duration tape installations, to tape works using the ARP synthesiser, to works for acoustic instrumentalists. A single ocean of vibration, being cultivated and guided at a distance, allowing it to feed back on to itself, generating an infinite play of resonance.

'The freedom to be immersed in the ambivalence of continuous modulation… The freedom to let yourself be overwhelmed, submerged in a continuous sound flow, where perceptual acuity is heightened through the discovery of a slight beating, there in the background, pulsations, breath. The freedom of a development beyond temporality in which the instant is limitless' (p. 16). For anyone interested in Radigue's work, the history of electronic music and the situation of instrumental music in the present day, this book is essential.

Lawrence Dunn
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Mine Doğantan-Dack (ed.), *Rethinking the Musical Instrument*, Cambridge Scholars Publishing, 465pp. £67.99.

Performance Studies has been accepted as a musicological discipline in the last 30 years or so, but there is a much older tradition of instrumental research: history and evolution, fabric and mechanics, and that interface between composers, players (often the same person) and makers. The editor of this volume, Mine Doğantan-Dack, however, tells us that 'there is still little scholarly work… on the artistic affordances of different acoustic, electronic and digital instruments, their critical reception in cultural contexts, the nature of the embodied interactions they generate in composing and performing music, and the expressive and communicative meanings that emerge as a result of such interactions' (p. xvii). These 18 chapters, originating in the Music and Sonic Art Conferences held at the Institut für Musikwissenschaft und Musikinformatik in Karlsruhe between 2015 and 2019, try to address these areas in a volume that 'proceeds from acoustical to digital instruments, and from critical/philosophical enquiry and historical considerations to artistic research projects' (p. xviii). For *TEMPO* readers, two thirds of this book will be of interest, including two excellent chapters dealing with truly innovative work on traditional instruments, the cello and clarinet respectively, a valuable overview of Hugh Davies' work and chapters looking at different aspects of digital applications.

Cellist Ellen Fallowfield's work will already be familiar to readers of this journal.[1] Her practically focused chapter is a refreshingly jargon-free introduction to 'extended technique', with an historical overview of multiphonic research for all instruments, before moving specifically to cello multiphonics. She gives a useful list of instrumental manuals and web resources from 1921 to 2020, 60 or so in all, with only the odd omission (for example, Matt Barbier, trombone 2016[2] and Sarah Watts, bass clarinet 2015[3]). Detailed work is in *TEMPO*, on her site Cello Map[4] and the CelloMapp app on the Apple App Store.

Scott McLaughlin's approach in the 'The Material Clarinet' (part of an Arts and Humanities Research Council project, The Garden of Forking Paths[5]) is to explore areas that most players spend their lives practising to avoid, 'the indeterminacy of the clarinet: the unpredictable phenomena found across the strata and seams of clarinet sound-production' (p. 70). He moves away from 'normal' playing towards allowing the player and the instrument 'in-the-moment to determine possible paths… sonic forms hidden in resonant-material potentialities' (p. 71). McLaughlin pushes the instrument and the player's unique 'technique', seen 'as a physical system in an embodied instrument-player assemblage' (p. 72), by exploring all the multiphonic and harmonic possibilities. But what I like here is his view that these are not 'extended techniques', noises grafted on to traditional technique, but something quite different, 'that bring[s] everyone – the player, the instrument, the listener, and the composer – further inside the instrument, stripping away layers of imposed musical abstractions' (p. 74). He describes in detail the acoustics, harmonics, venting, under- and overblowing and multiphonics but with something much richer and more nuanced in mind than tired modernist tricks in the relationship of the player to a traditional acoustic instrument that has much to offer in what he calls the 'moment of invention'.

James Mooney gives us an excellent chapter on Hugh Davies and looks at the little documented area of new instruments (mostly electronic, invented in the twentieth century), but

[1] *TEMPO*, 74, no. 291, January 2020.
[2] https://mattiebarbier.com/resources/faceresectiontextfinal.pdf (accessed 25 May 2022).
[3] www.sarahkwatts.co.uk/home/index.html (accessed 25 May 2022).
[4] https://cellomap.com (accessed 25 May 2022).
[5] https://forkingpaths.leeds.ac.uk (accessed 25 May 2022).

specifically Davies' 'instrumentalising' of everyday found objects using contact mics and different electronic treatments. Davies began with tape pieces in the early 1960s but the period he spent as an assistant to Stockhausen (1964–66) seems to have sparked his work with live electronics. For Davies the skill of playing an instrument was also 'an instrument *building* skill as well as an instrument-playing one' (p. 263).

Eight further chapters are about electronic and digital instruments. Carsten Wernicke in 'The Role of Acoustic Instrument Metaphors in Digital-Material Musical Interface Designs' begins by replacing the term 'musical instruments' with the rather cumbersome 'MusickingThings' (from Johannes Ismael-Wendt's 'MusikmachDinge'), a term meant to be all inclusive: any 'tool', digital or physical, can be made to produce a noise for 'musical' purposes. The focus here is a German Ministry of Education project[6] that looks at teachers' responses to using digital instruments. This is not about software or apps but those strange commercially available digital instruments, usually percussion, that can be 'played', such as Roland's El Cajon or the Eigenharp Tau and Pico. The question was about the impact these had on the teachers' skill in playing traditional instruments, and a comparison of the two. It seems the participants, all competent, trained players, didn't take to these new instruments for reasons mostly to do with the interface and the surprisingly limited sounds they produce.

Marc Estibeiro and David Cotter in 'The Guitar Reimagined' reimagine the classical guitar with a specific electronic treatment. Unfortunately, after a lengthy and mostly redundantly simplistic preamble, we arrive at a 'reimagining' which simply takes guitar pitches as triggers for electronic sounds – we've been here before. Anne Veinberg and Felipe Ignacio Noriega's work with live-coding and algorithms in real time is much richer in possibilities, using the CodeKlavier, which, in simple terms, takes a real piano keyboard to input code rather than a computer keyboard. The piano for them is just another interface, like using a touchscreen, or sensors on dancers, but the difference is that the pianist plays music on the keyboard that turns into code rather than the reverse. Specific piano motifs relate to sentences of code: one note, a chord, a sequence, a tremolo and so on. The keyboard uses MIDI, so the pianist 'must give attention equally to both code and the overall musical narrative' (p. 319), and the challenge is to code and 'maintain one's artistic goals' simultaneously. In a sense it isn't that far from playing prepared piano, where it takes a while to 'learn' that the pianist's actions results in quite different sounds.

Ewan Stefani gives a useful history and description of the analogue synthesiser, particularly its recent resurgence, with cheap versions of classic 1970s machines such as the Minimoog and Korg making a comeback. Historically, they were often add-ons for rock and jazz keyboard players, but were also used by a number of composers, Subotnick and Radigue, among others. Stefani takes us through the design and uses and then compares ten currently available synths, concluding that 'Modern instruments offer an affordable pathway to experimental electronic music and an alternative to computer-based approaches to composition that has been largely overlooked in academic research' (p. 355). Sébastien Lebray gives a carefully researched account of French house music, a Parisian style that ran from 1994 to 2002 and was characterised by, among other things, the Roland drum machine and synthesiser and the use of filters and hip-hop style samples. Slavisa Lamounier and Paulo Ferreira Lopes give a detailed account of their Digital Sock – wearable technology and sound control through four pressure points on the foot. Foot-activated electronics has a long history, and this is another digital interface of the wearable variety. The authors take us (exhaustively) through its development, although there seems to be little reference to any 'music' created. In the final chapter Diana Cardosa and Lopes wrap up the book with 'Reflections on Digital Musical Instruments', and, while stating that there needs to be a way to assess the artistic potential of any new instrument, their overview seems a rather vague, impersonal survey that reads a little like a government report with no mention of specific instruments, performers or composers of whatever style.

Six chapters give historical musicological and philosophical approaches. In 'Rethinking the Pipe Organ' Andrew Blackburn tells the organ's story of composer-led musical developments (since the fourteenth century!) and the technological changes and innovations in the building of new organs. He sets out the current state of play but with only a short section on extended techniques, which deals, disappointingly, mostly with old new music: Ligeti's *Volumina*, for example. A section on digital processing brings us a little more up to date but there doesn't

[6] www.leuphana.de/en/portals/midakuk.html (accessed 25 May 2022).

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seem to be much 'rethinking' going on here. Temina Cadi Sulumuna's chapter looks at the harp in the nineteenth century, with a discussion of the opposing camps in support of either Naderman's single-action pedal harp or Érard's double-action. Stephen Husarik explores Beethoven's Sonata no. 32, op. 111, particularly the second movement *Arietta* with variations, in relation to Beethoven's Broadwood piano, now housed in Budapest's Hungarian National Museum. Husarik's emphasis is on the pedals of Broadwood's piano, stating that by comparison with the metal-framed modern piano the 'clarity and colouristic effect[s]' (p. 161) have been lost. Guitarist Stefan Östersjö's 'The Vietnamese Guitar: Tradition and Experiment' recounts the history of the Vietnamese guitar and its music, its tuning systems and a rethinking of the instrument during the twentieth century resulting in a hybrid music exemplified in a particular song that has 'undergone a radical set of transformations since the 1920s' (p. 167).

Olaf Hochherz's 'Instruments in Musical Experimentation' looks at the role of instruments in experimentation, using Hans-Jörg Rheinberger's ideas about scientific experimentation, particularly his 'experimental systems', where research is not a one-off laboratory experiment but a web of interlocking and interacting practices that involve the tools needed, the theories that drive the questions and then what results. For music, this kind of work might be what Husarik is doing with Beethoven or McLaughlin with his own pieces written for specific players. The chapter largely retreads Rheinberger, and Hochherz doesn't answer his own research questions; rather, he tells us that musical experimentation is ambivalent in sound, use of tools/instruments and discourse: 'These ambivalences can be resolved in concrete practices but because it may not be possible to communicate them, musical experimentation often remains opaque' (p. 208), which isn't terribly helpful and probably isn't true anyway. Katharina Schmidt in 'Situated Conversations: Rethinking Musical Expertise' also rather sidesteps her initial topics of 'mastery', 'virtuosity' and the idea that 'instruments gain specific agency, appearing as a collaborator rather than being thought of as a tool' (p. 212). What she gives us is something more ecological about musicians connecting with instruments and spaces and interacting with machines. This is about the digital world. There is also a description of feedback music and its long history from David Tudor onwards. 'Mastery' and 'virtuosity' are relegated to a long footnote from where we are pointed towards Nick Cook(!).

The volume also has rather a shaky start, unfortunately. The first two chapters discuss in detail aspects of playing that performers themselves might deem self-evident and not worthy of analysis. Despite both writers being players, this is the kind of 'research' that gives musicologists a bad name among so-called 'pure' performers who (to generalise at the risk of serious oversimplification) tend to have that divisive attitude 'those who can, do; those who can't. . .', etc. These two chapters also aren't helped by their written style, which is often unnecessarily elaborate – always a tell-tale sign there may be little of substance, as is the camouflage of references to alternative extramusical theories on which thoughts can be hung. This is a standard conference-paper technique of course, and a number of other chapters fall into this trap, where the writer starts with the usual philosophical suspects (in Chapter 2, Judith Butler, among others) before landing in the musically mundane, which is what their paper is actually about. One really does sigh at a sentence, in Chapter 2 again, that contains both 'epistemological' and 'ontological', with only 'teleological' missing to complete the music academic's holy trinity.

Doğantan-Dack, in 'The Piano as Artistic Collaborator', opens the volume with what might seem a slightly strange view of the solitary pianist: the solo recitalist who feels 'lonely' on stage, referring to psychological work on anxiety in music performance prompted by an offhand remark from Martha Argerich. Musical performer anxiety continues to be an overworked area of research in music psychology and is usually confined to classical solo performance, often conservatoire students playing under public (or examiner) scrutiny – so, not someone like Argerich. Doğantan-Dack's response to solo-pianist loneliness is that the piano itself, its physicality, should be seen as an actor/companion or an 'artistic collaborator': 'I argue that phenomenologically the pianist and the piano are interdependent in co-determining each other as musician and musical instrument respectively' (p. 1), which, one would assume, is obvious, as is the following: 'the piano does not exist as a *musical instrument* prior to its emergence in the kinaesthetic-affective consciousness of the pianist, who constructs its instrumental identity through embodied interactions with it' (p. 1). This sentence may well be a candidate for *Pseuds Corner*: put simply, pianos, like all instruments, if they are not to be just furniture or fancy ornaments, are pointless unless played. What is more pertinent perhaps is the truism that academic musical discussion ignores – 'the

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singular origins of expressive music making is the interaction between the unique body of the performer and the unique material qualities of a particular instrument' (p. 4). By way of example, as a clarinettist I can vouch for the close relationship with one's carefully chosen instrument: the search for the ideal, then the right mouthpiece (more challenging), and the daily struggle with reeds. All players who blow, scrape, strum, hit with a mallet or even plug in their instruments will recognise this and have their own personal stories.

As far as loneliness and the piano is concerned, the solo recital is a familiar part of classical music-making, but it is just the same as, say, an author doing a book-reading tour, a solo theatre show, a plumber servicing your boiler or the postman/woman on their round – all are solitary jobs, only becoming shared at the point of contact: the audience, the concert promoter, the householder. This is simply a fact of many people's working lives and seems to me in no way different or 'special' for the musician simply because of some mysterious 'higher plain' called 'art'.

Her central point is that the instrument becomes an extension of the player's body and 'the performer *becomes one* with her instrument' (p. 5), except that pianists are different because they are almost never playing *their* instrument. As one would expect, every piano has its own personality that a player will have to negotiate – hence, collaboration: the piano may aid, hamper or change the player's interpretation. Expert wind and string players are, of course, always at one with their own instruments. Doğantan-Dack tacks on a final point about pianists' movements while playing – the hands and upper body in the space between the player and the piano that she calls 'we-space' (p. 12). In the second chapter Margarethe Maierhofer-Lischka, a double bass player, continues this theme of players' movements by discussing the technical challenges of the bass and 'the impression that my physical performance makes on my audience' (p. 20): her focus is on 'effort' in instrumental performance. She suggests that music performance is the same as dance in that both use movement 'to express emotions and personal characteristics' (p. 21). The comparison is rather a stretch: dance, choreographed and improvised, tells stories, whether abstract or literal; playing an instrument, as she says later, is about negotiating the mechanics of producing the sounds. The majority of players, orchestral particularly, use a minimum of movement, focusing only on what is needed to play, particularly in difficult passages. Many solo players move in response to the sounds they make but this, while sometimes unconscious, is generally the false play-acting of show business. Calling on research from dance, much that is self-evident in the solo performance of different musics is identified and intellectualised. Using Laban's 'categories of effort analysis', the double bass is obviously something that demands a great deal of arm movement and effort.

Maierhofer-Lischka uses Jacob Druckman's well-known early solo bass piece *Valentine* (1969) as a case study. The point of the analysis here is to 'consider the hypothesis that effort is not only a component emerging during the musical performance but a central force of agency in Druckman's work' (p. 33), which also seems self-evident of any virtuosic piece: it is a part of its purpose and is central to, for example, Ferneyhough's notorious solo works or some Globokar pieces that are devised to be physically impossible to play as written. Druckman's piece is part of the tradition of solo instrumental/vocal theatrics where the performer is given an acting role emphasising what takes place in the music. Apart from comparing two very different performances, nothing is described in terms of effort as a coherent part of performance that we don't already know.

A mixed bag of a book, then, as one would expect from conference proceedings rather than a commissioned volume from leading exponents, but with some fascinating material nevertheless and a handful of examples of real innovative work.

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