

Angewandte Forschung in den Künsten öffnet ein weites Feld von Möglichkeiten. In diesem Beitrag werden drei Projekte im musikalischen Kontext vorgestellt, die Aktualitätsbezug ebenso wie praktische Relevanz und transdisziplinäre Methoden aufweisen: von musikalischer Identifikation jugendlicher Geflüchteter über zeitgenössische Musikpraxis bis hin zur Gesundheit von Musiker*innen.

Applied research in the arts opens up a wide range of possibilities. This article presents three projects with a musical connection that are as relevant to the present as they are practical and transdisciplinary: from the musical identification of young refugees to contemporary music practices and the health of musicians.

For many researchers, the possibility that their research not only attracts immediate attention but also has aspects which hold out the promise of future impact and influence is a significant consideration. By describing particular features of three research projects, each located within the broad discipline of music, but reflecting varying specialisms within it and involving different research methodologies, this essay attempts to suggest ways in which potential in existing work can be recognised and furthered. The word 'realising' in the title is therefore used in both its senses – that of recognising and that of bringing to fulfilment. The three projects which are described in this essay as illustrations of research with potential for the future are all projects which have been designed and executed in ways which not only make their findings relevant to current situations, but also offer encouragement both for members of the current research teams and for future researchers – within and beyond the arts – to perceive and exploit the potential which they afford for further investigative work. Characteristics of the projects which appear to help to position them in this way will be outlined in what follows.

All of the researchers whose work is described in this essay can legitimately be regarded as engaged in work which contains elements of applied research (*angewandte Forschung*). However, none should be seen as falling exclusively into this category. All have undertaken work which challenges in various ways the distinctions conventionally drawn between basic and applied research. Here, basic research (research whose aim is increasing knowledge, which sets out to establish underlying principles and to establish theories without necessarily concerning itself with any immediate application of its findings) is sharply differentiated from applied research (which generally exploits the findings of basic research in order to address real-life challenges, and to develop solutions to existing or anticipated problems). While future potential is often regarded as intrinsic to basic research, all the researchers whose work is featured here have demonstrated through their work that future potential can be identified and exploited in research of both kinds. Rather than regarding these two types of research (and researchers) as fundamentally different, it would therefore seem wise to regard them as existing on a continuum. For many researchers, especially fruitful explorations have emerged precisely from a need to engage with both approaches at different stages and, where appropriate, to move between them both. This is certainly the case in the three projects described here. All can be seen as building on previous investigations undertaken by at least one member of their team. Some have included pilot projects prior to the main investigation; all embrace elements of basic and applied research.

Other features shared by the three projects described below, which have led to outputs offering interesting potential for the future and which therefore offer useful lessons for those aiming to increase the impact and standing of their own research activities, include:

1. The salience of the issues on which the project focuses.

All three projects address questions which have become increasingly significant within and beyond the discipline itself. In doing so, all three present their findings in ways that offer insights for colleagues working in similar areas and for society more broadly.

2. The constitution of the research team engaged in the project.

Each of these projects has involved a team of researchers – men and women – with different levels of experience, different educational and cultural backgrounds, and complementary skill sets. By involving early career researchers at doctoral and post-doctoral levels, these projects have also enhanced the likelihood that there will be concerted efforts to identify related areas of investigation – projects which, while building on the work already being undertaken by the team, offer potential for fresh lines of investigation and for career advancement.

3. Positioning within and beyond the discipline.

While each of these projects is firmly grounded in its individual branch of the discipline, each looks outward as well as inward. Each project has contributed new knowledge and new insights to its home discipline, thus providing possible lines of future investigation and wider application. At the same time, all three of these projects have confidently embraced interdisciplinary perspectives and have sought to explore how current thinking in cognate disciplines can help to inform and shape their studies. By working at the boundaries of their disciplines, calling into question both the objects of study and their methods for doing so, they have made it likely that their work will encourage new lines of enquiry.

4. Contextualisation.

A commitment to contextualisation was central to each project. Each has drawn in one or more partners able to offer appropriate experience and support and likely to assist in ensuring that the research and its findings reach out beyond the walls of an academic institution and find their way into the broader community. All three projects adopted approaches which sought to consider the wider social impact of their findings and ensure that the results of their work were presented in ways that enable those working in related areas to explore, interrogate, apply and, where appropriate, build on the conclusions of their research.

5. Dissemination.

These conclusions have been openly and generously shared. Dissemination has been central to the conduct of each of these projects and was given serious attention throughout. These are researchers who, from the outset, were keen to test their ideas with colleagues and to share their findings – during the project as well as after its completion. They have ensured that a variety of means has been employed to disseminate information locally, nationally and internationally. Printed material has been supplemented by online publications; journal articles by interviews, conference presentations and workshops; and audio recordings by video recordings (both of which help to make key elements of the research verifiable, demonstrable, repeatable, and available for others to explore and analyse for themselves). The scope for making material more widely available through open access has been embraced. In each case, the diversity of ways in which the work has been shared has helped to augment the extent of the future potential which the research affords.

The research undertaken by Ursula Hemetek, Head of the Department for Folk Music Research and Ethnomusicology at the Universität für Musik und darstellende Kunst in Vienna, has demonstrated these characteristics particularly strongly. Hemetek's research in the field now described as Applied Ethnomusicology² has for the past thirty years been based on music and minority groups.³ The scope for this work to produce outputs with the potential to serve as 'tools of intercultural mediation' is what has characterised her approach. Through her research, Hemetek has consistently sought not only to develop a deeper knowledge of the distinctive cultural heritages of minority groups but also – and equally importantly – to draw attention to the political and social contexts within which they exist. The projects which she has undertaken and led have offered potential for future investigations and forms of social action that have helped to transform lives and change perceptions and attitudes.

*Musikalische Identifikationen von jugendlichen Geflüchteten*⁴ ("Musical identification among young refugees"), a three-year research project conducted between 2016 and 2018, provides a powerful example of this. It was led jointly by Hemetek and Kölbl, a post-doctoral research assistant based in the Department for Folk Music Research and Ethnomusicology, and was supported by colleagues with relevant experience in key aspects of the issues. It was conceived in response to social and political reactions to the flow of refugees from Syria, Iraq and Afghanistan which came to the fore in Western Europe during 2015.⁵ This project linked the Department with a group of fourteen young men, predominantly from Afghanistan, who had arrived in Austria as unaccompanied minors and for whom the Universität für Musik und darstellende Kunst was providing temporary accommodation.

Building on the potential of projects conducted in the Department between 1994 and 2000 that had focused on the experience of Bosnian refugees, and drawing on the support of the Integrationshaus in Vienna⁶ as a partner, this project investigated through fieldwork – some of which is shown in this [video clip](#) – the importance of music and dance in the everyday lives of the members of the group.⁷

By focusing on the intercultural potential of music in this particular context, the project provides a telling illustration of fieldwork that not only offered insights into ways of learning more about the cultural identities of this group of young immigrants, but, by studying this within the context of the political and social circumstances in which they found themselves, also achieved the goal of confronting immediate pressing social and political problems. The hope that the project would be seen as having potential that others might grasp is emphasised by Hemetek in the closing words of her preface to the final report of the project:

*Wir als Forschende möchten jenen, die unsere Forschungspartner_innen sind, etwas zurückgeben. Deshalb erscheint es mir wesentlich, dass mit diesem Bericht kein Schlusspunkt gesetzt ist, im Gegenteil. Es haben sich neue Räume forschenden Handelns, oder handelnden Forschens eröffnet, im Sinn einer 'applied ethnomusicology', einer Ethnomusikologie, die gesellschaftspolitische Verantwortung wahrnimmt.*⁸



The concluding section of this report, while indicating how the project has not only provided material for basic research in refining existing conceptual frameworks, illustrates in extensive detail how, by opening “the doors to a relevant and promising field of ethnomusicological research”, the project offers a wealth of future potential. The vision is wide: it is hoped that the project’s future potential would arouse interest not only within the Department but also internationally, through a broader global cooperation and exchange of ideas, and by increasing understanding in the wider field of *Musik und Flucht*, as well as in the specific topic which the project addressed.⁹

There is ample evidence that this is already happening. Not only have fieldwork exercises undertaken by students in Vienna been shaped by the project, and papers describing the research awakened attention at international conferences, but further investigations of the musical activities of young refugees are being developed in conjunction with a Swiss university of music. Interest has also been shown across disciplinary boundaries: the findings of the project have led to invitations from the field of gender studies for articles on the relationship between music, migration and gender.¹⁰ The potential for social impact was also demonstrated when issues highlighted by research in these areas were given prominence in media coverage accorded to Hemetek as one of the two recipients of Austria’s Wittgenstein Prize in 2018, as a result of which a research centre for ethnomusicological research on minorities will be established, where the potential of such research can be further realised.

This project thus demonstrates how much can be learnt and how far-reaching the impact can be from investigations which focus attention on pressing social issues that are right at hand. The ways in which the findings of this project have been shared and disseminated have ensured that the questions raised continue to resonate and to attract attention both nationally and internationally.

Developing new modes of creating and sharing knowledge

A project that has demonstrated its future potential through the wealth and the variety of the material that it has shared with fellow researchers and with others interested in the issues is the recently concluded project led by Paulo de Assis and hosted at the Orpheus Institute in Ghent, Belgium. At the centre of this project, entitled *MusicExperiment21*¹¹, has been the contemporary performance of music; its subtitle, *Experimentation versus Interpretation. Exploring New Paths in Music Performance in the Twenty-First Century*, openly declares its focus and purpose. A five-year artistic research project, conducted between 2013 and 2018 and funded by the European Research Council, *MusicExperiment21* involved a team of seven researchers (including two doctoral students) who brought to the project different but complementary cultural, educational and national backgrounds.

The team element proved integral to the project’s design and execution. In place of the traditional individual researcher, *MusicExperiment21* identified itself as a “thought collective” (*Denkkollektiv*).¹² De Assis conceived this as “a group of artist-researchers working together,



mainly within the spaces of the host institution, but also in the preparation of outcomes (written or performative), and through web-based platforms (Research Catalogue)".¹³ For *MusicExperiment21* these working methods were significant – influential in the model offered to others, and essential for achieving what was proposed. The constitution of the team was also key to the capacity of the project to range beyond conventional disciplinary boundaries. As de Assis later reflected:

*Such thought collectives, each with a special 'thought style' (Denkstil), are fundamental to the production of knowledge in artistic research, moving beyond the individual 'genius' to more distributed modes of creativity and reflection, which liberate the production of knowledge from disciplinary compartmentations. They extend practice and reflection beyond disciplinary thinking, avoiding what Bachelard called the 'cantonisation' of science.*¹⁴

The generosity with which material from the project has been disseminated, and the variety of forms that this has taken, has been one of the notable features of this project. As the description on the project website indicates:

*The project had a substantial creative and practical component that led to several artistic realisations and outputs. It generated a great number of performances, lectures, recordings, essays, and books, pioneering open access publication modes, as well as innovative online multimedia expositions of research.*¹⁵

By focusing on experimentation in the performance of Western notated art music rather than on interpretation, this project offers almost limitless future potential, some of which was explored, documented and disseminated by the team in the course of the project. Among the resources available on the website is a series of case studies – performances developed by de Assis based on major works from the Western art music repertoire in which performance is approached as a process of experimentation and invention. One of these case studies, based on Beethoven's *Diabelli Variations*, led to a series of experiments entitled *Diabelli Machines*. In these, Beethoven's original composition (itself a work with which Beethoven experimented over time) is reconceived as a type of musical time machine. Performances were developed in which the experimental character of the work is exposed and explored by juxtaposing performances of the original variations with other works, some newly composed in response to them. The video clip, which presents excerpts from the first of these experiments, inserts into Beethoven's Variations works that are quite different in character.¹⁶ In de Assis's words, this produces

*a collection of heterogeneous elements that are diverse, but bundled together through specific relations and expressing a common feature: a newly conceived idea of 'variation', where the difference itself becomes the constitutive dimension. Inspired by the idea that different elements can be connected (articulated) or disconnected in order to create new, unexpected assemblages [...].*¹⁷



Another of the sub-projects undertaken within the framework of *MusicExperiment21* – in this case a project focusing on key works by the composer Luigi Nono, entitled *Con Luigi Nono: Unfolding Waves* – demonstrates the extent to which future potential has been created by developing new modes of producing and sharing knowledge, and through these, new and more diverse types of research methodologies – in particular, methodologies providing scope for the inclusion of aesthetic concerns. The material for *Con Luigi Nono: Unfolding Waves*, described as an “exposition”, first presented in the online *Journal of Artistic Research* as a series of seven modules, explicitly aimed through its sequencing to emphasise “the fluidity and continuity of the borders between ‘academic’ and ‘artistic’ practices and outputs”.¹⁸ As with *Diabelli Machines*, this material has been supplemented by CDs and listening material, eloquently illustrating these qualities.¹⁹

That the project offers a wealth of future potential both within and beyond the discipline of music, and in terms of both specific content and methodology, is convincingly demonstrated in the book *Logic of Experimentation*, produced by de Assis at the conclusion of the project as a means of clarifying “the musical- and performance-related conceptual achievements of the project.”²⁰ By adopting concepts of experimentation and focusing on problematisation of the work to be performed, the project aimed to challenge traditional approaches to the performance of Western notated art music (approaches which have tended to emphasise the pre-eminence of *Werktreue*). De Assis associates the salience the issues on which *MusicExperiment21* focused with a “transdisciplinary conjuncture”. These issues he sees as having been shaped not only by the attention being given to music performance and to artistic research, but more broadly by recent trends in contemporary philosophy. Increasing interest being shown in the outputs of *MusicExperiment21* by researchers in other arts disciplines, cultural theorists and philosophers, is further acknowledgement of a recognition of future potential.

This project offers valuable lessons both in terms of the approach to the creation of the team of researchers involved and in terms of the range of modes of dissemination. The diversity of backgrounds within the team brought together for *MusicExperiment21* helped to ensure that the approaches adopted could draw on experience and insights which ranged beyond conventional disciplinary boundaries and helped to demonstrate the potential afforded by alternative research methodologies. The project’s impact has also been enhanced by the deliberate exploitation of a diversity of approaches to the dissemination of research outputs. By employing a number of the varied possibilities offered by arts-based research, this project has succeeded in engaging the attention of practitioners and audiences as well as that of fellow researchers and academics.

The *MusicExperiment21* project has been forward-looking in every sense. The opening chapters of *Logic of Experimentation* put forward ideas in relation to an “assemblage theory for music” which invite further exploration, while its final chapter, challenging notions of the “contemporary”, urges artistic researchers to recognise and exploit its potential to “look into the abysses of the present in order to grasp its futures”.²¹ Since its conclusion, the work of this project has been continued and expanded under the banner *MusicExperimentX: Transdisciplinary Encounters In and Beyond Music*. As the project description for this next phase indicates,



future potential created by the earlier project is now being explored by placing the creation of music “in a space that transcends music itself, opening wider fields of practice and inquiry.”²² The intention is to create experimental performances which are shaped not only by musical elements themselves, but by exploring extra-musical or non-musical connections. This potential is being expanded by sharing the ideas more widely: *MusicaExperimentX* is now working with professional ensembles in various parts of Europe. The material, the thinking, the examples, the encouragement are there for others to explore as well.

Within and beyond the discipline

The third project selected as an example of research rich in its future potential is a four-year project entitled *Musical Impact: A Study of Musicians' Health and Wellbeing*,²³ conducted between 2013 and 2017, which was devised by Aaron Williamon, one of the two Directors of the London-based Centre for Performance Science. This centre, established twenty years ago at the Royal College of Music, now functions as an interdisciplinary cross-institutional collaboration between the RCM and Imperial College, where research across a wide range of domains is undertaken into major challenges and benefits in the sphere of performance and their implications for society as a whole.²⁴

Over the years, the Centre has undertaken a number of investigations concerning music performance. For these studies, where the focus has been on the demands made on those aspiring to become professional musicians, advanced conservatoire students (at graduate or postgraduate levels) have been centrally involved. These studies have proved fruitful in suggesting further lines of enquiry and in drawing attention to implications for public health, demonstrating the potential of such research to shape thinking and practice in other fields when that research is shared effectively and outcomes are disseminated.²⁵ A number of these smaller-scale projects provided groundwork on which the much larger *Musical Impact* project was able to build.

While team projects have been the norm for the Centre, *Musical Impact*, funded by the UK's Arts & Humanities Research Council as a project for *Conservatoires UK* (the umbrella body for UK conservatoires),²⁶ was particularly ambitious in scale, bringing together a sizeable team from institutions across the UK to collaborate on research designed to help enhance the health and wellbeing of musicians studying and working in Britain.²⁷ Team members – who included two doctoral students – brought to the project a diverse range of cultural and educational experience and perspectives and research backgrounds and skills, not all of which were acquired in the same country or the same discipline. From the outset, key professional bodies were partners in the research: these included the Musicians' Union, the Association of British Orchestras and the British Association for Performing Arts Medicine.

This project, organised in three interrelated strands,²⁸ each led by an individual Principal Investigator, aimed to focus attention on ways of encouraging long-term, healthy lifestyles through a close investigation of the physical and mental demands of music-making and their effect on musicians' health and wellbeing. The first work package, *Fit to Perform*,



involved a longitudinal study of physical and mental fitness for performance which used a series of in-depth individual sessions to engage over six hundred music students in issues connected with their health and wellbeing. Making Music, the second package, investigated the physical and mental demands of practising and performing, while the third, Better Practice, which looked at the physical demands on musicians during practice and in performance, brought together ideas on health promotion for musicians, both during their student years and throughout their professional careers.

Awareness of the potential afforded by this project for future research and development was enhanced by its design and the constitution of the team, by the partnerships established, and by what has been done to disseminate and share its findings. Over fifty presentations on the project have been made at national and international conferences. New technology to assist in monitoring musicians' health and wellbeing has been developed and shared.²⁹ And while articles have been published in significant professional journals and are available on open access,³⁰ a short video highlighting the key messages is also being produced for each published paper and shared on YouTube.³¹ Viewing figures confirm that the findings of the research are reaching a wider audience in this way. And interest is not restricted to the field of music and the performing arts. Recent invitations from leaders in professional sports training indicate that the potential of the work to inform and influence approaches in other fields is being recognised.³²

One of the most encouraging outcomes of this project, showing a realisation of the significance of the findings and their importance in helping to shape the future with regard to performing artists' training and lifestyles, has been the establishment of the Healthy Conservatoires Network. This is described in a video clip:³³

A new development, this network has been described as bringing together "key stakeholders from across UK conservatoires and wider performing arts sector to assist in maintaining, developing and supporting aspects of health promotion and occupational wellbeing for performing artists."³⁴ With a mailing list of over two hundred, regular attendance of about forty to sixty key stakeholders at its twice-yearly meetings, and interest being shown from other parts of the world, the network, whose aims focus on activities designed to promote good practice and collaborative research and development, already shows encouraging signs of building on the potential which the *Musical Impact* project created.

Perhaps most importantly, topics central to musicians' health and wellbeing, both physical and mental – topics that in earlier times were not often discussed openly – are now seen as meriting serious attention. Most UK conservatoires now include a focus on health and wellbeing as an integral part of their curriculum. In several, new appointments have been made to lead this work. In various institutions, doctoral and post-doctoral students are pursuing research on themes highlighted by the *Musical Impact* study. Orchestras and other organisations are giving greater attention to the issue of health and wellbeing for performing arts professionals.³⁵ From the start, this was a research project that looked outward. Its potential is increasingly being acknowledged. Its circles of influence continue to grow.



As with the other two projects, the design and the execution of the *Musical Impact* project not only reveal how much the researchers involved had learnt from earlier research investigations which they had undertaken in similar fields, but also embody lessons from which others can learn. In common with the other two projects, this project demonstrates how effective research can emerge from the adoption of a questioning approach to issues right at hand. The team of researchers was created looking outward, rather than inward; from the outset, dissemination strategies were devised in order to reach a diverse range of potential audiences. And, in the case of this project, the readiness to work collaboratively with partner organisations has helped to ensure that the potential of the research, begun initially with students, is increasingly recognised as having lifelong significance, both within and beyond the discipline.

Recognising future potential

The projects presented here as examples of research with future potential were quite long-term: all were designed, organised and funded to run for between three and five years. However, it is not necessarily the duration of a research project that is a significant determining factor in creating its future potential. Indeed, it could be argued that it is sometimes shorter projects that leave future directions signalled but unexplored.

The features that are likely to enhance the future potential of particular research projects are the significance and timeliness of the questions being addressed, the quality of the work, the widening possibilities that the research reveals,³⁶ the integrity of the researchers and their generosity of spirit and, within this, their commitment to the furthering of knowledge and understanding. Where these qualities exist, future potential will not be concealed but will generally be flagged by those who have undertaken the research. Their interest in seeing the possibilities of their work spread more widely and shared beyond the boundaries of the research that they have undertaken will often prove key drivers in taking forward what has been achieved. This is what helps to create the type of environment in which fresh ideas emerge and innovative work is produced.

And how can such future potential be revealed? The American commentator and statistician Nate Silver, when talking about good innovators, observed that, in his opinion:

*Good innovators typically think very big and they think very small. New ideas are sometimes found in the most granular details of a problem where few others bother to look. And they are sometimes found when you are doing your most abstract and philosophical thinking, considering why the world is the way that it is and whether there might be an alternative to the dominant paradigm.*³⁷

In this observation lie some of the clues to recognising the potential for the future that resides in research projects. It lies in the thinking. As was the case in devising each of the projects described above: think big, think small and, above all, question why.

- 1 I wish to express my thanks to Ursula Hemetek and Marko Kölbl (Universität für Musik und darstellende Kunst Wien), to Paulo de Assis (Orpheus Institute, Ghent) and to Aaron Williamson (Centre for Performance Science, Royal College of Music/Imperial College, London) and their colleagues for allowing their work to be featured in this essay, and for their assistance in its preparation.
- 2 Ursula Hemetek: Applied Ethnomusicology as an Intercultural Tool. Some Experiences from the Last 25 Years of Minority Research in Austria, in: *The Oxford Handbook of Applied Ethnomusicology*, ed. by Svanibor Pettan and Jeff Todd Titon, Oxford/New York 2015, pp. 229–277.
- 3 Ibid., pp. 271–272 for a list of the projects conducted between 1990 and 2010 focusing on music and minorities. For the work of the Study Group on Music and Minorities of the International Council for Traditional Music, see www.ictrmusic.org/group/music-and-minorities (all web-links in this paper last consulted 16 July 2019).
- 4 www.mdw.ac.at/ive/forschungsprojekt-refugees.
- 5 In the initial project application (2015), Hemetek described the situation as follows: “Derzeit beschäftigen Politik und Gesellschaft die großen Flucht-bewegungen aus Syrien, Afghanistan und dem Irak. Die öffentlichen Diskurse sind einerseits geprägt von politischem Populismus, Fremdenfeindlichkeit, von Vorurteilen und Nichtwissen. Auf der anderen Seite steht das Bemühen vieler zivilgesellschaftlicher und institutionalisierter Initiativen um die Integration der ankommenden Personen.” (“At present, politics and society are concerned with the great movement of refugees from Syria, Afghanistan and Iraq. The public discourse is on the one hand characterised by political populism, xenophobia, prejudice and ignorance, but on the other side by the efforts of many initiatives on the part of institutions and civic society to integrate the people who are arriving.”). For the initial description and the final report [Projektbericht] of the project see *ibid*.
- 6 See www.integrationshaus.at.
- 7 Marko Kölbl: Afgha-nische Männer tanzen Attan beim Konzert von Haroon Andeshwar, Festsaal der Volkshochschule Floridsdorf, 22 March 2017. www.mdw.ac.at/ive/refugees [Video-clip 2].
- 8 “As researchers, we should like to give back something to those who are our research partners. This is why it seems fundamental to me that this report does not have a conclusion. On the contrary; new spaces for research action (or active research) have been opened up in the sense of an ‘applied ethnomusicology’, namely an ethnomusicology that is sensitised to societal and political responsibilities.” Vorwort, Projektbericht, p. 2.
- 9 Ausblick, Projektbericht, pp. 34–36.
- 10 Marko Kölbl: Gender, Musik und Migration, in: *genderstudies. Zeitschrift des interdisziplinären Zentrums für Geschlechterforschung der Universität Bern IZFG* 33 (2018), pp. 8–10. A further article by Marko Kölbl will appear during 2020: Klänge, Körper, ethnische Markierungen. Othering und Interdependenz in migrantischen Musik-kontexten, in: *Marginalisierungen – Ermächtigungen. Intersektionalität und Medialität im gegenwärtigen Musikbetrieb*, ed. by Anke Charton, Björn Dornbusch and Kordula Knaus, Hildesheim/ Zürich/New York (Jahrbuch Musik und Gender, Vol. 12) (in print).
- 11 <https://musicexperiment21.eu>.
- 12 Use of the term by *MusicExperiment21* was influenced by references to the work of Ludwig Fleck in Hans-Jörg Rheinberger: *Towards a History of Epistemic Things*, Stanford, CA 1997.
- 13 For examples of the work of the team, see the series of *RaschX* research outputs, www.researchcatalogue.net/view/64319/64320.
- 14 De Assis, in a communication to the 2017 Society for Artistic Research Conference in Helsinki, see *ibid*.
- 15 <https://musicexperiment21.eu/>. For a summary of the achievements of the project, and the areas where future potential is seen to reside, see <https://musicexperiment21.eu/final-activity-report-march-2018>. Multimedia material from the project can be found on the website.
- 16 Paulo de Assis : Diabelli Machines 1. Unexpected Variations, Video file. ORCiM Festival, Handelsbeurs, Ghent, 15 September 2010. <https://musicexperiment21.eu/diabellimachines-1-unexpected-variations>.
- 17 *Ibid*. In an essay accompanying *Diabelli Machines* 8, ideas that informed this endeavour and the potential which it can offer for future experimental performance of Western notated art music are elaborated and shared. Material produced within this sub-project has also been shared through the Research Catalogue produced by the Society for Artistic Research, see www.researchcatalogue.net/view/302790/302791.
- 18 www.jar-online.net/archive?page=2. Also available at www.researchcatalogue.net/view/51263/51264.
- 19 <https://musicexperiment21.wordpress.com/luigi-nono-sofferte-onde-serene>.

- 20 Paulo de Assis: *Logic of Experimentation. Rethinking Music Performance through Artistic Research*, Leuven 2018, p. 11. This is an open access publication, accessible for free at <http://oapen.org/search?identifier=1001749>.
- 21 *Ibid.*, p. 211.
- 22 <https://orpheusinstituut.be/en/projects/musicexperimentx>.
- 23 <https://performance.science.ac.uk/musichealth>.
- 24 For an overview of the work of the Centre for Performance Science, see <https://peformancescience.ac.uk/research>.
- 25 For details of completed projects, see <https://performance.science.ac.uk/musichealth> which provides links to "related initiatives".
- 26 www.conservatoire.suk.ac.uk.
- 27 www.performance.science.ac.uk/MusicImpact/people.
- 28 Descriptions of each work package can be accessed on the project website. For a detailed account of the project, see <https://gtr.ukri.org/projects?ref=AH%2FK002287%2F1>.
- 29 Details of an iPad-based pain tracking app and a "do-it-yourself" hearing test kiosk ("Sound Screener") are included in articles published about the project (cf. end note 28).
- 30 Links to these can be found on the outputs section of the project website. It is planned that data collected by the project will also be made available on open access, in order that the potential of the research can be further exploited by other researchers.
- 31 Healthy Conservatoires channel, www.youtube.com/channel/UCKuf52cLEX3MuT3aor9qLBw.
- 32 An invitation to participate in the 2018 Leaders in Sport conference (see <https://leadersinsport.com/event/sport-performance-summit-2018>) has led to continuing discussions with leading international professional sports organisations. See also <https://leadersinsport.com/performance/leaders-performance-podcast-aaron-williamon>.
- 33 Healthy Conservatoires: Healthy Conservatoires Network, published 18 September 2017, www.youtube.com/watch?v=e3W3DpjPv4U.
- 34 See <http://HealthyConservatoires.org/Network>.
- 35 Consultancy provided by the project assisted the Royal Liverpool Philharmonic Orchestra in developing a Health and Wellbeing programme which it now offers its players.
- 36 See Georgina Born: For a Relational Musicology. Music and Interdisciplinarity, Beyond the Practice Turn, in: *Journal of the Royal Musical Association* 135/2 (2010), pp. 205–243, for a challenging view of where future potential for research in music may lie.
- 37 Nate Silver: *The Signal and the Noise. The Art and Science of Prediction*, London 2012, p. 106.