The defamiliarizing frame of the book consists of a very interesting and innovative examination of NASA's Golden Record as well as accompanying perspectives and theories on how music should be defined, analysed, listened to, and thought about. Part II of the book, entitled 'A Media Theory of the Third Kind', offers a detailed analysis of the Golden Record project, which is described in terms of a beautiful 'mission impossible' (p. 183). This fascinating story began in 1977, when NASA launched a golden record into outer space. The record aboard one of the Voyager spacecrafts contained world music and sounds of the earth to introduce music from earth to extraterrestrial civilizations. Up to now, the Golden Record is the only human-made object to have left our solar system. Since its launch, it has sparked much debate about the representativeness of the twenty-seven musical pieces selected (pp. 116–17), in particular about the metaphysical theory that Western classical music, especially compositions by Bach and Beethoven, is the universal language of the human soul. In line with this tradition, *Alien Listening* asks questions related to those the Golden Record raises: What are the possibilities and limitations of music from earth in communication with aliens but also with humans? How do we use technology to further this communication? What can we learn from the auditory systems of other earthly creatures, such as whales, whose sounds are included on the Golden Record? Do aliens have ears? Is it possible to go beyond the limitations of human

thought and perception, or are we condemned to the act of wishful anthropomorphism if we encounter otherness? And, last but not least, what is music?

Around the 'mission impossible' of the Golden Record, Daniel K. L. Chua and Alexander Rehding develop a new music theory of everything that is based on an object-oriented ontology of sound. In the third part of the book, entitled 'Coda', they try to formulate a new definition of music, in which different strands from music and media theory are woven together. They argue: 'Music, then, cannot be defined apart from its mediation. Music is a material flow through different surfaces, a mixed compound of frequency modulations riven by various interfaces' (p. 194). This seems to be a proposal for a theory about music as the universal language of the body, or of matter. In this attempt to come up with a new, singular, and all-encompassing definition of music as the basis for their universal music theory, however, the authors have entangled themselves in all sorts of problems. In repeating the project of the Golden Record in the form of their book, ironically, the very book becomes a 'mission impossible' itself. It speaks in favour of the authors that they are aware of the problem: 'the major problem with formulating an intergalactic music theory of everything is that no one can write it. It would be a performative contradiction' (p. 65). They are right that in a post-human universe no great mind can formulate such a theory, because in so doing the heroic subject would be reinstalled at the centre of knowledge: 'Such male posturing cannot secure the autonomy of the system' (p. 65).

This is precisely what happens when the authors present their seemingly objective definition of music as the language of matter: the object-oriented ontology of sound they aim for is clearly a subjective choice for scientific realism, which holds that the physical world exists independently of human thought and perception. Thus a good scientific theory, according to realists, is one that truly describes the way the world is, or the way music is. But why would it exemplify the 'post-human' turn in the humanities? And why would a music theory of everything not take scientific anti-realism as point of departure? Scientific anti-realists claim that the physical world is in some way dependent on the conscious activity of humans. The way they use convenient fictions to deal with the physical world seems to be a valuable alternative point of departure for a music theory of everything. The convenient fictions anti-realists use to talk about the physical world, in particular about its unobservable entities, could be useful in exomusicology to

theorize otherness or the unknown. In line with Bruno Latour, I would argue that Pythagorean music theory, Western musical aesthetics, and Rehding and Chua's Penelopean model woven together from strands of music and media theory are all very similar convenient fictions to order the musical universe. The facts of any music theory—including the object-oriented ontology of sound presented in this book—are always 'networked'; they stand or fall on the strength of the institutions and practices that produce them and make them intelligible, that is, not on the strength of their inherent veracity. The history of music teaches us that if this network were to break down, the facts would go with them. The greatest merit of this book is that it takes musicologists out of their comfort zone and engages them in a new debate about sense and nonsense in their methodologies. This has not been an easy task. Towards the end of the book the authors sigh: 'Of course, the difficulty in attending to this sonic mirror [i.e. the Golden Record] is to avoid catching ourselves at the center of the reflection. It is almost impossible to be consistent in banishing ourselves to the margins' (p. 209). Indeed, talking about music as 'a material flow through different surfaces' is no solution to this problem, but what the book's beautiful thought experiments demonstrate is that we should be more aware of the fact that all musical knowledge is somehow mediated, and that we as humans, even in a 'post-human' musical universe, will always be bound to our fictions to make sense of music.

To conclude, reading this book made me reel at times: just as Takahiro Kurashima's wonderful *Intergalactic Dots*, included as an illustration, are starting to dance when you move the film

provided with the book over them, I often had the feeling that I could not connect some of the important points it discusses (p. 185). But, to my great relief, it is the first book I read that includes explicit instructions for its readers and reviewers: 'Our weave is just the beginning. There are still so many loose ends. And they are deliberately loose, because by coming to a frayed ending, we are handling the mission over to you. This is not for you to stitch up, of course, but to continue the warp and weft in different directions' (p. 207). As part of its marketing strategy, and in sharp contrast to its very mission, the book also comes with its own praise, which is a clear sign that we are still living in the Anthropocene with its powerful industries and commercial strategies. Both on the website and in the jacket blurb, important people sing its praises and applaud its humoristic tone. Nina Eidsheim (University of California at Los Angeles and author of a book on a related topic), for example, writes admiringly: 'This book made me laugh out loud, and then reflect on my own place in the galaxy.' But I would argue 'good wine needs no crown'. As a counterpoint to the esoteric voice of praise and understanding offered together with the book, I sincerely hope that my attempt to continue the warp and weft of the book in different directions will not be dismissed as extraterrestrial murmurs.

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