

Institution: Anglia Ruskin University
Unit of Assessment: 33 Music, Drama, Dance, Performing Arts, Film and Screen Studies
<p>1. Unit context and structure, research and impact strategy</p> <p>Overview and context</p> <p>Anglia Ruskin University's vibrant Music, Drama, Dance, Performing Arts, and Arts Therapies research environment, includes scholarly research and impact in four main clusters:</p> <ul style="list-style-type: none"> • Music Therapy, Music and Health • Neuroscientific study of Music and the Brain • Music Technology, Sonic Arts, Composition and Musicology • Theatre Studies, Performance and Dramatherapy <p>The clusters are strategically aligned with Music Therapy and Creative Practice which are two of Anglia Ruskin's (ARU) 11 priority research areas, identified in the Research and Innovation Strategy 2018-2020. These clusters are supported structurally by innovations during the current REF period. These include the establishment of the Cambridge School of Creative Industries (CSCI) in 2018, which brought together creative disciplines enabling and encouraging interdisciplinary research across a range of creative and technical courses. The establishment of the Cambridge Institute for Music Therapy Research (CIMTR) reaffirmed and strengthened the largest research centre of its kind in the UK, both as a central part of our research strategy and as a model of interdisciplinary research in and beyond this UoA, spanning arts and health research and engaging creative and technical expertise. The development of these priorities and the creation of the new School and Research Institute have been central to driving forward our research successes and developing our research strategy.</p> <p>CIMTR</p> <p>Professors Odell-Miller and Fachner lead ground-breaking, international research in personalized Music Therapy for people with dementia, and in Music and Neuroscience (see ICS1 Dementia). Emeritus Professor Oldfield continues research in the field of children and families with autism, culminating in her award-winning documentary, <i>Operation Syncopation</i> at the Cambridge Film Festival 2018 (see ICS2 Autism). The Institute is a sector-leading area of critical mass in research, which also supports the career development of post-doctoral staff. It has been at the forefront of new research in response to COVID-19 since March 2020. Two Music Therapy projects for people living with dementia and their companions have moved online; <i>Together in Sound</i> and HOMESIDE, a large, externally funded, five-country, randomised controlled trial (RCT) comparing reading and music interventions for people living with dementia. <i>Together in Sound</i> featured in BBC regional and national news programmes in April 2020, as providing a lifeline through virtual Music Therapy, to those experiencing isolation during lockdown. RadioME, an EPSRC 4-year funded national research project on assisted living technology for people living with dementia, led by Fachner with Odell-Miller and Street, is leading new research to reduce isolation and dementia symptoms.</p> <p>CSCI</p> <p>Formed in 2018 following a Faculty restructuring, CSCI brings together a wide range of disciplines to facilitate interdisciplinary research and innovative creative practice. The disciplines include Music and Music Technology, Theatre Studies and Performance practice. They link to, and are integrated with, CIMTR's research focus on Music Therapy, Music Psychology, Music Neuroscience and Arts Therapies. In addition, the School encompasses Film, Television, Computer Gaming and Publishing, bringing together a range of skills and expertise, united by a focus on creative research and applied skills. A diverse and adventurous array of outputs demonstrates the vitality and sustainability of the research environment created by uniting areas of strength previously dispersed through different faculties. For example, music provision within CSCI</p>

now sits within a discipline group with Audio and Music Technology, previously part of the Department of Computing and Technology in ARU's Faculty of Science and Technology. This change integrates additional engineering facilities and technology in audio analysis and recording tools into the range of resources supporting our unit's research.

The details of our four research clusters are:

Music Therapy, Music and Health

Professor **Odell-Miller** leads international research in Music Therapy for people with dementia, which informs and shapes policy. She also leads an international trial HOMESIDE. Dr **Pool**, and **Bloska** also work on HOMESIDE, researching homebased care for people with dementia comparing music, reading and standard care. Emeritus Professor Oldfield leads international Music Therapy research for children and families especially for those on the autistic spectrum.

Neuroscientific study of Music and the Brain

Professor **Fachner** has built a thriving research culture focused on neuroscientific research, investigating brain responses and rehabilitation via Music Therapy. Dr **Maidhof** specializes in EEG analysis showing synchrony in Music Therapy practice and music-making. Dr **Street** researches new approaches and technologies for Music Therapy Neurorehabilitation for people with stroke in NHS settings.

Music Technology, Sonic Arts, Composition and Musicology

Dr **Rhys** links computer music with acoustic approaches, composing in the enlarged tonal space of 19-note equal temperament. Dr **Banks** researches intercultural analysis, for example of Turkish music, and Dr Jackson (appointed 1992-2018) became an authority on Grainger. Dr Tarrant (appointed 2016-2019), a musicologist linking Psychoanalysis and musical analysis, launched a collaborative consultancy with the London Philharmonic Orchestra (LPO) producing introductory videos for the orchestra's repertoire.

Theatre Studies, Performance and Dramatherapy

Dr **Wilson's** research contributes to archival research of holdings at the Beckett International Foundation, and her research on Tristan Tzara/Dada, led to invited contributions to the *Yearbook in English Studies* (2020). Dr Ward writes on the French avant-garde and intercultural performance, Dr Lilley on community theatre and reminiscence, and Dr Dokter (appointed 2010-2017), Carr (appointed 2012-2018) and Condaris took new Dramatherapy and Migration Performance Research to the Edinburgh Festival in 2018. Dr Bouchard (appointed 2004-2017) was co-convenor of 'Performance and Science' for Theatre and Performance Research Association network (TaPRA).

Research Strategy

Our key strategic objectives for this REF period as set out in 2014 have been met, as reviewed below:

- promoting research, especially in the field of Music Therapy
- increasing external income
- increasing the level and quality of outputs
- increasing numbers of research students
- expanding research collaboration and partnerships
- maintaining public engagement and impact at a national and international level.

Promoting Research

We have achieved this nationally and internationally with extensive publications in high impact, peer-reviewed journals, linked our research to established partners (for example, in fields of dementia and neuro-rehabilitation). In line with the Faculty research strategy to increase cross-disciplinary and applied research, our focus on research in Neuroscience and Music Therapy is

designed to benefit stroke patients, people living with dementia and children and families with autism. In Music we have enabled the creation and performance of new musical works at the cutting edge of research. Concerts have provided opportunities for public exposure of practice-based research and featured collaborations between our creative practitioners and musicians of international standing. In 2020, the international orchestra Britten Sinfonia established its base at ARU enabling live briefs and research placements as well as performance and event management opportunities.

Our research is closely engaged with UK communities, impacting on wider society in addition to its academic rigour. Our international partners enable us to take our research into Europe, India and Australia.

From REF2014 to the present, research projects include:

- The NIHR funded international Music Therapy research project TIME-A for children with Autistic Spectrum Disorder (2014–17)
- The Music Therapy Charity (UK) funded project on Social Neuroscience research in Music Therapy (2015–18)
- Brain research funded by the Austrian Christian Doppler Society (CDG) with IMC Krems on Music Therapy interventions in neurorehabilitation (2016-2022)
- The EU Joint Program for Neurodegenerative Disease Research (JPND) which provided funding for a multisite project HOMESIDE, on dementia and caregiving between five countries, including UK, Norway, Poland, Germany, and is led by University of Melbourne, Australia (2019–22). ARU leads the UK arm for HOMESIDE
- RadioME, the UK-based Engineering and Physical Research Council (EPSRC) funded joint project into assisted living with dementia; led by the University of Plymouth's Centre for Computer Music Research, and the University of Glasgow's computer science team for Interactive Systems (2019–2023).

Leadership of research by CIMTR has succeeded in expanding and consolidating its international reputation, a key strategic priority of the UOA.

Increasing external income

Since 2014, we have attracted over £3 million in external research income with more than 20 partners. £952,000 of this is direct income linked to our UOA's research. Building upon our impact in care and health in the community, we have established (2014-2020) collaborative research contracts and memoranda of agreement with Saffron Hall Trust, MHA Care homes, Alzheimer's UK, Arthur Rank Hospice, Britten Pears Foundation (previously Snape Maltings) the Josef Ressel Centre (JRZ) in Austria, (2016-current), Addenbrooke's Hospital (within Cambridge University NHS Hospitals' Trust), five NHS Trusts recruiting for the HOMESIDE RCT trial, and the Westminster Drug Project. For HOMESIDE, we have established a new consortium with the Universities of Melbourne, Wurzburg, Krakow, and the Norwegian Academy of Music. The combination of Music Therapy and Neurophysiological research underpins CIMTR as a leading research institute with a worldwide reputation. CSCI staff contribute through expertise in Music Technology, and together, CIMTR and CSCI promote and develop ARU research strategies for external income.

Increasing the level and quality of outputs

We expanded research in areas such as Music and Neuroscience, Dance, Drama, Musicology and Music Therapy. This is evidenced through 48 publications, including 15 in high-quality, peer-reviewed journals, 8 books, and 25 book chapters.

Increasing numbers of research students

We significantly increased PhD student intake between CIMTR and CSCI. In REF2014, 1 completion was recorded, and REF 4a for this submission records 21 completions. Since the last REF period, our total number of new PhD registrations is 35.

Expanding research collaboration and partnerships

We have developed interdisciplinary research within the university: as well as Music Therapy's extensive collaboration in the health sector, internal collaboration has been enabled through partnerships across CSCI, with Computer Gaming, Writing and Social Sciences; through Research Institutes such as StoryLab and through our local networks (Cambridge Arts Network, Addenbrookes Hospital) and international partnerships. Following the 2018 restructure, researchers linked to Audio Music Technology BSc, now collaborate directly with staff and students from Music and Popular Music. StoryLab, which focusses on interdisciplinarity through technological experimentation, supports research projects and events involving Unit 33 staff. A new computer gaming partnership with Antarctic Heritage Trust and the British Antarctic Survey, Cambridge was formed, enabled by CSCI and StoryLab.

We forged strong partnerships nationally and internationally. **Fachner** is a member of the scientific advisory board of KenVak, a Dutch art therapy research organisation which collaborated with CIMTR on joint activities at the 2018 IFP World Conference of Psychotherapy in Amsterdam. We further established research partnerships in the exploration of new technologies for therapeutic work with people with autism, dementia, assisted living and end of life care. This includes the new partnership with Arthur Rank Hospice from 2019, and joint bids with European universities in Augsburg, Wurzburg, Genova, Genoa and Barcelona. Collaboration also includes the Centre for Music and Science at the University of Cambridge, Imperial College in London, the Nottingham University Institute for Mental Health, Plymouth University, and Glasgow University, SBV University in Pondicherry, India.

Maintaining public engagement and impact at a national and international level

Our researchers play a prominent role in the International Music Therapy Research Consortium, established in 2009, which brings together the world's leading institutions in research on Music Therapy. We have a vigorous programme of practice-based research activities, spanning conferences, visiting researchers, performances, and other public presentations (Section 4). Public engagement is promoted through annual events presented to practitioners, researchers and the public, in each country, leading international trends in practice.

CIMTR has a high public profile; our Social Neuroscience research on dementia featured in the BBC1 documentary series in May 2019, *Our Dementia Choir*, presented by the BAFTA-award winning actor Vicky McClure, with viewing figures of several million. The programme, as billed by the BBC, 'takes us on a deeply personal journey to discover the true extent of music's power in the fight against dementia'. **Odell-Miller** was live on BBC Radio 4's *Woman's Hour* hosted by Jenny Murray, with Prof Lauren Stewart (Goldsmith's College London University), and Grace Meadows, CEO of Music for Dementia, discussing Music Therapy research for people living with dementia as part of the National BBC Music Day, 26 September 2019, for which she was a member of the steering group. CIMTR researchers lead on the UK Strategy for music and dementia; **Odell-Miller** being an author and Commissioner for the strategy launched in 2018 in the House of Lords.

The development of a rich culture of musical performance and scholarship sustains and nourishes our research in composition and musicology. **Banks** performs regularly at the Globe Theatre, with ensembles ZRI and the Dufay Collective, and worked as composer-arranger for BBC Radio 4 broadcast *Sir Gawain and the Green Knight* (Simon Armitage, 2014). Jackson has performed Grainger's music widely and edited and conducted the first performance of UK composer Anthony Scott's Violin Concerto at Saffron Walden Concert Hall (2014).

Future five-year research strategy

We will continue to expand research in creative practice linked to regional, national and international trends, prioritising interdisciplinary research with applied outcomes across the range of the work of the UoA. Specifically, we will:

(i) Grow and maintain high quality outputs and diversify fields and grow research income by:

- Continuing to align with the research strategy of CSCI, focussing on contemporary research in emerging discourses. This benefits our rare combination of subjects, focussing on innovation and engagement with new technologies, such as VR, AR hyperscanning, and their potential impact on live performance, health, creative and therapeutic practice.
- Continuing consolidation of existing interdisciplinary research in the Arts, Health and Music areas, with funding streams secured through NIHR, MRC, EPSRC and JPND until 2024-26.
- Consolidating CIMTR as an International Centre of Excellence for Music Therapy, linked to CSCI research in Drama, Theatre Studies, Music Technology and Health Technologies. We will expand large international multi-centre research bids, by 2026. These research projects will be within key identified health priorities such as dementia, neurorehabilitation for children and adults, mental health and treatments for addiction.
- Following initiatives such as Innovate UK, and Arts Council's current strategy for arts and digital technology, and artificial intelligence (AI), we will continue to utilise research in emerging diverse technologies such as computer gaming, drawing on interdisciplinary groupings in and beyond the unit. We will extend our profile, reach and external income linked to CIMTR and CSCI research, leading initiatives to contribute and transform the new ARU research and impact strategy.

(ii) Develop staff who are completing PhDs and early career researchers:

- We will continue to increase national and international PhD and ECR recruitment through a project-specific cohort approach (already in place internationally for HOMESIDE). PhD recruitment will align to CIMTR, CSCI and University wide themes, which are linked to government priorities of Sustainable and Safe Communities, Emerging Creative Technologies, and Arts, Health Wellbeing and Performance. This will enable completion of relevant ground-breaking innovative research (see Section 2 People).
- Links with existing MA Therapies, and new Masters level developments in creative arts and technology, such as the MA in Music for Health will enable smooth pathways to doctoral programmes.

(iii) Develop impact work through enhancing partnerships through our impact strategy:

- As part of the 5-year strategy for CIMTR and CSCI we will continue the formation of specialized consortia, relating to applied technology in health-care settings, such as through our developing partnership with IBM and Care Home settings, including IP agreements for innovation.
- Each new research project must demonstrate impact within the appropriate sectors of health, social, voluntary, medical and humanities communities.
- With other university collaborators from Spain, Italy, Germany, Finland and The Netherlands and Australia and USA, in line with ARU strategy for development of new health technologies, we are modelling how Music Technology, Health and Music interventions of the future may change and develop.
- Investigating the use of AI, big data, machine learning, hyperscanning, real-time biomarkers and social interaction analysis during music-based interventions, our research will map the future of technological innovations in Drama, Movement, Music Digital Technology, Neuroscience and Music Therapy, as in current fields of research in CIMTR and CSCI.

Research ethics and integrity

All researchers, supervisors, Postgraduate Research Students (PGRs) and new staff undertake compulsory training in ethics and research integrity. Since much of the unit's research directly engages with members of the public, vulnerable people, older adults, or children, ethical rigour for research projects is paramount. Training is mandatory for legal issues such as recording data, and data security. Our strategic commitment to public engagement, in line with Principle 1 of the *Concordat for Engaging the Public with Research*, leads directly to adherence to the guidelines of the UK national *Concordat to Support Research Integrity* (2019). Prof Tony Holland, an international expert, works with researchers and PGRs on the 2016 Mental Capacity Act; CIMTR runs regular PGR sessions on ethics and publishing. Similarly, following the ARU Good Research Practice Guide, we ensure impartial interrogation of research honesty, rigour and transparency. In our human participant research, care and respect for all participants is primary. Participants living with dementia work with us in *Together in Sound*, RadioME, and HOMESIDE. They are involved in research planning, implementation and design such as video making. Clear information is fundamental to our projects such as our Neuroscience research, where informed consent must always be granted by participants, and visual and emoji designs are used to supplement the written word. If participants lack capacity to give informed consent, such as for our studies of autism and dementia, the principles and safeguards set out in the Mental Capacity Act (2016) are followed before approval is granted.

Open Access

The Unit actively supports the move towards open access and members benefit from university-wide services such as an annual £100,000 Open Access Fund for gold open access, and the ARU Online Repository (ARRO) for green open access. The unit gained £10,575 for Open Access gold publication which supported 6 journal articles between 2014 and 2020. The money supported **Fachner, Maidhof, Street, Pool**, and **Odell-Miller**, who published in journals *Frontiers in Human Neuroscience*, *Frontiers in Psychology-Performance Science*, *BMC Geriatrics*, *BMJ Open*, *Clinical Rehabilitation* and *Topics in Stroke Rehabilitation*, widening access and ensuring public, participants and academic communities gained new knowledge in timely fashion.

Researchers are on international editorial boards for Open Access journals such as *Frontiers* (**Fachner**), *The Nordic Journal of Music Therapy* and *British Journal of Music Therapy* (**Odell-Miller** and Oldfield). Unit staff have peer-reviewed across disciplines for a total of 20 journals in this REF period.

2. People

Staffing across this unit totals 15.11 FTE permanent posts, and 5 Research Fellows. 7.7 FTE staff work outside of CIMTR and similarly benefit from developmental initiatives and financial investment in their research. We are submitting 8.01 FTE staff carrying significant responsibility for research (SRR) in line with our institutional REF Code of Practice. Staff in Performing Arts, Computer Gaming and Audio Music Technology who have entered higher education with outstanding industry expertise are completing doctorates or have recently become ECRs. Alongside this, we have recruited early career researchers, such as **Street, Maidhof, Pool** and Rene-Aymami. This strategy is part of our commitment to developing research, researchers, and building industry partnerships. Colleagues at early stages in their career are supported, mentored and guided by professors and senior researchers across CSCI, CIMTR and the university. Since 2014, QR funds have been prioritized for REF output completion and for realising our impact strategy.

In theatre and performance practice, our research extends into interdisciplinary fields on health, medicine and community engagement. We have expanded our collaborative opportunities in the community through the appointment of Lilley (2015–present), whose research focuses on applied drama practice and community theatre. Lilley is an advocate of, and participant in, the establishment of the Reminiscence Theatre Archive in partnership with the University of Greenwich

and the European Reminiscence Network, a network for participants and researchers where reminiscing assists in every-day living and reflection. Former colleague **Bouchard** is a leader for the Chimera network based at Kingston University.

In CIMTR, when specific research and clinical experience has been gained, Research Assistants have been promoted to Research Fellows (**Bloska** 2019). Strategic appointments to Senior Research Fellow posts sustain and enhance areas of research strength. For example, **Street** and **Maidhof** were appointed in line with **Fachner's** international music and brain research, and **Pool** and **Street** linked to **Odell-Miller's** international dementia research. Demonstrating career progression, **Street's** PhD research at ARU was funded by the Faculty under a competitive Graduate Teaching Assistantship scheme. He was later integrated into CIMTR in 2017 and continued his research into stroke hemiparesis and investigating the effects of Music Therapy on agitation in people with dementia. **Fachner** has built a thriving research culture focused on neuroscientific research, investigating brain responses and rehabilitation via Music Therapy. Staff work with centres of excellence in Finland and Germany on his original research, in close alliance with **Fachner** on the brain and cognition.

Career development is a priority, in line with the *Concordat to Support Career Development of Researchers*. Professors have collaborated and co-authored journal articles with ARU researchers, on research projects contributing to the unit's research outputs and increased staff with significant responsibility for research. For example, **Odell-Miller** co-authored 2 articles with **Bloska**, (2018 and 2019).

The unit also seeks to facilitate secondments, for the benefit of staff profiles and to strengthen key strategic partnerships. **Street** was seconded to Addenbrooke's Hospital in Cambridge to undertake a research project on stroke rehabilitation and Hsu is seconded into the unit from Methodist Homes Association's (MHA) care homes as a Category C Senior Research Fellow. Both secondments demonstrate the long-term commitment of these partnerships, as well as facilitating colleagues' career development by combining research practice in real world applications. Having completed his PhD at ARU, Hsu became Music Therapy Lead at MHA care homes, where he developed an award-winning Music Therapy service (including the LangBouisson Award in 2015), where Music Therapy is used throughout the UK to diagnose and treat the Neuropsychiatric symptoms of dementia. To further enrich this research environment and partnership, we hosted two international Visiting Research Fellows, Mangiacotti and Morales between 2014 and 2016. Mangiacotti is now also engaged with a clinical research project with MHA.

We work very closely with the Research and Innovation Development Office (RIDO) which enhances and supports our research environment, ensuring best practice by providing advice and guidance on intellectual property, bid-writing, impact, partnership, development, and research ethics and integrity. RIDO's Staff Researcher Development Programme is mapped onto the Vitae Research Development Framework, designed to promote and support all research-active staff. Training ranges from mandatory training in research integrity and the supervision of doctoral students, to an introduction to the REF, writing research proposals, preparing external research funding bids, understanding intellectual property and methods for enhancing research impact. Less formal subject specific development opportunities and structured series of research events are attended regularly. Postdoctoral fellows and clinical research fellows organise conferences, lead and contribute to new bids, and lead the public visiting lecture series. As a result, they are regularly invited to join international working groups such as the International Music Therapy Assessment Consortium (**Pool**). **Pool** is also invited Chair of the research section of the European Independent Neurorehabilitation Providers Alliance, demonstrating how CIMTR facilitates international profile development for ECRs. The programme facilitates expansion of the staff base of doctoral supervisors, including all eligible staff as supervisors and examiners.

Research activities are enabled by the allocation of dedicated research hours within the Annual Work Balancing Model (AWBM). A standard allocation is 200 hours, and staff have one day a week during semesters kept free of scheduled activities, allowing regular pursuit of research across the

academic calendar. The AWBM ensures staff have research activities properly quantified and rewarded.

The unit won 10 sabbaticals since 2014. As well as supporting teaching cover, sabbaticals bring funding of up to £10,000 per award, research costs, and specialist equipment enabling completion of projects. Sabbatical leave is available for one trimester during a three-year cycle and awarded on the basis of quality and potential of the proposed research and impact outcomes.

Staff development for newly recruited colleagues includes research mentoring. Our 4 postdoctoral fellows are mentored by Professors **Fachner** and **Odell-Miller**, enabling 100% success in completion of probationary periods. Under ARU's Early Career Research Charter, which operates for five years from the award of a PhD, or first academic post, the time allocated to research in the AWBM is 500 hours for at least 2 of those 5 years, with the other 3 years allocated 200 hours. In one teaching trimester, ECR staff are also granted one day without scheduled activities to facilitate the development of their research profile.

Academic staff are asked to compile an Individual Research Report on outputs, impact, work in preparation and external funding bids for research income as part of annual appraisal, with achievements in the past year and future plans outlined. The research activity of each staff member is an important part of the discussion with an appraiser, and targets are negotiated as guided by the Faculty's Deputy Dean for Research and Innovation, reflecting School and institutional priorities. A strong research record provides a clear pathway to promotion and increasing seniority in an academic career within the School.

Research Students

We recruited 35 PGR students into our vibrant community between 2014 and 2020, resulting from our research impact in REF2014. Our PGR body includes 5 new fully funded Vice-Chancellor PhD Studentships arising from the institutional Research and Innovation strategy. These are awarded through a competitive process and are attached to our internationally funded research grants from the Alzheimer's Society UK and Engineering and Physical Sciences Research Council (EPSRC), for research on the RadioME, HOMESIDE, and *Together in Sound* projects as part of our strategy prioritising Music and Brain, Music Technology, adult mental health and dementia. With QR funds, we further established five of our own fully funded studentships, plus fees-only bursaries for 6 students across our research areas. Engagement with external agencies enabled the funding of PhD students in the CDG Research Excellence Centre (Austria), and for HOMESIDE international study, where there is a cohort of 10 PhD students across 5 countries. These links to PGRs in other countries are a deeply enriching process for PGRs and staff in the unit. We recruited 2 PhD students following their work as music therapist researchers on the externally NIHR funded international research study, TIME-A (Section 3). Commitment in time and funds from external grants and agencies, contributes to this process.

Following the retirement of leading Dramatherapy researcher Dr Ditty Dokter in 2018, and to strengthen the research culture in Performing Arts, we appointed excellent and highly experienced practitioners (e.g. Condaris), embarking on early research careers by enrolling on PhDs. Internally supervised PhD research fees are waived, and a reduction in teaching duties granted for the probationary period. Where the doctoral specialism of the new staff member requires external supervision, their fees and costs are covered.

Research training offered to PGRs forms an extensive programme established and run by the ARU Doctoral School, based on principals expounded in the *Concordat for the Career Development of Researchers*. Our unit runs regular seminars where subject specific presentations are made from internal and external staff. CIMTR has a student-led PGR special interest network covering technology, meaningful moments, music analysis, EEG measuring and music and dementia. The annual ARU PGR conference is a shared forum where all our PGRs present papers, enabling research development. They participate in induction processes and thereafter complete training for

effective presentations for conferences, follow an advanced course in academic writing, receive detailed guidance in thesis production and examination preparation, and are introduced to the legalities of intellectual property. PGRs also receive compulsory training in ethical practice and research integrity. This leads to employability and timely completion. Past PGR students in this period have achieved jobs and roles such as head of a university training course, head of a national Music Therapy service, and advisor to the Italian Government on music and dementia.

PGRs have open access to their own study rooms, with networked computers and free printing for draft work and the final thesis. They are invited to apply for QR funding for conference attendance, with 95% successful in their bids for up to £500. ARU's internal Arts Council also supports creative aspects of PhDs in Drama and Performing Arts; for example, in 2018, £4,000 was awarded for a public performance with a cast of 50, commemorating the 50th anniversary of the assassination of Dr Martin King Jr. produced at Zion Baptist Church in Cambridge. Staff receive training prior to taking on supervision for PGR students and undertake refresher courses, fostering excellent final thesis and portfolio submissions. Supervision is conducted by teams, with at least two supervisors available to the student as subject experts and often a third, in some cases from another discipline within ARU, such as health, education and medicine, psychology, or engineering. Monitoring and support for PGRs is continuous from the proposal, through regular deadlines for successive chapters, up to completion. PGRs receive at least 24 hours of supervision per calendar year with regular meetings scheduled monthly, and each fortnight during COVID-19, since March 2020. PGRs produce a Personal Development Plan for review and advice by the supervisory team, and their progress is monitored annually by senior staff independent of their discipline area. This provides an impartial forum where PGRs can raise concerns about their supervision and the supervisory team can do the same. Most unit PGRs start at MPhil level, and application to upgrade to PhD is a further opportunity to measure progress and for the student to receive extensive feedback from subject experts outside of their supervisory team. VC students in particular are part of research teams, delivering interventions, leading public and participant committees, and developing academic and clinical skills.

Equality and Diversity

The unit has an international staff who have been educated or held posts in higher education in South Africa, New Zealand, Greece, Denmark, Germany, Canada, Taiwan, Finland, Austria and the USA. Education or creative work has also been undertaken in India, Turkey, the Czech Republic, Spain, Portugal, Australia, the Middle East and the USA. This multicultural network prepares our students for diversity in the workplace and for the international professional community. PGRs come from around the world, including New Zealand, Asia, USA, Canada and Europe. CIMTR's international research attracts experienced practitioners. Our strategy is to link funded opportunities to our existing international, large externally funded research projects such as HOMESIDE and RadioME.

Our diverse groups of PGRs are drawn from all seven continents into a community of researchers brought together in their programmes of training, postgraduate conferences and research seminars shared by CIMTR and CSCI. One PGR, from an industrial engineering background, leads new forms of analysis of Music Therapy audio and video from sessions, another runs an interculturally focussed theatre company with support from the Arts Council, a third is a teacher specialising in adapting Music Technology and Gaming for people in stroke rehabilitation. Academic and professional staff are trained to support PGR students with protected characteristics, particularly special learning needs associated with dyslexia, or conditions in anxiety or depression. ARU has implemented mechanisms to allow a cause for concern to be rapidly communicated to counselling services by supervisors and tutors.

At institutional level, ARU gained an Athena SWAN bronze award in 2015 (renewed in 2018) and included information from our unit research staff and students. A flexible working policy accommodates staff and PGR student needs with parental or other caring responsibilities. Especially during the COVID-19 period of lockdown, we have supported several PhD students and

research staff with adjustments for parental and care duties, moderating hours and work loads. Our procedures also provide a phased return to work for staff from maternity or parental leave, with pre-arranged 'Keeping in Touch' (KIT) day visits organised prior to resumption of full-time duties. Three periods of maternity leave for our staff have been managed in this way.

Our HR department promotes numerous staff networks with a remit of installing equality and diversity policies and ensuring good practice across the university. These include a Women's Network, a Part-Time and Flexible Working Staff Forum, a BME Network, LGBTQ+ Network, including new plans for an LGBTQ+ Research cluster, and a Disabled Staff Network. Odell-Miller has mentored the lead Professor for the new ARU LGBTQ+ research cluster. In all areas, we strive for equal gender balance across the unit research teams. We promote awareness of disabilities and this has raised the profile of staff with disabilities. We actively implemented our Job Interview Guarantee Scheme for disabled applicants who meet the essential published criteria and offer flexibility in working practice for a successful disabled applicant. Each network above is influential in ensuring equality and diversity are not merely aspirations, but have a direct impact upon the treatment of staff in terms of recruitment, promotion, equitable workload and support for research pursuits.

As an inclusive employer, PGR and staff researcher recruitment interview panels are gender-balanced with all members trained in equal opportunity policies, the importance of diversity and inclusivity in the staff body and the potential influence of unconscious bias.

3. Income, infrastructure and facilities

Our strategy for securing external research funding is based upon international partnerships, allowing a pooling of expertise to cover all aspects of the projects pursued. Researchers regularly peer review for international journals, creating by doing so professional links which benefit our income generation. The clinical and international academic consortia infrastructure supporting CIMTR in Cambridge, for example, is crucial to the success of our major and prestigious bids, such as from NIHR, MRC, EPSRC and JPND. Collaboration between universities in the UK and internationally, (e.g. International Music Therapy Research Consortium), is evident in the successful bids below. In each case, their motivation is to contribute to society in the form of healthcare interventions for people living with neurological disease or injury and their wider families' wellbeing.

Music therapy research activities have resulted in significant levels of private donations and research-related income, amounting to approximately £2million new external income between 2014 and 2020, in addition to the donation in 2013 of £1million for the new state-of-the-art, Jerome Booth Music Therapy Centre (JBC), the benefits of which are still being felt. This is the base for CIMTR research and partnership clinical Music Therapy sessions; and Masters and PhD Dramatherapy and Music Therapy training. The completion of JBC provides us with a unique university-based clinic, which has enabled an expansion of the quality of our engagement with local communities in the provision of Music Therapy and Dramatherapy. JBC, including CIMTR's newly designed, equipped and evolving Brain Lab (2015-2020), enables us to engage in national and international research projects impacting upon health and social care. This has doubled our specialist research advice in Music Therapy to the public and private health and social care sectors.

Our other continually developing facilities add to our bid success and infrastructure. Our strategy (2013-2020) for expanding subject-specific spaces includes a refurbished Recital Hall, redesigned Mumford Theatre, a Drama Studio, as well as six recording studios, a dance space, Mac labs and access to film and television studios, media equipment, VR and AR equipment and software. In Drama and Performing Arts, ARU's Mumford Theatre has been brought into CSCI, relaunched in January 2020, and is now co-led with students within our research focussed artistic strategy. In June 2017, Neil Blower's *Shell Shock* (produced by Smokescreen Productions) was performed as part of a post-doctoral study on post-traumatic stress disorder. A public Q and A event and

publication followed. PGR and other students develop their research and practice/performance skills in venue management, marketing, technical theatre and stage management. The theatre hosts weekly concerts, involving professional players, as well as staff and students, and we also make use of our re-furnished recital hall and venues around the city of Cambridge and beyond to present our musical performances and research. Jackson led the public launch of the Ruskin Song Book for the 25th anniversary of ARU in 2019 in the Recital Hall, in collaboration with performances by professional singers and Cambridge researchers. The spaces enable new and experimental cross disciplinary work which can be delivered by professional performers, staff and research students.

Our unit's international profile and reputation in Music Therapy has generated a significant level of external research income, including £500,000 awarded for the TIME-A International Music Therapy and Autism RCT multi-centred trial (a joint bid with Imperial College at London University in 2014). £200,000 of this grant was for the East of England arm of the trial, with **Odell-Miller** as Principal Investigator and Oldfield as Clinical Supervisor. £110,000 was awarded by the Music Therapy Charity for researching neuro-correlates and music during dyadic improvisation. Our international funding strategy and priority for supporting high level presentations from our keynote researchers, has enabled worldwide presentations in Canada, USA, Europe, and Asia. €221,000 was awarded to CIMTR following **Fachner's** successful bid for an Austrian Research Council grant (CDG) in collaboration with the University of Krems, Austria. £25,000 was won in 2017–2018 to produce and tour *Shell Shock*, a war-veteran drama project. LIBOR is one of the funders for this, as distributed by the Ministry of Defence. **Street's** secondments as part of our unit partnership and secondment strategy for new researchers and research, raised £30,000 from Addenbrooke's Charitable Trust (2017–2019) for an investigation of the efficacy of Music Therapy for acquired brain injury for people with stroke. **Odell-Miller** led the UK arm, and gained a bid to the EU Joint Programme in Neurodegenerative Disease Research (JPND) led by University of Melbourne and 3 other universities in Germany, Poland and Norway, for £1.5 million overall (£367,000 from Alzheimer's UK for ARU for the UK), funding for the project HOMESIDE: Partnerships in Dementia Care. Further developing our strategy for prioritising music and dementia research, in 2019 **Fachner** and **Odell-Miller** (CIMTR) secured £806,179 from a successful EPSRC bid, RadioME for £2.7 million shared by four UK Universities, to design a personalised radio station for people in the early stages of dementia.

A further local facility, Saffron Hall Trust, an Essex-based concert venue, is involved in a partnership with CIMTR extending into the 2020 *Together in Sound* project, a ten-week Music Therapy group for people with dementia and their carers, undertaken by **Odell-Miller** and Molyneux. This is a joint-funded initiative supported by NESTOR, the Arts Council and private donors. In March 2020 this moved successfully online and was featured on BBC 1 TV headline news (ICS 1 Dementia).

4. Collaboration and contribution to the research base, economy and society

We have a vigorous programme of academic and practice-based research activities, spanning conferences, visiting researchers, performances, and public presentations. Conferences hosted include the *first* international conference on Music Therapy and Dementia in 2015, and the Role of the Arts Therapies in Dementia Care in the 21st Century. The latter was held in collaboration with the International Centre for Research in the Arts Therapies, MHA care homes and the British Association for Music Therapy. Over 300 delegates from across the international sector attended this three-day event, enhancing CIMTR's reputation as a centre for world-leading research collaboration and knowledge. Psychodynamics in Dramatherapy Supervision and Use of Texts in 2014 were also hosted in the unit.

Further innovation was evident in First Sounds: Rhythm, Breath and Lullaby in 2016, which explored the use and efficacy of Music Therapy in Neonatal units. In 2017, the International Consortium for Music Therapy Research Symposium, attracted twenty-two leading international researchers in Music Therapy in collaboration with health commissioners and Health Education

England. In 2018, we ran a pedagogic research symposium on innovations in assessment and feedback in Drama and Performing Arts in partnership with the University of Greenwich. 2019 saw the first international conference on Arts Therapies and Brain Injury in collaboration with the International Council for Arts Therapies Research. In early 2020, Lilley and Rene-Aymami created Platform East to support artists and graduate students in developing professional work for community projects and professional theatre circuits.

Our continuing lunchtime concert series has showcased new music by Ryall (2017) performed by the acclaimed pianist Xenia Pestova, and new works by Hanspal whose CD release *Only Two Things Are Infinite* (2018) was recorded with Miles Davis' musicians Bill Evans and Mike Stern. Our active participation in the Cambridge Festival of Ideas has featured premieres of other works such as the experimental opera *The Colour Blue* (2018) composed by Spagnolo, directed by Ward, and algorithmic music responding to real-time EEG data by PhD researcher Hofstadter. Use of scientific data to compose music is also the focus of PhD researcher Chaggar, whose music featured in 2018 and 2019 on CD releases on Naxos and Warner records.

We encourage diverse modes of presentation for research outputs through dynamic media such as TV and radio to maximise impact. In 2019, Tarrant launched a collaborative consultancy, the first of its kind, with the LPO: a six-minute introduction to William Walton's First Symphony, which was distributed to the orchestra's 300,000 followers via social media. The development of computer software for the creation of music is an important focus of other staff. Compositional software has been created by **Rhys** (Section 1). Other musicological research focuses on the music of pioneering composers of the 20th century including: a series of papers by Jackson on the music and ideas of Percy Grainger; work by Hanspal (2015) on the music of Frank Zappa; and papers by Hall on the music of Morton Feldman, Harrison Birtwistle and Peter Zinovieff. **Banks'** publications have included an interdisciplinary piece on Turkish music, published in *Early Music* (2018) and several contributions to the *Cambridge Encyclopedia of Musical Performance*.

Publications led to transformations of Music Therapy care provision for people with dementia, and children and families with autism. Key findings from the research produced by Hsu, **Fachner**, and **Odell-Miller** in 2015, confirmed significant indications that Music Therapy can reduce the agitation experienced by older people in middle to late stages of dementia. This project was devised from the ongoing partnership between CIMTR and one of the largest care providers for older people in the UK, the MHA, which has increased its Music Therapy service from 12 to 26 full and part-time music therapists, thanks to our unit's influence. Our unit's selected impact case studies on dementia and Music Therapy, and autism and Music Therapy for children and families, show sustained impact in these fields, and a strong influence on public policy and practice in Music Therapy provision. Other impact projects include work on music and brain, and Music Therapy for stroke, following our impact strategy focus upon health and wellbeing through music and the arts.

Addressing national and international priorities

- Our research unit has been leading national treatment strategies through contributions to NICE guidelines and Cochrane Reviews in dementia, autism, addiction, schizophrenia, and personality disorders (2014-2020).
- **Odell-Miller** continues in her elected role as advisor on Allied Health Professions and Nursing, sitting on two government policy boards; she gave a keynote speech for the House of Commons' Round Table on Music Therapy and dementia in June 2015. Oldfield provided the keynote speech on Music Therapy for children and young people in June 2016; in July 2016, PhD student Kate Jones presented research evidence for the round table on selective mutism.
- In June to December 2017, **Odell-Miller** was one of the Commissioners for the International Longevity Centre's Music and Dementia Commission, chaired by Baroness Greengross and based in the House of Lords. CIMTR's research provides evidence for this commission and has influenced national policy outcomes and recommendations as

demonstrated in ICS1 Dementia.

- Demonstrating public recognition of the value of this research, **Odell-Miller** was awarded an OBE for services to Music Therapy in 2016.
- Fachner was invited to be adviser to the German Wissenschaftsrat, a government body advising on university policy and development (2020).

Clinical Practice

- **Odell-Miller** has provided research in Music Therapy and criminal justice and in the treatment of personality disorders. The publication of *Forensic Music Therapy* (2013), co-edited and authored by **Odell-Miller**, is a ground-breaking examination of clinical Music Therapy in secure hospitals settings.
- Dissemination of this forensic Music Therapy research to 400 delegates took place at Temple University, USA, in association with the International Consortium for Music Therapy.
- In October 2016, the research conclusions were presented by invitation at the International Consortium for Music Therapy congress held at Shanghai Conservatoire of Music, China.
- CIMTR has collaborations with several clinical settings where we deliver clinical services and research consultancy. This includes Marbrook Centre for Rehabilitation and Dementia 2018-2019, Arthur Rank Hospice 2019-2020, and Addenbrookes Hospital 2017-2019.

Children and families including autism

- Oldfield's use of Music Therapy for children and families has been recognised through her Clinical Impact Award in 2014 from The World Federation for Music Therapy.
- In 2018, Oldfield created the documentary *Operation Syncopation* about her former young autistic patients and their life trajectories 15 years after their Music Therapy treatment. The documentary was presented in association with National Autistic Society at the Cambridge Film Festival, winning the Silver Audience Award for Best Documentary.
- Between 2011 and 2016 Oldfield and **Odell-Miller**, with the research team at CIMTR, led the UK TIME-A international RCT trial for children with Autistic Spectrum Disorder, following a successful bid to the NIHR with Imperial College London for a grant of over £500,000. Funding for ARU's UK arm was £200,000. Our UK research teams recruited over 120 children to the study, which is the first international sociological research project for children with autism including a RCT trial.
- Oldfield conducted research into the use of orchestral instruments in Music Therapy, resulting in the first book about instrumental specificity in Music Therapy in 2015. Dr Helen Loth published first research on the use of gamelan and multicultural approaches in Music Therapy (2014). Both projects involve collaboration with external academic and non-academic communities across the world. Oldfield and Loth set up new collaborations in Singapore and Thailand. Loth pioneered the use of Gamelan in Music Therapy, Oldfield consolidated her research in autism with children and families in an international context (ICS2 Autism).

Drama and Dramatherapy

- Carr and Dokter developed intercultural good practice guidelines in parallel with professional associations in the US and Canada through the North America Dramatherapy Association (NADTA) and the British Association for Dramatherapy (BADth) in October 2015 in New York.

- Ward led practice as research in the UK, India, US, Portugal and Czech Republic.
- Carr led a Dramatherapy research project 2015-2016, on Migration and Home involving public performances at the Edinburgh Festival which showed impact in highlighting refugee and migrant issues in the UK.

Music Therapy as related to mental health and professional identity

- **Odell-Miller** was an invited editorial guest writer, launching the new online *British Journal of Music Therapy*, in April 2016. **Odell-Miller's** article is an overview of professional identity within the Music Therapy, with research undertaken in CIMTR and worldwide.
- Public lectures on the same topic were given at the Barbican Library Music Therapy Exhibition in 2015 and as an invited keynote speaker in Japan at the Annual Music Therapy Congress in 2016.

Neuroscience, Dementia, Music, and Health

- Fachner conducts international research in Music Therapy related biomarkers, Neuroscience, and Music and Brain research. His wide-ranging and prolific 50 publications, 2014-2020, demonstrate his collaborations and the impact of his work.
- In 2015, **Fachner** led a successful £100,000 bid to the Music Therapy Charity (MTC) to research neuro-correlates and music during dyadic improvisation; this research has been presented in Canada, the USA, Europe, and Asia. Results were published in 2019 in *Frontiers of Psychology*, as the conclusion of the MTC-funded research, the **first** hyperscanning study of therapist and patient.
- In 2016 **Fachner** won a bid with the national Austrian funding agency (Section 3).
- In 2019, this work on the Social Neuroscience of Music Therapy was featured by BBC TV in a feature about dementia research, *Our Dementia Choir*.
- **Odell-Miller** was keynote speaker at the Dementia Music and Brain congress in Melbourne at the Centre for Brain Science, invited by University of Melbourne (2018).

The combination of Music Therapy and Neurophysiological research alongside our interdisciplinary research in Music, Music Technology, Drama and Dance will underpin the unit's future as a centre of excellence for research, innovation and impact.