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# CHAPTER 1

## THE DRUM KIT IN THEORY

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### INTRODUCTION

What is a drum kit and how do we study it? There is a commonsense answer to this question: a drum kit is a musical instrument comprising an arrangement of drums, cymbals, and associated hardware, and it can be studied both formally (not just through private tuition but also prestigious music schools and academies) and informally (by practicing along to recordings, playing in bands, and so on). And yet this commonsense answer is deceptive because it hinges on taken for granted assumptions about the stability of the term ‘drum kit’ and the conventional ways of studying it. The problem, of course, is that musical definitions and conventions are not fixed, immovable, or timeless; they are always in flux and in a constant process of being shaped by shifting historical and cultural contexts.

In fact, the definition of the drum kit - and consensus regarding its appropriate study - have changed dramatically over the course of the instrument’s history. This chapter is a rough guide to unpacking that history, and in doing so it treats the drum kit not as a fixed object, but a theoretical concept. What follows is a discussion of the drum kit in theory divided into three parts: (1) the invention and changing status of the instrument; (2) the trajectory of drum kit studies within the wider field of musical instrument scholarship; and (3) a discussion of the ‘drumscape’ as a theoretical tool.

## THE INVENTION OF THE DRUM KIT

The drum kit is a uniquely American instrument whose invention coincided with the birth of jazz at the turn of the twentieth century; or at least this is the prevailing origin story that we see reproduced in numerous popular histories of the instrument.<sup>1</sup> A typical version of the myth goes like this:

The drum set [sic] is one of New Orleans' greatest gifts to American popular music. When the brass parade bands stopped marching and settled down in the riverboats to play—when the dances and comics in minstrel shows needed percussive accompaniment—when the blues came drifting off the plantations and mixed with Caribbean and African rhythms to make a new music called jazz, the drum kit was born.<sup>2</sup>

A similar account appears in a 2019 BBC documentary on the drum kit presented by Stewart Copeland. While being filmed on location in downtown New Orleans, Copeland holds up an enlarged photograph of the drummer Dee Dee Chandler, who played with the John Robichaux Society Orchestra at the tail end of the nineteenth century. Pointing to the bottom of Chandler's bass drum, Copeland informs the viewer that 'down here is one of the most important inventions in modern music', and then declares Chandler to be 'one of the first snare drum guys to play the bass drum at the same time ... by inventing a homemade foot pedal'.<sup>3</sup> To be fair to Copeland, the photograph of Chandler (taken circa 1896) is arguably the earliest surviving *photograph* of a drummer standing next to their bass drum pedal. But the viewer would be mistaken if they made the leap of assuming the photograph of Chandler was the first documented *evidence* of a bass drum pedal, or that it was unquestionably invented in New Orleans. Putting to one side the question of whether the hi-hat (which doesn't appear in

drum catalogues until the mid-1920s) or separate tension tom-toms (which appear in the mid-1930s) are necessary core components of a drum kit, I will for the moment restrict my investigation specifically to the origin of the bass drum pedal.

Drummers have experimented with ways of playing more than one percussion instrument at once for centuries, if not millennia. To take a relatively recent historical example, it was common in the nineteenth century for both marching band and orchestral drummers to attach a cymbal to the rim of their bass drum so that they could play both at once.<sup>4</sup> Jayson Dobney has documented that this practice was also evident in the United States, noting that 'photographs taken during the Civil War often show a cymbal attached to a bass drum for use in a military band. After the war, this configuration could be found in many of the community and town concert bands that were gaining popularity throughout the country.'<sup>5</sup>

When theatre and symphonic orchestras attempted to represent the sounds of military marching band drumming indoors in cramped conditions and with fewer musicians, some inventive drummers began to place the bass drum on the floor so they could simultaneously play snare drum (often placed on a chair, since snare drum stands had not yet been invented) and bass drum (with cymbal often attached to the rim) – a performance practice which by the 1880s came to be known as 'double drumming.'

So when did foot-operated drum pedals arrive on the scene? This is not an easy question to answer. In order to illustrate the complexity of the problem, and the messiness of historical research more broadly, I will present *seven* potential candidates for the bass drum pedal's moment of origin, each with its own narrative advantages and disadvantages.

Option 1: bass drum pedals have existed from the early nineteenth century, but robust documentation proving their existence has not survived. As I document elsewhere in my book *Kick It: A Social History of the Drum Kit*, there are surviving illustrations from early

nineteenth century France that portray at least two different one-man bands using homemade beaters attached to their feet to play a drum with one foot, and a pair of cymbals with the other.<sup>6</sup> Based on this evidence, you could argue for the possibility that foot pedals for drums and cymbals were likely discovered by multiple people independently in different countries from at least the beginning of the nineteenth century onward and probably earlier. Here we begin to see that choosing a particular origin narrative serves a particular agenda: this first version of the bass drum pedal origin story privileges (a) the international roots of the technologies that inform the drum kit as an instrument; and (b) a 'multiple discovery' (no one person is attributed) rather than a 'lone genius' (one person only is attributed) narrative of invention. This origin narrative also de-privileges (a) innovations that have documented widespread impact (e.g. a pedal design that was successfully mass-produced); and (b) the USA as the country of origin for the proto-drum kit.

Option 2: the oldest surviving example of a foot operated drum pedal is located (somewhat surprisingly) in the Keswick Museum in England. (A full discussion of this unusual bass drum pedal can be found in a 2014 journal article by Paul Archibald.)<sup>7</sup> It was created by an inventor named Cornelius Ward for the novelty Richardson Rock and Steel band. If we chose this as a moment of origin, it privileges (a) a single named inventor; (b) the role of drummers in novelty music (as opposed to jazz, for example); and (c) historical instruments in museum collections as a source of evidence.

Option 3: in the published memoir of Arthur Rackett, a longtime drummer for the John Philip Sousa band, he recalled that 'in 1882 I settled in Quincy, Illinois. This was about the time that the first foot pedal came out. Dale of Brooklyn made it. Everybody laughed at the idea, but I sent for one and started to practice in the woodshed.'<sup>8</sup> This moment privileges oral history (Rackett's memory preserved in print), but ignores the need for material evidence (no catalogue or paper trail corroborate the memory survives).

Option 4: the oldest legal patent for a bass drum pedal dates back to 1887, when George Olney of St. Louis, Missouri, was granted a patent for a design very similar to that of Dee Dee Chandler, but Olney's patent predates the photograph of Chandler by approximately nine years. The option privileges legal patents as documents of record, but de-privileges those who may have come up with a similar design but did not manage (or were somehow prevented) from patenting their idea.

Option 5: the earliest example I can find of a bass drum pedal being sold in an instrument catalogue is from 1893, when the German manufacturer Paul Stark published a catalogue to advertise his goods at the Chicago World's Fair. This option privileges commercial production and evidence from instrument catalogues, and de-privileges the USA as the accepted country of origin for the bass drum pedal.

Option 6: as mentioned above, the earliest photograph of a drummer next to his bass drum pedal is likely that of Dee Dee Chandler in New Orleans circa 1896. It privileges the city of New Orleans, African-American culture (Chandler was black), photographic evidence, and the notion that the drum kit only coalesces as an instrument through a particular kind musical performance practice (e.g. dance music influenced by New Orleans second line drumming). It de-privileges patents as evidence (i.e. Olney 1887), countries outside the USA, and popular music not rooted in the jazz tradition.

Option 7: arguably the most famous of all the candidates outlined so far is William F. Ludwig's 1909 patent for highly successful and influential bass drum pedal design. This option privileges the overall impact a particular design has on the rest of drumming culture. From 1909 onward Ludwig's design is not only successfully mass-produced and sold, but also widely imitated by other manufacturers.

The point of outlining seven different possible origin moments for the bass drum pedal is not, in my view, to then select one of them as the definitive version. Instead, the

point is to draw attention to the *historiography* of the drum kit – in other words, to draw attention to the processes of inclusion and exclusion that must be made when writing the instrument's history. To investigate the origin of the drum kit, like any historical project, is necessarily to sift through a wide range of partial sources and piece together a story, which inevitably involves making judgments about what to leave in, and what to leave out of the story.

Put simply, there is frequently more than one way of framing the origin story of a musical instrument. The point here is that each of the possibilities above serves a particular ideological agenda, and to privilege one narrative necessarily excludes a host of equally important influences, inspirations, and voices. By giving attention to the multiple possible origin narratives and their implications, we can gain a better understanding of who and what we are including and excluding in the stories we tell, and why.<sup>9</sup>

The historiographical lesson learned from the bass drum pedal can also be applied to invention of the drum kit in full as a distinct instrument – there is more than one possible moment of origin. Does the first drum kit appear in 1906, when the Philadelphia-based instrument manufacturer J.W. Pepper publishes a catalogue featuring a pre-bundled “trap drummer's outfit” (comprising a bass drum, snare drum, cymbal, and bass drum pedal)? Or is it 1918, when Ludwig & Ludwig first advertise their own ‘Jazz-Er-Up’ outfit equipped with their signature bass drum pedal? Is it 1928, when a new accessory that we retrospectively recognize as a hi-hat pedal (produced and distributed by the Walberg & Auge company in Worcester, Massachusetts) begins appearing in multiple drum manufacturer catalogues? Or must we wait until 1936, when Gene Krupa collaborates with the Slingerland company to create the new ‘Radio King’ series of drum kits equipped with separate-tension tom-tom drums? To complicate matters further, what happens when electronic drum kits are introduced from roughly the 1980s onward, or virtual drum kits from the 2000s onward? Can

a drum kit be acoustic, electronic, or virtual and still count as a drum kit? If this question causes even a modest amount of debate, then we have to assume that the meaning of a 'drum kit' is not fully stable. The pioneers of the acoustic drum kit could not have predicted that in the twenty-first century that debates around the meanings of a 'drum kit,' 'drummer,' and 'drumming' would include voices from computer software engineers and multi-national corporations packaging virtual drummers into their digital audio workstations. Nevertheless, these actors significantly influence our contemporary understanding of what counts as a drum kit, drummer, or drumming performance.

To ask such questions is point toward a broader question in the sociology of knowledge: what aspects of its design must stay the same in order for a drum kit to *remain* a drum kit over time? In the twenty-first century, when as many or more electronic drum kits are sold relative to acoustic drum kits - and when the sounds of multiple drum kits can be stored and deployed within a single software plugin - is the definition of what constitutes a drum kit categorically fixed? My argument is that it is not and never was, and this is what I mean when I say the drum kit is not a fixed object, but a theoretical concept.

## **THE HISTORY AND FUTURE OF STUDYING THE DRUM KIT**

Having now seen that the 'drum kit' is a contested concept whose meaning changes over time and across different contexts, it will come as no surprise that the same applies to *studying* the drum kit. William F. Ludwig published an essay in 1927 detailing his recollection of how drummers in the United States studied their instrument:

The old timers of Chicago were practically all rudimental drummers ... [and] all probably had the same experience in learning to drum as I had. My dad stepped into Lyon and Healy's store and simply said he wanted a drum book. [A book of military drum rudiments]



was laid out on the counter and could be purchased for \$1.00 each. It was the only drum book that [the store] had or recommended.<sup>10</sup>

With the advent of ragtime at the turn of the twentieth century, however, Ludwig observed that a new way of studying the instrument appeared: 'new beats were invented, new systems of playing the drum were invented and, in fact, ragtime methods of all sorts appeared on the market, each one different from the other. Originality seemed to be the main object.'<sup>11</sup> The ragtime and jazz eras fueled a clash of musical cultures, specifically a tension between musicians who learned their instrument through reading and following notated sheet music versus those who learned to play through more informal methods and improvisation. In truth, learning to play the drum kit had always involved both formal and informal approaches, and even after the drum kit gained acceptance in institutions of higher education as part of university jazz programmes, drummers typically continued to study performance practice on their instrument using a mixed methods approach.

For most of the twentieth century, the practice of studying the drum kit could be divided into one of two categories: *construction* (how the instrument was designed and manufactured) or *performance* (how it was played). The study of the drum kit's physical construction can arguably be situated within the wider field of 'organology' - a term coined in 1933 to designate the academic study of the material and acoustic properties of musical instruments dating back to the nineteenth century; it should be noted, however, that the scope of organology was severely limited for many decades, and the drum kit was not considered worthy of serious attention until the late twentieth century (see, for instance, James Blades' 1970 landmark study, *Percussion Instruments*, which briefly contextualizes the drum kit's origins amidst the wider history of percussion).<sup>12</sup> Meanwhile, the study of drum kit performance can be situated with the broader field of 'performance practice' scholarship, which in the case of the drum kit made inroads into the academy with the gradual

institutionalization of jazz in higher education over the second half of the twentieth century (Theodore Dennis Brown's 1976 doctoral dissertation, *A History and Analysis of Jazz Drumming to 1942*, is a milestone in this respect).<sup>13</sup> The establishment of percussion education organizations are also relevant here, such as the Percussive Arts Society (created in 1961), which held its first International Convention (PASIC) in 1976.

While the practice of studying the drum kit has gradually crept into the academy, it is worth emphasizing that many of the most important early analyses of the drum kit's construction and performance were produced *outside* the academy. The publication of catalogues, newsletters, and periodicals about the drum kit are a useful example. The drum kit was a product aimed at a commercial market, and therefore the catalogues and newsletters produced by early drum kit manufacturers such as Leedy, Ludwig, and Slingerland are rich sources of information describing the latest innovations in the instrument; even though such descriptions were explicitly created to advertise the products of drum companies, they are nevertheless invaluable accounts of the drum kit's design and construction. In terms of performance practice, a plethora of "method books" appeared following the dawn of jazz: notable examples include Carl Gardner's *Modern Drum Method* (1919) and Ralph Smith's *50 Hot Cymbal Breaks and 70 Modern Drum Beats* (1929), George Lawrence Stone's *Stick Control For The Snare Drummer* (1935), Jim Chapin's *Advanced Techniques for the Modern Drummer* (1948), and the list goes on.

Likewise, the vintage drum community that arose from the late 1980s onward has produced numerous vital historical studies. While some of these were created with the primary aim of identifying, collecting, and restoring rare and potentially valuable drums and cymbals, others – including pioneering work by John Aldridge, Jon Cohan, Rob Cook, Chet Falzerano, and Geoff Nicholls, to name but a few – often included social history scholarship that provided insight into the cultural significance of the drum kit.<sup>14</sup> Longstanding special

interest magazines like *Modern Drummer* (first published in 1977) and *Not So Modern Drummer* (first published in 1988) also produced important articles on the instrument, key artists, and performance styles and techniques that predate much of the academic scholarship on the drum kit.

In recent years, a much wider range of approaches to researching the drum kit has flourished, arguably marking a shift from a paradigm of 'studying the drum kit' (concerned mostly with issues of construction and performance) to *drum kit studies* (a fully interdisciplinary field of inquiry). The emerging field of drum kit studies is distinctive for embracing insights from a variety of academic sources – including but not limited to philosophy, sociology, anthropology, psychology, education, race, gender and class studies – which are brought to bear on the drum kit, drummers, and drumming. Systems of cultural theory that have proved influential elsewhere in musical instrument scholarship – such as science and technologies studies (STS), social construction of technology (SCOT) theory, actor network theory (ANT), and material culture studies – can also be productively applied to enhance our understanding of the drum kit (more of which in the next section). Drum kit studies is not itself a discipline *per se*, but a loosely organized field of study, which is slowly showing signs of cohering (as evidenced by the publication of this *Cambridge Companion*). The point here, however, is not to define drum kit studies in opposition to earlier ways of studying the drum kit, but to build upon them. Nor is it to isolate drum kit studies inside the academy from those occurring outside the academy. The drum kit is a living instrument, and drum kit studies therefore can, and should, actively encourage interaction and engagement between all spheres of drum kit culture.

In an effort to explore the breadth of what drum kit studies can and should be, I propose unfolding the term 'drum kit' from its narrow, commonsense definition (described at the outset of this chapter) into a larger map of directions for further enquiry. Steve Waksman

has previously argued that musical instruments can be understood in a multitude of ways: as commodities, material objects, visual icons, sources of knowledge, cultural resources, and of course, 'sound-producing devices, without which music could hardly be said to exist at all.'<sup>15</sup> Similarly, Kevin Dawe has shown how musical instruments create forms of meaning, "changing soundscapes, affecting emotions, moving bodies, demarcating identities, mobilizing ideas, demonstrating beliefs, motioning values."<sup>16</sup> Inspired by the above and other recent work in musical instrument research, I propose that through the lens of what one might call the *drumscape* (which I will outline in detail in the following section), drum kit scholars can add the sum of these multiple perspectives together and make steps towards understanding not just how the drum kit, drummers, and drumming relate to the wider world – but how they impact upon it.

## **THE DRUMSCAPE AS A THEORETICAL TOOL**

The concept of the 'soundscape' is a twentieth century invention. One of its key proponents, the composer and naturalist R. Murray Schafer, once theorized that 'modern man is beginning to inhabit a world with an acoustic environment radically different from any he has hitherto known,' arguing that the soundscape of the world required careful study 'in order to make intelligent recommendations for its improvement.' Similarly, the anthropologist Arjun Appadurai introduced further concepts like 'mediascape' and 'technoscape' to make sense of the intangible forces that shape the global cultural economy. More recently, Kevin Dawe has put forth the term 'guitarscape' in an effort to theoretically frame the guitar as 'a large-scale musical-cultural-social occurrence that merits serious and ongoing academic study.'<sup>17</sup> I suggest that if we are comfortable using terms like 'technoscape' and 'guitarscape,' drum kit scholars might also benefit from the concept of a *drumscape*.<sup>18</sup>

The drum kit in all its forms (acoustic, electronic, physical, virtual, and symbolic) participates in the drumscape. (By virtue of its name, the drumscape can also encompass other instruments in the percussion family). Such an approach encourages the study of the drum kit not just as a physical object or a performance practice, but as a symbol (encompassing both physical and virtual forms) whose meanings are determined by cultural use. In short, the drumscape is a macroscopic lens through which to understand drums, drummers, drumming, and the meanings and impacts they produce.

To once again borrow from and modify Kevin Dawe's thoughtful discussion of the guitarscape, I suggest that the drumscape is a lens through which to consider (a) how the drum kit has been written about, thought about and talked about; (b) the power and agency of the drum kit in culture and society; and (c) what kind of experience it is to play the drum kit (an experience involving both the mind and the body).<sup>19</sup> Moreover, the drumscape is not simply a concept through which to analyze the drum kit as a phenomenon: it is also a process in itself. In other words, we can interrogate a multitude of events when *drumscaping* occurs: in the sound mixing of a recording or a live concert; in the transistorized drum machine sounds emanating from the car speakers of a moving vehicle, or the wireless headphones connected to a mobile device; in a performance by a busker in a city park; in a religious service as a gospel drummer entrains a congregation toward a spiritual experience; or in a clothing store as market researchers study whether adjustments in the BPM of a four-on-the-floor kick influence the speed with which customers shop. Drumscaping need not even be sonic in nature: it could be present in the logic of a conversation between band members over how songwriting royalties should be divided, and whether the drummer's role merits a percentage (and if so how much); or the visual mapping of virtual music-making interfaces in a digital audio workstation that is informed in some way by an acoustic or electronic drum

kit. All of these moments are both a part of the drumscape as a concept, and act as particular examples of drumscape as a process.

Building on earlier theorizations of instruments by Simon Frith, Emily Dolan and John Tresch, I propose that viewed through the lens of the drumscape, the seemingly simple term 'drum kit' can be understood from at least four different but related perspectives: the drum kit is a *technology*, an *ideological object*, a *material object*, and a *social relationship*.<sup>20</sup> I will examine each in turn.

To understand the drum kit as a technology is to approach it as the application of an accumulated field of human knowledge (i.e. instrument-building) resulting in the creation a new music-making device. The technology of the drum kit not only solves particular problems of labour and space – allowing a single musician to play multiple percussion instruments at once – but also opens up new and extends the possibilities for musical expression. However, understanding the drum kit as a technology is not to artificially separate it from its social interaction and cultural use, as may science and technology studies (STS) scholars have observed. As Timothy Taylor once put it, for instance, music technology is 'not separate from social groups that use it, it is not separate from the individuals who use it; it is not separate from the social groups and individuals who invented it, tested it, marketed it, distributed it, sold it, repaired it, listened to it, bought it, or revived it. In short, music technology ... [is] always bound up in a social system.'<sup>21</sup> Approaching the drum kit as a technology is not synonymous with treating it as an object either. The technology of the drum kit could easily be understood, for example, not as a thing made up of wooden shells, skins, and cymbals, but as a spatial arrangement or conceptual interface. The drum kit is a form of software as well as hardware. Non-drummers might initially puzzle over the following arrangement of abstract shapes, but any drummer would immediately be able to identify its meaning and implied use (see Figure 1).

**[INSERT EXAMPLE 1.1 HERE]**

Figure 1: The drum kit as an abstract interface

Whether conceived of as an abstract interface or a concrete instrument, the drum kit as technology affords certain kinds of use and discourages others. It has the power to both enlarge and restrict the activity of music-making. Understood from this standpoint (in other words, through the framework of actor network theory, or ANT), the drum kit is not a passive object, but an *object with agency*: it acts upon a drummer as much as a drummer acts upon it. The drum kit as a technology encourages the user to experience music in a certain way (a very different way than, say, a guitar or woodwind instrument).

As an ideological object, the drum kit can be understood as a set of self-reinforcing ideas and values. The extent to which there is consensus surrounding these values informs social agreement of the drum kit's function and purpose, how it should and should not be used. The ideology of the drum kit contains received wisdom about its history, tradition, the accepted canon of significant drummers as artists (and the criteria by which they are judged to be significant), and its status as a sonic and visual icon. The ideology of the drum kit can also challenge prevailing music ideologies: from the perspective of drum kit culture, West African musical performance practices might be near the top of a hierarchy of musical value, while they might be located further down the value hierarchy embedded into the ideology of, for instance, a European instrument like the harpsichord or piano. There are also multiple and conflicting ideologies of the drum kit. In jazz drumming culture, for example, it might be taken for granted that an acoustic drum kit is a 'real' or 'authentic' drum kit, and an

electronic or software drum kit is not; in electronic dance music culture, by contrast, this distinction might not matter at all. None of these ideas and values are absolute truths, but some sets of ideas have historically gravitated toward the orbit of the drum kit and the genre worlds surrounding it, while others have been repelled. And as ever, these ideologies shift and change over time.

As a material object, the drum kit can be understood as being made of particular elements and having particular physical and acoustic properties. Elsewhere I examine how the changing materials of the drumscape are mirrored by a wider shift in the materials used for commodity goods as a whole. A political ecology of the drum kit could be divided into three overlapping historical eras, each grouped by the principal materials used to manufacture the drum kit as a product: (1) *renewable materials* (i.e. the wood and metal used in traditional acoustic drums and cymbals); (2) *non-renewable plastics and e-waste* (i.e. the electronic circuitry and synthetic materials used in electronic drum kits); and finally (3) *data* (used in drum replacement and augmentation software).<sup>22</sup> How this categorization plays out in detail represents an avenue for future research. Furthermore, the drum kit as a material object takes part in a global commodity industry, and is implicated in various commercial and industrial processes. Here the study of the drum kit could productively align with material culture studies more broadly.

As a social relationship, the drum kit only becomes a drum kit when it is used as such (in other words, when it is played) and when a relationship is established between the instrument and the person playing it.<sup>23</sup> As Gareth Dylan Smith has observed, a drum kit can play a powerful role in shaping a drummer's social identity.<sup>24</sup> According to this approach, drum kits are not merely aids to the activity of drumming, but also powerful forces acting in relationship to their users, shaping drumming and its meaning in the process; and as it is



woven into the texture of everyday existence (to paraphrase cultural theorist Langdon Winner), the drum kit sheds its tool-like qualities and becomes part of our very humanity.<sup>25</sup>

## CONCLUSIONS

To summarize, 'what is a drum kit and how do we study it?' is not a question where a short and simple answer will suffice. But this is a good thing. The drum kit is a living, mutable concept, and to study it properly is not a short exercise, but a lifelong inquiry that requires the establishment of a community of scholarship with constituents from both inside and outside the academy. In offering a few provocations concerning the historiography of the drum kit, the trajectory of drum kit studies, and the theorization of the drum kit, I do not claim to have fully answered any of the questions posed in this chapter, nor do I see a concept like the 'drumscape' as a unified theoretical approach for drum kit studies as a whole. These are simply some tools to add to the toolbox, and it is my hope that the reader will find other useful tools to understand the drum kit, drummers, and drumming in the rest of this book.

## END NOTES

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<sup>1</sup> See, for example, Hart, M., F. Lieberman, and D. A. Sonneborn. *Planet Drum: A Celebration of Percussion and Rhythm* (New York, Harper San Francisco, 1991); Budofsky, A. *The Drummer: 100 Years of Rhythmic Power and Invention* (Cedar Grove, NJ: Modern Drummer Publications, 2006).

<sup>2</sup> Cohan, J. *Star Sets* (Milwaukee: Hal Leonard, 1995), p.2.

<sup>3</sup> *On Drums... Stewart Copeland!* Television programme, 59 minutes. BBC Four, aired 13 January 2019.

<sup>4</sup> MacDonald, H. *Berlioz's Orchestration Treatise: A Translation and Commentary* (Cambridge: Cambridge University Press, 2002), p.280.

<sup>5</sup> Dobney, J. 'The Creation of the Trap Set and Its Development before 1920', *Journal of the American Musical Instrument Society*, 30 (2004), p.25.

<sup>6</sup> Brennan, M. *Kick It: A Social History of the Drum Kit* (Oxford: Oxford University Press, 2020), p.34-35.

<sup>7</sup> Archibald, P. 'Searching for the first bass drum pedal: rock harmonicas to Viennese pianos', *Popular Music History* 9(3), 2014.

<sup>8</sup> A. H. Rackett, *Fifty Years a Drummer* (Elkhorn: Self-published, 1931), p.10.

<sup>9</sup> Brennan, M. *Kick It*, p.51.

<sup>10</sup> Quoted in C. Bolton (ed.) *The Ludwig Drummer: April 1926 to Spring 1948* (Anaheim Hills: Centerbrook, 1999), p.63.

<sup>11</sup> *Ibid.*, pp.8-9.

<sup>12</sup> Blades, J. *Percussion Instruments and Their History*. London: Faber & Faber, 1970.

<sup>13</sup> Rognoni, G.R. 'Organology and the others: a political perspective', presented at Galpin Society / AMIS Conference (3 June 2017).

<sup>14</sup> Aldridge, J. *Guide to Vintage Drums*. (Hal Leonard Corporation, 1994); Cohan, J. *Zildjian: A History of the Legendary Cymbal Makers* (Milwaukee: Hal Leonard, 1999); Cook, R. *The Complete History of the Leedy Drum Company*. (Fullerton: Centerstream, 1993); Cook, R. *The Ludwig Book*. (Rebeats Press, 2003); Falzerano, Chet. *Gretsch Drums: The Legacy of 'That Great Gretsch Sound'* (Hal Leonard Corporation, 1995); Nicholls, G. *The Drum Book: A History of the Rock Drum Kit* (Milwaukee: Hal Leonard Corporation, 2008).

<sup>15</sup> Waksman, S. 'Reading the instrument: an introduction', *Popular Music and Society* 26:3 (2003), p.252.

<sup>16</sup> Kevin Dawe, "The Cultural Study of Musical Instruments," in M. Clayton, T. Herbert, and R. Middleton (eds) *The Cultural Study of Music: a critical introduction* (Abingdon: Routledge, 2003), p.195.

<sup>17</sup> Kevin Dawe, *The New Guitarscape in Critical Theory, Cultural Practice and Musical Performance* (Ashgate Publishing, Ltd., 2010), 41.

<sup>18</sup> This discussion develops an argument I first made in *Kick It: A Social History of the Drum Kit*, pp.316-317.

<sup>19</sup> *Ibid.*, pp.45-46.

<sup>20</sup> Here I draw from and modify Simon Frith's theorization of musical instruments outlined in S. Frith, M. Brennan, and N. Prior, 'Towards a new understanding of musical instruments', presented at Royal Musical Association Music and Philosophy Study Group conference, 14 July 2017; J. Tresch and E. I. Dolan. 'Toward a New Organology', *Osiris* 28, 2013, pp. 278-298.

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<sup>21</sup> T. D. Taylor. *Strange Sounds: Music, Technology, and Culture* (New York: Routledge, 2001), p.7.

<sup>22</sup> See M. Brennan, 'The environmental sustainability of the music industries', in K. Oakley and M. Banks (eds) *Cultural Industries and the Environmental Crisis: New Approaches for Policy* (Springer, forthcoming). See also K. Devine, *Decomposed: A Political Ecology of Music* (Cambridge: MIT Press, 2019).

<sup>23</sup> Thanks again to Simon Frith for this formulation, which first appeared in S. Frith, M. Brennan, and N. Prior 'Towards a new understanding of musical instruments', Royal Musical Association Music and Philosophy Study Group conference, 14 July 2017.

<sup>24</sup> G. D. Smith, *I Drum Therefore I Am*. (Farnham: Ashgate, 2013).

<sup>25</sup> L. Winner, *The Whale and the Reactor* (Chicago: University of Chicago Press, 1986), pp.6-12.