

Institution: Royal College of Art
Unit of Assessment: 32 Art and Design: History, Practice and Theory
1. Unit context and structure, research and impact strategy Overview <p>The Royal College of Art leads research across the visual creative disciplines, collaborating with science, technology, engineering and other disciplines to engage with communities and audiences, and to address national and international priorities. Since 2014, the College has continued to expand its world-leading specialist research activities and to deliver impact for global business and industry as well as for public and community partners. In addition to increasing research and impact capacity and capability, it has put in place an integrated infrastructure to support excellence across research, knowledge exchange, innovation and enterprise, executive education, and postgraduate research degrees, and to deliver the ambitions of the RCA Strategic Plan 2016-2021. Research income over this REF period has more than doubled since the previous REF; the number of doctoral degrees awarded has similarly increased substantially, as has our supervisory capacity; and we are submitting 100% of our eligible staff to REF2021.</p> <p>The RCA's Research, Knowledge Exchange & Innovation (RKEI) Strategy 2016-21 set out our ambitions to provide an outstanding research and innovation environment that delivers research excellence, supports the career development of staff and research students, and makes a difference in the world by sharing its research and collaborating with academic, business, community and creative and cultural partners worldwide. Specific targets in the Strategy, relating to increasing research and knowledge exchange income, establishing an income-generating executive education programme, establishing new interdisciplinary research centres, establishing a new MRes degree, enhancing the quality of doctoral training, and securing increased investment for InnovationRCA's start-up programme, have all been achieved, indicating the quality and scale of developments in RCA research over this period.</p> <p>Since REF2014:</p> <ul style="list-style-type: none"> • our total research income has increased to £20.5m (2014-20) from £8.7m (2008-13) • the value of research grants and contracts awarded exceeds £28m (2014-20) • 3 new industry-facing, interdisciplinary research centres have been established, securing UKRI, industry and philanthropic funding of over £10m • doctoral degrees awarded have increased to 170 (2014-20) from 57 (2008-13) • over 80 AHRC doctoral studentships and 30 collaborative doctoral awards have been secured • the ratio of academic staff to PhD students supervised is 1:2.88 • the average doctoral completion rate is 3.92 years. <p>Structure, themes, objectives</p> <p>Research takes place across the College's four Schools: Architecture; Arts & Humanities; Communication; Design, and across its four research centres: the Helen Hamlyn Centre for Design; the Intelligent Mobility Design Centre; the Materials Science Research Centre; and the Computer Science Research Centre and Robotics Lab. The College's commitment to interdisciplinary research now integrates into its core art and design disciplines expertise from fields as diverse as anthropology, artificial intelligence, material sciences and mixed realities. This has been supported through the appointment of staff from science, technology and engineering backgrounds, including Asadipour (computer science), Ozden Yenigun (material science and nanoengineering), Robertson (smart materials for textiles) and Sareh (robotics). Embedding this knowledge from across disciplines within RCA research across the Schools and research centres equips us to address the major global issues of the 21st century, mapping our</p>

research onto the UK industrial strategy grand challenges and the UN sustainable development goals.

Research in the Schools encompasses creative and critical practice, human experience, global challenges, technological change, social justice, political and environmental change, and public and community engagement. All Schools explore these broad themes through School-specific research groups and clusters, which are used to organise and connect not just staff research, but also research student forums and taught MA student clusters.

Research in the School of Architecture, led by the Dean (**Lahoud**), addresses contemporary social and spatial design challenges, combining innovative practice with practice-led and interdisciplinary design research to deliver tangible social impact. Research is organised around the following themes: Architecture and Social Movements (**Kaasa, Lahoud, Burns, Pereira, Loewenson**); Climate Justice (**Lahoud, Pereira, Goodbun, Schwabe, Fernandez Pascual**); Intergenerational Cities (**Kaasa, Lopez, Jacoby**); and Institutional Forms and Practices (**Hughes, Campbell, Jacoby, Brooker, Weizman, Giudici**). The School established a Laboratory for Design & Machine Learning (**Lahoud, Jacoby**) in 2018, following a £1m private gift. The lab conducts interdisciplinary research into automation in construction and building processes, exploring machine learning applications in housing design and creating a visual and statistical database of housing in London, in collaboration with the RCA's Academic Leads in Computer Science and Robotics.

For the School of Arts & Humanities, research themes led by the Dean (**Neil**) provide a forum connecting staff research with research student clusters and MA student groups. They also provide a means of working with colleagues across the institution and beyond in areas of mutual interest, including ethics, interdisciplinarity, including with scientific research, new technologies, materials and materiality, social inequalities, decolonisation and climate change. The organising themes are: Art, Artificial and Distributed Intelligence (**Brown, Duffau, Ferguson, Golding**); Feminisms, Materialities, Legacies (**Blackshaw, Fortnum, Smith**); Health, Disorder and Care (**Baseman, Blackshaw**); Representation, Citizenry and the Public Sphere (**Ash, Berry, Dillon, Jordan, Kennard, Kollektiv, Teasley, Thomasson**); Critical ecology, climate crisis and non-human sentience (**Boyd, Kennard, O'Reilly, Richon, Teasley**); New Writing Forms (**Faust, Fortnum, Thomasson**); Critical Pedagogies (**Cranfield, Large, Richon, Suterwalla, Walsh**); and Materials & Materiality (**Aylieff, Brown, Oakley**).

In the School of Communication, the Dean (**Ramanathan**) led a shift in emphasis from individual practice to research and collaboration that interrogates conventional approaches to the field (e.g. in graphic design). The focus is on the social and political implications of communication and communication technologies, on connecting research with issues of community, identity and intercultural cooperation, and with radical forms of collective, open and community learning, working critically with industry, government and NGOs, researching with, not for, partners (**Buchan, Dare, Lewis, Ramanathan, Simmons, Waller, Yamada Rice**).

The Dean of the School of Design (**Anderson**) developed a new strategy for design research, supported by new appointments, to respond to rapidly changing international needs, challenges and opportunities. This includes enhancing STEM capacity, particularly in robotics (**Sareh**), materials science (**Ozden Yenigun, Robertson**) and computer science (**Ahmed-Kristensen**), and expanding research in design for services (including service design: **De Leon, Sun, Grinyer**), systems (e.g. healthcare: **Toomey**) and strategies (e.g. design for safety: **Anderson, Hall, Ferrarello**). This strategy is underpinned by a commitment to design's role in supporting diverse cultural values and caring for the future of society and the planet, where ethics are fundamental, not just an issue of compliance. This approach informs research with significant impact such as the citizen science My Naturewatch project (**Phillips**), in collaboration with Goldsmiths University and the BBC, and the RCA's collaboration with science partners at the universities of Leeds and Huddersfield through the AHRC-funded Future Fashion Factory project (**Postlethwaite**).

The Helen Hamlyn Centre for Design (HHCD), the RCA's longest-established research centre, has refreshed its own strategy to consolidate its research and impact strengths in inclusive design for healthcare (**West**) and ageing (**McGinley**), and inclusive design for social impact (**Bichard, Ramster, Gaudion**) and business impact (**Myerson, Gheerawo, Ivanova**). In 2019 it was successfully awarded £5m funding from the Research England Development Fund to establish the Design Age Institute (DAI), a design-for-ageing network that stimulates opportunities for design-led innovation among university researchers, small and medium-sized enterprises (SMEs) and larger companies across the UK. The DAI addresses the Government's Grand Challenge on Ageing, positioning the UK as a leading market for aspirational products and services that support healthy ageing, and moving away from medical products and services that are provided only at the point of crisis. HHCD staff (**Fusari**) continue to work as part of the HELIX Centre for innovation in healthcare alongside staff from Imperial College London's Institute of Global Healthcare Innovation.

Interdisciplinary research

As part of the RCA's commitment to interdisciplinary research with impact in the current REF period, three new industry-facing research centres have been established:

- the Intelligent Mobility Design Centre (IMDC), led by **Harrow**, established in 2016 with initial funding from Hyundai-Kia, and now from collaborations with Shanghai Automotive (SAIC), Ford, Bentley and other industry partners;
- the Materials Science Research Centre (MSRC), led by **Baurley**, established in 2017 with initial funding from the Burberry Foundation, and now from major funding from UKRI (e.g. the EPSRC Circular Economy Centres scheme), and with strong partnerships with science and engineering research faculties led by three visiting professors;
- the Computer Science Research Centre (CSRC), established in 2019, with the appointment of **Asadipour** as Academic Lead in Computer Science, working closely with the Academic Lead in Robotics, **Sareh**, who joined us from Imperial College in 2017.

The MSRC (**Baurley, Petreca, Ribul**) forms part of the RCA's 'STEM to STEAM' strategy, collaborating with science and engineering faculties (Cambridge, York, Leeds, UCL), and using design-led approaches to develop human-centred solutions to address the challenges of environmental sustainability and human wellbeing. The mainstay of its STEAM methodological approach benefits from both designer and scientific modes of enquiry, by integrating scientific methods into the design process, as well as design methods into science. This approach is enabled by the research team who are hybrids – they have design backgrounds but have acquired scientific knowledge through working in science labs and faculties. It has been awarded funding from science research councils (e.g. BBSRC) and interdisciplinary funding (e.g. EPSRC Digital Economy programme), and was awarded UKRI Circular Economy Centres funding of £5.4m in 2020 to establish the Textiles Circularity Centre at the RCA.

Building on the College's strengths in automotive design, the IMDC (**Harrow, Diels, Mausbach, Wu**) combines design research expertise with technology and a people-centred approach to explore, prototype and evaluate the future of mobility from a social, environmental and economic perspective. Its first innovation lab was supported by a partnership with Hyundai-Kia, and its work is organised around three studio: the Automotive Transitions studio, which explores the shifts in the industry, a new focus on sustainability, and connections with material culture, fashion and aspirations; the Humanising Technology studio, which explores how emerging technologies can transform mobility experiences and services, and how creative and human-centre approaches can make these accessible and enjoyable; and the People and Places studio, which explores the relationships between society, place and transport systems for sustainable future products, services and experiences.

The CSRC (**Asadipour**) explores the interface between art, design and computer science, with interdisciplinary research in intelligent human-computer interaction in areas including Computer

Graphics and Visualisations, Smart and Interactive Technologies, Artificial Intelligence, and Information Systems.

The College's RKEI strategy supports staff to work together across the institution to connect research on related topics. Internal research funding is used to stimulate this, for example supporting cross-College symposiums that bring together staff working in cognate areas, some of which go on to bid successfully for external research funding to develop projects further. An example is the IMDC-led cross-College 'Transformations' symposium (2019), which used internal research funding to bring together researchers from across the RCA around three themes, Transforming Cities and Society, Transforming Creativity and Practice, and Transforming Mobility and Technology. Externally funded projects that operated College-wide include the £8m GATEway (Greenwich Automated Transport Environment) project, funded by InnovateUK, which involved IMDC and HHCD staff and others in collaboration with partners including the Transport Research Laboratory and SMEs; and a cross-College collaboration on the British Council's Crafting Futures network, as part of the College's Global Challenges Research Fund strategy, supporting craftspeople in Asia through research, collaboration and education. Staff from all Schools and research centres have also developed a major collaboration with Hong Kong Polytechnic University to establish the world's first AI-Design Lab (see section 3).

Collaboration and impact

The RCA's research culture is distinctive because it is informed by a specialist environment, practice-led approaches and close collaboration not only across the RCA schools and research centres but also with external partners, in the UK and internationally, whether other HEIs or those who use our research and benefit from its impacts. As our impact case studies demonstrate, these include businesses and industry (**Myerson; Simmons, Hall and Triggs**), policy-makers, governments, public sector bodies, charities and NGOs (**Myerson, West, Phillips**), national museums, galleries and cultural organisations, and community groups and sectors of society (**Kennard, Shani, Watson, Ramanathan**).

The RCA's high-quality, research-intensive environment attracts interest from global businesses and other organisations keen to collaborate with academic staff and postgraduate students, including British Airways, the BBC, Bentley, Burberry, Fujitsu, Huawei, Hyundai-Kia, Karsan, Lloyds Register, Microsoft Research, the NHS, Royal Crown Derby, Shanghai Automotive (SAIC), and Tata Consultancy Services. Our unique position as a postgraduate-only institution ensures that the whole environment is research-focussed, with students and staff benefitting from the development of new knowledge at the forefront of art and design disciplines.

The RCA's research expertise in the visual and creative arts, design and innovation, technology and materials, and critical thinking and cultural interpretation generates significant impact and benefit, whether economic, social or cultural. Our research leads to excellence in teaching and achieves impact through its application in many sectors of society, business, industry and public life, making a positive difference to lives by bringing about benefits to the economy, society, culture, health and wellbeing, and quality of life. As artists, designers, curators, critical thinkers and historians, RCA researchers have extensive experience of collaborating and engaging with audiences, users and partners in projects as an integral part of their research. We have provided training to staff at different research career stages in planning routes to impact and planning for impact evidence as well as in public engagement in research, and Research & Knowledge Exchange (RKE) Office staff have delivered drop-in sessions on research bid writing, REF preparation, and working with partner organisations.

Since the last REF the RCA has seen a number of changes which have supported and developed its research environment. The construction of a new research and innovation hub as part of the expansion to the Battersea site, funded by HM Treasury in 2016, is now well under way, with the building due to open in 2021/22. The new facilities will accommodate state-of-the-art studios and labs for our research and innovation centres, including a new visualisation lab and increased space for start-up and spin-out incubation, as well as enabling an increase in MA

student numbers. This new space will become the focal point for our research and innovation activity in the next REF period, providing lab space for interdisciplinary research across art, design, materials science, computer science, AI and robotics, and open spaces in which colleagues can work in collaboration with each other and with project partners from business and industry as well as from community groups. The College's work with local businesses and community groups will also be a focal point for activity across our London campuses in Kensington and White City as well as in Battersea, and our commitment to art and design research that is undertaken with people is a central part of our commitment to supporting business and communities to recover and become stronger during the 2020s.

Enterprise and IP

InnovationRCA (established 2004) supports RCA students, alumni and staff to commercialise their ideas and build successful businesses. Its portfolio of design-led start-ups and spin-outs covers sectors ranging from agri tech, med tech, clean tech and construction to fashion, jewellery and interiors. Companies selected to join the incubator and accelerator programmes benefit from access to office and workshop facilities, funding, Intellectual Property advice and support, and expert coaching and business mentoring built on InnovationRCA's unique design-led, user-centred ethos and methodologies. Assessed by McKinsey & Co as a 'world-class spinout incubator and an inspirational organisation acting as a significant driver of entrepreneurial growth, delivering impressive results' (McKinsey Internal Review for the RCA, 2017), InnovationRCA won the 'Accelerator of the Year 2019' award given by the UK Business Angels Association, in recognition of its outstanding incubation track record. 71% of InnovationRCA start-ups are still in operation after five years (the UK average was c.40% in 2019).

InnovationRCA operates its own angel investor network, AngelClubRCA, and has partnered with a venture capital company, Venrex Investment Management, to provide increased access to private funding for RCA start-ups. It also provides short courses and executive training programmes for entrepreneurs, start-ups, businesses and other organisations seeking to promote and support innovation and entrepreneurship worldwide.

The RCA has also explored research-led entrepreneurial innovation through the Research England funded MedTech SuperConnector, a £6m accelerator programme led by Imperial College London and a consortium of London institutions including the Francis Crick Institute. Other Knowledge Exchange developments in this period include: realigning MA studio projects as consultancy projects, appropriately priced to cover full economic costs and generate a surplus where possible; developing new, and scaling up existing, business and industry partnerships with major global corporates; establishing a successful executive education programme that combines open short courses and masterclasses with custom programmes delivered in London, internationally and virtually, which has exceeded financial targets. Recent clients for these short courses include the European Broadcasting Union, Fujitsu, GlaxoSmithKline, Hong Kong Civil Service Bureau, London & Partners, JP Morgan, PwC, Samsung, Singapore Airlines, Sony, Statoil and Visa.

Research-led postgraduate teaching

Over the course of the current REF period the RCA has enhanced and expanded its postgraduate research environment in response to the changing external context, ensuring that high-quality and broad training and development opportunities are available to equip our research students to progress to a successful academic research career or a variety of other professional roles.

A new interdisciplinary RCA MRes programme was launched in 2016, and has since doubled in student numbers and received excellent external examiner feedback. MRes graduates progress successfully into funded doctoral research and into professional posts in the creative industries and beyond. An MRes in Healthcare & Design was also launched in 2016; a joint degree with

Imperial College London, this programme has developed from the RCA-Imperial HELIX Centre for design-led healthcare innovation.

Master's-level teaching at the RCA is informed by the research undertaken across the College, with elective units offering a flexible and agile way to incorporate new directions in staff research directly into student-facing experience. Design MA programmes combine design research with industry-facing studio projects that provide students with valuable experience of live projects: examples include the Fashion MA programme's studio projects with companies including IFF, Timberland, Microsoft and Porsche, the latter run jointly with the Intelligent Mobility MA programme. The School of Communication's annual MA graduate exhibition has evolved to incorporate the School's research values of public engagement, discourse and access and includes podcasts, telecasts, broadcasts and embedded community outputs.

Arts & Humanities collaborations with external partners take place through collaborative doctoral awards (e.g. with Tate; Gasworks) and graduate projects (Awami Art Collective, Lahore, Pakistan; Beaconsfield, Delfina Foundation, Design Museum, Furtherfield, Gasworks, Lux, Stanhope, Team London Bridge, The Photographers' Gallery, Pump House Gallery, Nottingham Contemporary, and Margate Open School East), as well as through funded research projects. In 2019 the RCA, the Showroom gallery and Tate Britain partnered to convene a creative workshop, 'This Is No longer That Place: A Public Discussion', as part of the EU-funded 4Cs (From Conflict to Conviviality through Creativity and Culture) project (**Crimmin**). Students from the RCA's Curating Contemporary Art programme were involved in the development of the workshop's content.

A number of new MA courses have been introduced during the REF period that draw directly on new RCA research expertise, including:

- Intelligent Mobility, which has developed from the RCA's world-renowned Vehicle Design MA and draws on the research of the Intelligent Mobility Design Centre to train the next generation of innovative designers able to influence and disrupt the rapidly evolving automotive and transport industries
- Information Experience Design and Digital Direction, both developing highly skilled graduates for the new creative economy, with Digital Direction combining training in script writing, production design, direction, filming and sound recording with coding and programming, VR and AR, 360 video editing, interactive design and AI.
- Environmental Architecture, exploring the future of landscapes, environments and ecosystems
- City Design, harnessing social, technical and spatial innovations to generate new possibilities for our cities and urban living.

Supporting excellent research

The College's RKEI activities are supported by a number of formal committees and less formal network structures. The Director of Research & Innovation is chair of the College's RKEI Strategy Committee and Research Ethics Committee, both of which are accountable to the RCA's Senate. The RKEI Strategy Committee itself is accountable for the work of a number of sub-committees and groups, including the RKEI Operations Committee, the REF Strategy Group, the Knowledge Exchange Framework (KEF) Strategy Group, the Ethics Committee, and the Research Costing & Pricing Group. These committees and groups are all chaired by the Director of Research & Innovation, and their membership is drawn from across the academic staff in the schools and research centres and across the professional services staff. There is also a Postgraduate Research Leads group sharing good practice in doctoral training.

Since 2015, the new RKE Office at the RCA has put in place a number of policies and processes to support academic staff to undertake high-quality research and impact activities, and to develop their research careers. These include:

- Formalising an internal peer review policy and process

- Introducing an updated research ethics policy, process and annual Research Integrity report
- Introducing a costing and pricing policy and process
- Introducing a research data management policy and training
- Refreshing the Intellectual Property (IP) rights policy, ensuring it supports students and staff to develop innovative ideas and benefit from IP created
- Becoming a signatory to the Vitae Researcher Development Concordat
- Committing to the Research Integrity Concordat
- Committing to the Knowledge Exchange Concordat

The RKE Office has also established clear RKE data capture and reporting processes, to support the increase in income secured from research grants and contracts. RKE Office staff have good working relationships with UKRI, and regularly participate in consultations, roundtables and advisory groups relating to REF, KEF, university enterprise and other topics. The substantial increase in research income delivered over the current REF period has been supported by a combination of supporting more staff to submit bids that are appropriate in scale and scope to their career stage; preparing high-quality bids to increase chances of success; and in particular, supporting cross-institutional collaboration to develop credible bids for large-scale grants (e.g. the two £5m UKRI grants awarded in 2019 and 2020).

Research integrity and ethics

The RCA is committed to maintaining the highest standards of professionalism, good conduct and integrity in research, not least because we believe this makes our research better. Research integrity is overseen by the College's Research Ethics Committee, which operates two sub-committee dealing at a more granular level with ethical issues, training and approval processes for (a) taught postgraduate programmes and (b) research students and research activity. All research students and staff are supported by the College's internal research funds to undertake Epigeum research ethics training, which ensures that those undertaking and supervising research are aware of good practice guidelines and expectations. The nature of our research themes and activities also reflects this commitment to an ethical approach.

Open research, open access and research data management

The RCA Library and RKE Office worked together to establish a new post of Scholarly Communications Librarian in 2019. Prior to this, the RKE Office managed open access compliance and the RCA Research Repository, but had identified the need for specialised knowledge and expert support in order to move beyond compliance into more proactive good practice in open access and research data management. This new post, which is unusual for a small, specialist institution, quickly proved successful in providing specialist support and expertise for research staff and students and has led to further development of the RCA Research Repository. All research staff are expected to deposit their research (textual, non-textual and practice-based) in the Repository, reflecting the wide range of research and output types in art and design. Postgraduate research students are expected to deposit open access versions of their PhD thesis. The College has developed Open Access policies and processes aligned with the wider scholarly communications landscape, and a Research Data Management policy and support service are being developed to support good practice in these areas.

As the College moves into its next Strategic Plan period, we will continue to build on our reputation for research excellence and to deliver impact for our research partners and collaborations, locally, nationally and internationally, securing income to reinvest in further strategy development of the research environment. Our research centres will grow, generating new opportunities such as the Textiles Circularity Centre within our MSRC, and the Design Age Institute within the HHCD. Staff across the Schools and centres will continue working with partners in business and industry, policymaking and communities around the world, as well as with other researchers from other disciplines, and we will use our research in new doctorate routes for professionals and to inform teaching on existing and new MA programmes.

2. People

The RCA has invested heavily in further developing support for staff and students since 2014. This reflects the College's strategic objectives to become more research intensive, to develop a consistently high-performance culture and environment that attracts and retains talented, diverse and ambitious staff, and to improve provision for the student experience of postgraduate research (PGR). The RCA is committed to creating an environment where differences are valued and respected and where innovation, creativity and diversity can flourish.

Staffing Strategy

In spring 2015/16, the College introduced the new Academic Employment Framework (AEF), which provides protected research time for tutors and senior tutors, and defines roles for all tutors and senior tutors in terms of research and teaching. The AEF's protected research time replaces the RCA's former system of research remission. The AEF aims to ensure that the academic workforce is recognised and rewarded through: transfer of academic staff on fixed-term contracts to permanent employment; guaranteed significant time for research; proportioning the amount of time spent on teaching activities to allow more effective planning; and providing the opportunity for an increased level of research time to early-career researchers (ECRs). Prior to the introduction of the AEF, 41% of academic staff were on fixed-term contracts; as of July 2020, 4% of academic staff are on fixed-term contracts.

Recruitment to tutor posts requires that there should either be evidence of, or clear potential to produce, high-quality research in line with the strategic priorities of the College, and attract ECRs, including staff joining the College from industry. Senior tutor posts require a proven record of producing high-quality research outputs, and providing a progression route for academic staff.

As part of the AEF, a new probation and appraisal policy was introduced. All newly appointed academic staff have a two-year probation period, during which they are expected to achieve a recognised professional teaching accreditation appropriate to the job role, and/or, in the case of staff whose role will involve supervision of doctoral students, to have achieved a recognised research degree supervision qualification. In addition, new appointments are expected to develop and agree a 5-year research plan in consultation with their line manager or Dean, appropriate to their career level. ECRs on the research pathway can agree with their Dean an increased allowance for protected research time during their probation.

Through the annual appraisal process, academic staff are supported to develop and agree personal research plans and objectives with their line manager alongside their performance review. This includes a review of research undertaken, outputs produced, external funding secured, and supervision of research students, as well as agreeing training and development needs which will support good research practice.

The College offers formal recognition, through the Professorship and Readership Scheme, for sustained achievements in academic leadership, research and scholarship, and learning and teaching. This scheme provides published criteria for opportunities for career progression and recognition. In the period 2014–20, there were 17 applications for readerships, of which 14 were successful (a 75% increase of successful applications from the previous period: 10 female and 4 male; 10 white, 2 did not declare, 1 Other Asian, 1 Asian or British Asian–Indian; 6 part-time and 8 full-time) and 3 were unsuccessful or declined (1 female and 2 male; all where white; 2 full-time and 1 part-time). In this same period, there were 15 professorial applications, with 7 successful/approved (an increase of 17% from the previous period: 2 female and 5 male; 5 white, 1 Other Asian background, 1 did not declare; 2 full-time and 5 part-time) and 8 unsuccessful/declined (3 female and 5 male; 5 white, 2 Asian or British-Asian and 1 did not declare; 5 full-time and 3 part-time; 1 unsuccessful professorial applicant was awarded a readership instead). Staff awarded a professorship include Aylieff (Ceramics), Bichard (Accessible Design), Brooker (Interior Design), Dillon (Creative Writing), Jacoby (Architecture and Urban Design), Kennard (Political Art) and Rowe (Metal Art and Design); staff awarded a readership include Boyd (Jewellery), Coutts (Fine Art), Crimmin (Art and Conflict), Dare (Digital

Media), Dormor (Textile Practices), Hughes (Architecture), Oakley (Material Culture), Ramanathan (Intercultural Communication), Robins (Textiles), Sareh (Robotics and Design Intelligence), Satz (Fine Art: Sound and Moving Image), West (Healthcare Design) and Wu (Intelligent Mobility Design).

Staff Development

The RCA has invested in staff development in the period 2014-20, creating the new Talent & Organisational Development (TOD) Manager post in February 2020. This permanent post replaced the fixed-term Learning & Development Specialist role that was introduced in November 2017. Staff engagement and areas of focus for staff support and development are informed in part by the feedback gathered through all staff surveys (introduced in 2019). The HR budget for staff development also substantially increased in 2019/20. This has led to the introduction of the College's new Staff Development Policy in early 2021, with a new Staff Development Strategy currently in development (to be published 2021). The new policy provides clarity to academic staff on the support available for research professional development. Coupled with the RCA's commitment to the Concordat to Support the Career Development of Researchers (signed in September 2020, with the action plan currently in development by a cross-College group of academic/research, HR and RKE Office staff), the College has greatly and visibly increased its support for research staff development.

As noted above, the introduction of the AEF has meant that all academic staff, regardless of whether they are on a research or teaching pathway, have protected research time designated in their contracts. There are a number of opportunities for staff to access development and support for their research and professional development internally, on offer from both HR and the RKE Office. HR offers a variety of standard professional development and leadership/managerial courses to support staff as they progress in their careers (e.g., coaching skills, action learning), as well as more targeted development opportunities, such as the Advance HE Aurora Women's Development Programme (6 academic women have participated/are participating; and annual Aurora engagement events have been held at the College for the past two years with high attendance from academic/ research staff). HR has also developed a new mentoring scheme for both academic/research and professional services staff, where mentors are trained and supported with ongoing development and digital resources. The current pool of mentors includes 15 academic/research mentors, which is expected to grow. In addition, all new Heads of Programme and Deans are supported by an internal academic mentor.

The RKE Office offers research development training, including courses such as research-bid writing, European funding opportunities, tracking and evidencing impact, open-access and research-data management, developing a research profile, research supervision and viva chairing. The RKE Office funded academic and research staff to join the NCCPE (National Co-ordinating Centre for Public Engagement) Engage Researchers' Academy residential workshops (14 RCA ECRs and MCRs each attended 3 two-day workshops) to develop their public engagement and impact knowledge and practice. The RKE Office also funded a series of cross-College research symposia (10 funded, covering topics such as Feminism and Materialities; Artificial Intelligence; Design for Active Engagement; Intelligent Solutions: Accessibility, Connectivity and Creativity; Sexuality, Power, Research from Analogue to Digital; and Politics of Sound), which sought to bring together researchers from across the RCA, including students, to explore their shared research interests. The RKE Office's Executive Education team has also collaborated with HR to offer a place to an ECR Principal Investigator on a Design Thinking and Innovation training course as a pilot.

The RKE Office also offers internal funding schemes, which aim to support academic/research staff to develop their networks and research activities. The Research Costs scheme offers up to £1k to cover the costs of conference attendance, short-term technical assistance or some publishing costs. Staff can make two applications per year, although ECRs are allowed to make up to three requests per year (143 awards were made over the period, totalling £100k). The Research & Knowledge Exchange Development Fund is a peer-reviewed scheme that offers up

to £10k for seed funding or proof of concept to academic/research staff-led projects, with the expectation of leading on to major external funding proposals to funding bodies or industry partners (58 awards totalling £123k, including contributing £10k towards Shani's Turner Prize-winning *DC Productions* project). The Research Investment Fund offers up to £25k for large-scale collaborative activity, which will lead to a major step-change for the College's research activity and/or to major external funding proposals (7 awards were made totalling £97k, including funding the kit-out of the new Robotics Lab, and strategic investment in the new MSRC, both of which contributed to securing substantial external funding from EPSRC). These as well as other externally funded projects have provided Schools and research centres with the opportunity to offer research-project mentoring and support to ECRs (e.g., the British Council and RCA joint-funded Crafting Futures Central Asia project has involved ECRs to build their research-project experience; x2 AHRC-funded Creative Economy Engagement Fellows; x1 AHRC-funded Innovation Placement).

Research Students

The College offers a highly concentrated, subject-specialist community of approximately 250 PGR students, comprising 20% of the RCA's student body. This number has risen from 181 PGRs in 2013 (14% of the student body), in line with the College's Strategic Plan. Out of 174 staff who submitted to REF2021, 129 are currently supervising PhD students, and as each student has at least 2 supervisors, the ratio of staff to PhD supervisions is 1:2.88. As of 2019/20, the average completion rate for PhD students is 3.92 years.

The RCA has secured over 80 AHRC-funded studentship awards through the College's membership of doctoral training partnerships and centres since 2014: LDoc (consortium led by the RCA, 2014–ongoing with 5 cohorts); TECHNE (consortium member, 2014–ongoing, 5 cohorts); and LAHP (consortium member, 2109–ongoing with 5 cohorts; also offers collaborative doctoral awards with non-HEI partners). Through LAHP, the RCA has secured 11 studentships out of 90 per year and 4 collaborative doctoral awards (CDAs) out of 14 total since 2019, showing that the RCA is performing well above its size within a consortium of high-profile, large-scale London HEIs. The RCA has also secured over 30 AHRC Collaborative Doctoral Partnerships since 2014, working with cultural partners (e.g., Tate; V&A; Science Museum; British Postal Museum; and National Archives) and industry partners (e.g., TATA; The Birthrights Collection; AKTII; Ubisoft; Microsoft; British Antarctic Survey; and ARUP).

Between 2014 and 2018, the College increased recruitment of research students in areas of strategic importance, aligned with the RCA's research strengths and growing research centres. The College strategically secured funding and recruited doctoral students to the new research centres and Robotics Lab (e.g. £110k for MSRC), offering them the chance to undertake their studies immersed in a specialist research environment working in collaboration with industry. Funding was also secured from business and industry (e.g., Microsoft, Stavros Niarchos Foundation and Ted Powers Foundation £325k) to support doctoral students across the College in Schools and research centres.

The environment for PGRs guarantees access to high-quality research supervision, to specialist workshops and facilities, as well as to a broad range of training covering subject-specific and generic research skills, KE training and career development. During the period 2014-2020, the College has established an enhanced PGR culture driven by the introduction of the new cross-College role of Head of Research Programmes, who is responsible for ensuring parity and consistency of provision, standards and opportunities for all research students across the College's Schools and research centres.

In order to support the growth in numbers and to further develop the College's PGR culture, the proportion of academic staff supervising students has increased, and the new role of PGR Leads in each School and research centre has been established. Doctoral supervision has been professionalised, with regular training for new supervisors as well as refresher sessions for experienced supervisors, and with national standards applied to all aspects of supervisory practice. PGR Leads organise and collaborate with the PGR community on a range of activities

and events, including reading groups, practice and theoretical workshops and platforms for peer exchange. PGR students are also offered the opportunity to engage with staff-led research projects and to design and deliver (working with their supervisors) executive education programmes to further build their experience and development (e.g. Contemporary Art summer school; Curating Art & Design summer school; and Designing Services and Products for AI modules).

The RCA has continued its collaboration with the V&A on the History of Design PhD and MA programmes, with 4 V&A staff (Category C staff: Dr Marta Ajmar, Deputy Director V&A Research Institute; Dr James Ryan, Head of Programmes V&A/RCA; Dr Spike Sweeting, Tutor; Dr Simona Valeriani, Senior Tutor) co-supervising 8 PhD students (including AHRC CDA/CDP-funded students) and actively publishing research during the REF period.

To further support excellence in academic and professional training for PGRs, in line with the Vitae Researcher Development Framework, the College-wide Doctoral Training Programme has been re-designed and expanded from the former first-year 'research methods course'. The new RCA Doctoral Training Programme, introduced in 2018, is a flexible model delivered by 50 RCA academic staff and 40 visiting lecturers annually, which is relevant to all stages of the PhD lifecycle and builds on specialist training and supervision within Schools, research centres and specialist clusters. The first Student Research Biennale began development, planning and design during the REF period (formally launched in early 2021) to offer an intensive space for celebrating and making public the research being undertaken by the College-wide PGR cohort.

The RCA also successfully launched the new College-wide, interdisciplinary Masters of Research (MRes) in 2016. The MRes has grown from an initial cohort of 15 students to 52, with graduates of the 1-year taught programme securing funded PhD placements at the RCA, Cambridge University and other international universities, as well as roles in policy and industry-based research posts internationally. This positions the programme as an important nexus of research for industry and the academy and addresses the particular need for research training for doctoral candidates in the sector.

From 2021, the College will prioritise further embedding the strategic alignment of PGR students within RCA research themes, initiatives and funded projects, and expanding on existing external PGR funding in these areas, as well as developing new areas that align with national and EU themes and industry engagement. This will involve developing new centres for doctoral training in specialist areas of art, design and humanities that build on existing expertise, as well as expanding into new strategic areas, and developing sustainability strategies for both. The Professional Doctorate that is currently under development will provide a flexible, industry-focused route for a new type of PhD programme and career-development opportunity. The College will also work towards becoming a leader in ECR career development by creating further opportunities for postdoctoral researchers to contribute to major research projects.

Equality & Diversity

The RCA requires standard compliance training courses to be undertaken by all staff (Unconscious Bias, Diversity at Work), and Recruitment & Selection training is a requirement for all staff involved in recruitment and selection of either staff or students. More focused training, such as AdvanceHE's REF-specific Equality & Diversity course, is offered to staff to raise awareness of the impacts beyond recruitment and selection. The College took part in a Bystander Intervention training pilot for both staff and students to raise awareness of sexual assault in June 2020 and has run training for Mental Health First Aiders. The College continues to explore the Athena Swan Charter and how the RCA can embed Athena Swan principles into working practices in preparation for its first submission to the Charter. The College's HR systems have also now been set up to import data that allows HR to monitor activity levels and trends, especially in relation to EDI and promotion/career development.

The RCA has a number of standard policies and tools in place to offer support to staff in a variety of areas, for example: career break policy that allows staff to leave employment without a

break in service in order to fulfil personal obligations or to engage in career development and formal training; flexible working arrangements; and maternity/paternity/shared parental leave for birth and adoptive parents. Schools and Research Centres provide personalised support to staff and research students (as well as the standard leave of absence for research students) who are part-time, have flexible working arrangements, and/or who have caring responsibilities or ill health to attend conferences and other research development opportunities, or who are returning from related periods of leave.

As a small specialist art & design institution, the RCA has a significant number of staff and research students who have dyslexia, dyspraxia or other learning difficulties, as is common across the discipline. The College offers specialist dyslexia and dyspraxia screening, and advice and support for both students and staff as part of the larger Student Support team.

Academic/research staff who require additional support to write research funding proposals, carry out research projects, or report on research activities can request funding from the RKE Office's schemes above. Funds have been provided for external research bid writers and consultants for larger-scale proposals and for research associates to support internally funded research projects and external research and impact reporting. Schools and Research Centres provide local support for staff as needed.

Likewise, as is common in art and design, the RCA has a relatively large percentage of part-time academic/research staff. As such, part-time staff are afforded the same support mechanisms to carry out and disseminate their research, with Schools and research centres ensuring part-time staff are supported to lead or act as co-investigators in research projects and to engage with internal research activities.

With a relatively small pool of academic/research staff, many of whom are part-time, have a learning difficulty, or have other protected characteristics, it is 'business-as-usual' to provide support for all staff, taking into account any additional considerations that may be required. There is no differentiation in the RKE Office, for example, between who receives support for developing research and knowledge exchange proposals, who receives internal RKE funding, or who has access to training, advice and guidance on RKE matters. As such, the College's approach to developing its REF2021 Code of Practice, as well as selecting outputs and impact case studies for submission, is informed by this approach. A range of support has been offered to all academic/research staff in selecting and preparing their outputs for selection and submission in order to account for different working patterns and needs (e.g. from the RKE Office as well as local support in Schools/Research Centres; 1:1 and small group support, workshops and training sessions). With regards to output selection, all staff were asked to submit their best quality output for assessment in internal informal and formal quality assessments and to submit any additional high-quality outputs for assessment if available, but with the basic requirement for all staff to submit one output. There was no requirement or expectation in the Code of Practice that staff would be required to submit more than one output based on their contracts/FTE. All staff were invited to submit research impacts for consideration in the impact stocktake, and selection of case studies to receive support was based on the significance and reach of the impact. As such, the College's impact case study leads are from a range of FTE, gender and protected characteristics. All staff involved in making the final selection for the RCA's submission were required to undertake REF-specific EDI training to support this process and highlight any areas of bias that may affect decisions, which was successful and well-received.

The RCA's Equality & Diversity and Anti-Bullying, Harassment and Victimisation Policies underpin the College's core values: "The RCA is committed to creating an environment of mutual respect, where differences are valued and respected and where innovation, creativity and diversity can flourish. Positive working relationships – whether between staff and staff, staff and students, or students and students – are central to this. Mutual respect is facilitated by the promotion of values of dignity, courtesy and respect, alongside a zero tolerance of bullying and harassment." In 2020, the College engaged an EDI consultant to highlight areas of training and development to undertake, which will form part of the new Staff Development Strategy. The

College has also taken steps towards becoming an anti-racist institution, engaging Amatey Doku to work with staff and students through 1:1 consultations and focus groups to discuss journeys and experiences within the College. Confidential, specialist counselling was put in place to protect the emotional safety of those staff and students who took part in these sessions. Amatey's work will support the RCA's objectives to: increase senior staff's awareness and understanding of staff and students of colour from African, Caribbean, Asian, Middle Eastern, First Nations and Indigenous heritage backgrounds; to better inform the executive team and Council to take action towards becoming an anti-racist institution; and to set the new Head of Equity & Inclusion up for success (to be appointed in 2021). The College acknowledges these are only first steps in becoming an anti-racist institution, and the Head of Equity & Inclusion will continue the journey the RCA has begun with Amatey Doku's work with staff and students.

To support the health and wellbeing of staff, the College offers standard support mechanisms such as an employee assistance programme, mental resilience e-learning, and Mental Health First Aid and has an agreement with Imperial College to offer RCA staff occupational health services. Since the Covid-19 lockdown in March 2020, the College has increased its wellbeing support for staff and students, including: additional tools and guidance for working from home; additional training and information materials to support good mental health; and regular Covid-19 HR updates which include links to mental health support and activities such as Mental Health Awareness Week.

3. Income, infrastructure and facilities

The RCA's vision for research over the current REF period has been to deliver a continuously improving research environment that produces excellent research, supports the career development of our academic staff and research students, collaborates with academic, business, cultural and community partners across the globe, and makes a difference to the world by communicating research findings effectively. In disciplinary terms, the College's strategy focuses not only on achieving research excellence across art, design and architecture disciplines, but also developing interdisciplinary research strengths through collaborations with science, engineering, medicine and social science researchers, and through interdisciplinary research centres. The RCA has built a strong research culture, which is distinctive because it is informed by a specialist environment, practice-led approaches and close collaboration.

This vision informs the College's strategic priorities in terms of research activities, funding and collaborations. The RKEI 2016-21 strategy set out ambitious targets for research and knowledge exchange income, leading to a marked increase over the REF period. There has been a steady increase in income over the period through actively developing new partnerships alongside existing ones to expand the RCA's network and funding sources, and through increasing research infrastructure and support. In the previous REF period, the College's annual RKE income averaged at £1,745k per year across all funding sources; in the current period, **the average annual RKE income has been £2,975k per year (totalling £20.8m over 7 years)**. In addition, the RCA has attracted over £4.3m in income through the delivery of research-informed bespoke and open executive education courses, and a further £2.3m from consultancy services. This averages at **£170k/FTE of RKE income** over the REF period, or £225k/FTE for RKE, executive education and consultancy income.

The RCA's established academic partnerships include those with our close neighbours, Imperial College London (joint MA and MRes programmes; jointly established Healthcare Innovation Exchange HELIX Centre) and the V&A (joint MA and PhD programmes), as well as leading institutions worldwide, such as Tsinghua University, Beijing, Nanyang Technical University, Singapore, Pratt Institute, New York, and Keio University, Tokyo (through our Global Innovation Design MA programme). Partnerships focusing on research and knowledge exchange have been developed with global partners, including Hong Kong Polytechnic University, with whom the RCA has been awarded substantial funding from the Hong Kong Government's Innovation & Technology Commission to establish the world's first AI-Design Lab. This collaboration will bring together design expertise with research in AI, robotics and machine learning to address

developments in automation and customisation of products and services, in sectors ranging from healthcare and manufacturing to fashion and textile design. Industry and charity partners include Hyundai-Kia, Burberry, Lloyd's Register Foundation, Karsan, Shanghai Automotive (SAIC), and Tata Consultancy Services.

The RCA has been **awarded over £28m in research grants and contracts** between January 2014 and December 2020, outperforming the previous REF period and contributing to a marked increase in RKE income. Major external research grants secured by the RCA in this REF period include: Design Age Institute (**Myerson** and **Gheerawo**; Research England Development Fund, £4.9m); Artificial Intelligence Design Laboratory (AI-Design Lab collaboration between the RCA and Hong Kong Polytechnic University; Hong Kong government-funded, c. £20m with c. £5m to RCA); Textiles Circularity Centre (**Baurley** PI; UKRI Interdisciplinary Circular Economy Centres, £5.4m); Citizen Nature Watch (**Phillips** PI, collaboration with Goldsmiths; EPSRC, £350k); Bio-manufacturing Textiles from Waste (**Baurley** Col, collaboration with University of York; BBSRC, £150k to RCA); Marked (**Baseman** PI; Wellcome Trust, £200k); Getting a Grip: from the science of robotic attachment to innovation and deployment (**Sareh**; EPSRC Innovation Fellowship, £394k); Future Fashion Factory (**Postlethwaite** Col, led by University of Leeds; AHRC Creative Industries Clusters, £460k to RCA); Nature's Way: Co-Creating Methods for Innovating Nature-based Solutions for Public Health and Green Recovery in a Post-COVID World (**Sun** PI; UKRI Covid Response, £400k).

The RCA developed its Global Challenges Research Fund (GCRF) Strategy in response to Research England's quality-related (QR) GCRF allocation, and this has supported an increase in GCRF-related research activity and partnerships. A core feature of the RCA's GCRF Strategy is its collaboration with the British Council as a member of the British Council's Crafting Futures core stakeholder group. This engagement with British Council led to the successful and ongoing Crafting Futures Central Asia project (**Ramanathan** and **Simmons**) and partnership with Kazakhstan and Kyrgyzstan crafters and researchers (in collaboration with the University of Leicester). The College's QR GCRF funding has also been used to fund collaborative work with Thammasat University in Thailand, focusing on Thai Textiles (**Oakley**); the Fair Luxury conference and workshop focusing on ethical sourcing in the jewellery industry (**Oakley**); a collaborative project addressing the effects of migration on settlement and urbanisation in Ethiopia and Uganda (**Jacoby**); and a collaborative project with Shanghai University exploring spatial design and well-being (**Jacoby**).

As artists, designers, curators, critical thinkers and historians, RCA researchers have extensive experience of communicating their research and delivering impact beyond academia, engaging with and bringing benefits to audiences, partners and research users. Impact is very much built into the research process and is considered 'business-as-usual' at the RCA, rather than a separate process or activity to undertake after the research is complete. The RKE Office offered non-academic staff the opportunity to attend the NCCPE's Engage Academy for professional services staff on a pilot basis, in order to provide training in supporting academic staff's research and impact; the RCA Communications & Marketing team's Community Engagement Manager, who provides support to academic staff running public events, undertook this training. Internal funding schemes (as described in Section 2) are available to academic staff to develop their research and impact, and RKE Office research development services provide support for external funding proposals. Impact support is an area the RCA plans to continue to develop over the next REF period, with more training and specialist support made available.

The College's investment in new research centres in this REF period also demonstrates its commitment to supporting and developing impactful research. The Helen Hamlyn Centre for Design has a long history of impactful research, focusing on healthcare, ageing, and social and business impact. With the introduction of three new research centres since 2014 (IMDC, MSRC and CSRC), as well as the new DAI associated with HHCD, a critical mass of high-impact interdisciplinary research is developing alongside research taking place in the Schools.

Infrastructure and Facilities

RCA Technical Services revised their team structures and roles (and created new roles) during this REF period to better support both current and future research needs, e.g., the Senior Technical Instructor in Robotics & Computer Science was an entirely new position created to support future developments within the Robotics Lab. In line with College strategy, Technical Services has focused on the development of several key areas, culminating in the formation of the IMV (Intelligent Manufacturing & Visualisation) in 2017. IMV is a group of specialist, progressive technical areas with an agenda to build, year upon year, the facilities and technical knowledge required to support the new research centres, as well as individual research-project needs. Key areas of focus within this grouping are: XR (Extended Realities – VR, AR, MR); Creative Coding and Programming; Robotics & Computer Science; Materials Science – Textiles; and Intelligent Manufacturing.

Investment in the new RCA Robotics Lab has supported the combination of creative techniques, mechanisms and functions from nature and art, and approaches from the experimental sciences, to develop new robotic technologies to enhance access, safety and performance in a wide range of industrial applications. The Robotics Lab and the Academic Lead cover a number of research spaces, including soft robotics, robot mobility, manipulation and attachment, and multi-modal sensing. Strategic internal investment in equipment for the lab and the Academic Lead post have led to InnovateUK-funded projects as well as an EPSRC Innovation Fellowship, which in turn have funded further research assistant posts for robotics. Other facilities established during this period include the 3D sound lab, the VR/AR/MR lab, and the Motion Capture studio.

Since 2014, the Special Collections division of the RCA Library has continued to enhance the holdings in its specialist areas. Recent acquisitions include materials relating to projects and individuals from the College's Department of Design Research, and a teaching collection of commissions from the career of graphic designer Ken Garland. In 2015, Special Collections assumed responsibility for the archive of the RCA's Graphic Design programme, and around 1,500 posters and 24 boxes of printed materials and other examples of student work were transferred to its care. The Colour Reference Library, a self-contained collection of over 1,600 books, and one of the most comprehensive resources of its kind in the world, has continued to grow in scope and use and has supported numerous practice-led research projects and publications.

In 2018, the RCA received a grant of £200,000 from the Foyle Foundation to fund refurbishment of the Special Collections reading room, an extensive preservation programme and mass digitisation. High-specification digitisation equipment, including an A0 scanner, was purchased, and the entirety of the RCA's works on paper are now being scanned for delivery through a new public-facing image resource (launching 2021). The College's historical images of student work are also being digitised for access through the same platform. To date, around 40,000 digital images of items in the RCA's collections have been created for the project.

The College has continued to invest in research support and development. In 2015, the new Director of Research & Innovation (Dr Emma Wakelin, formerly AHRC Associate Director of Programmes) joined the RCA to oversee RKEI strategy and development. The RKEI directorate encompasses the RKE Office, the College's research centres (HHCD, DAI, MSRC, IMDC, CSRC, HELIX), and InnovationRCA, the RCA's centre for enterprise, entrepreneurship, incubation and business support.

The RKE Office has grown in order to support the College's RKE strategy and increase its research and knowledge exchange activity and income. The structure includes a head of function for each of the core business areas: Research Development, Knowledge Exchange, Research Programmes, and Executive Education. Research and Knowledge Exchange is supported by Research & Knowledge Exchange Development Managers (2x new posts, 2017), the Post-Award Research Manager (new post, 2020), the Research Information Manager (new post, 2019), and a small administrative team. Research programmes, including externally funded doctoral training provision, are supported by a small team of administrators.

The RKE Office shares the Scholarly Communications Librarian post with the College Library. This post was introduced in 2019 and was developed in order to provide expert guidance and support to research staff and students in areas such as open access (OA) (including compliance with funder OA policies) and research-data management. Since joining the College, the Scholarly Communications Librarian has provided group and individual training and advocacy around OA to RCA research staff, worked to embed and promote OA best practice within the College's research culture, and manages the RCA Research Repository and associated OA processes. Individual training and support have been delivered to RCA PGR students around OA and copyright in order to maximise access to, and the reusability of, RCA PhD theses. The PhD thesis deposit workflow has also been updated (including reducing the maximum embargo offered), and wider group training on OA for PhD students is being developed as part of the existing RCA Doctoral Training Programme.

The Scholarly Communications Librarian, working with the Library Information Systems Manager (new post, 2019), manages the College's EPrints Research Repository. The RCA repository platform is based on the open-source, open-standards EPrints digital repository and MEPrints extensions, with visualisation extensions devised by Visual Arts Data Service (VADS) KULTUR. The RKE Office, Library and IT services have further adapted the EPrints platform, design and interfaces for use by researchers, students and staff. The Pure research information system will be launched for use by staff and PGR students in late 2021 and will allow researchers to record details of their research outputs, projects, activities and awards. Pure will be integrated with the RCA Research Repository.

During this REF period, the RCA has further invested in research support and development by procuring and beginning implementation of the Elsevier Pure research information system (due to be completed in 2021). Additional investment has also been made in the Unit4 finance system to integrate with Pure and better support research costing and pricing. As the College's research and knowledge exchange portfolio continues to grow, the need for additional infrastructure and support for the entire research lifecycle has increased. Investment in RKE Office posts, including specialist posts (Post-Award Research Manager, Scholarly Communications Librarian), and systems (Pure), demonstrates the RCA's commitment to developing a robust and supportive research environment.

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

Underpinning the RCA's research and knowledge exchange activity and support is a commitment to continually enhance existing collaborations, and develop new relationships with institutions, industry, the public and third-sector organisations. Engaging with key research users, beneficiaries and audiences is fundamental to the College's research, and will ensure that it continues to make a positive difference to many sectors of society, business, industry and public life.

RCA researchers regularly and actively collaborate with both national and international partners. As above, internal RKE funding schemes administered by the RKE Office provide funding to develop networks and collaborations with a view to establishing joint research projects with other universities and partners from industry and public/third sector organisations, both in the UK and internationally. Examples of successful internally-funded projects include: Crafting Futures Central Asia, where QR GCRF funding has been used to match-fund the British Council-funded project (co-led by RCA and University of Leicester) in Kyrgyzstan and Kazakhstan. This project has developed new collaborations with local craftspeople to co-research and co-create methods for peer support and exchange, including intergenerational storytelling and communication, sustainable craft and design knowledge and skills development, and enhanced access to information about crafts practices in and beyond the region. Internal funding was also awarded to the MSRC for scoping work, including identifying and developing relationships with strategic partners in STEM-based faculties and industry, which fed into the successful £5.4m UKRI bid, Interdisciplinary Circular Economy Centre for Textiles: Circular Bioeconomy for Textile Materials. This proposal was led by the MSRC, collaborating with a wide range of academic and industry

partners, including UCL, University of York, University of Leeds, University of Manchester, Cranfield University, University of Cambridge, UK Fashion & Textile Association, IDEO, Oxfam GB, and Wandsworth Borough Council.

There are a number of externally-funded RCA collaborations with UK and international partners, in addition to those mentioned in earlier sections. The Multi-Platform Inspection Maintenance & Repair in Extreme Environment (MIMRee) project is funded by Innovate UK. **Sareh** leads on this project for the RCA, collaborating with University of Bristol, University of Manchester, Royal Holloway University of London, Thales UK, and the Offshore Renewable Energy Catapult. The project reduces the need for humans or autonomous vehicles to go offshore to carry out wind turbine blade inspection, maintenance and repair (IMR) tasks and removes the need to shut wind turbines down to carry out inspections. The Creative Exchange Knowledge Exchange Hub, funded by AHRC, was a collaboration with Lancaster University (lead partner) and Newcastle University (RCA lead **Myerson**) that connected arts and humanities academics with public and private sector organisations to explore creative applications of digital tools and solutions on social and cultural challenges. The Creative Europe-funded 4Cs: From Conflict to Conviviality through Creativity and Culture project brought together partners from across Europe (Catholic University of Portugal, lead partner; Vilniaus Dailes Akademija, Lithuania; Savvy Contemporary e.V, Germany; Museet For Samtidskunst, Denmark; Stiftelsen Tensta Konsthall, Sweden; Ecole Nationale Supérieure des Arts Decoratifs, France; Fundacio Privada Antoni Tapies, Spain; RCA, led by **Crimmin**) to explore how training and education in art and culture can reflect on, and respond to, conflict through audience participation and co-production.

RCA research is interdisciplinary and engages with diverse research beneficiaries, users, audiences and communities by design. **Phillips** (Co-PI for EPSRC-funded Citizen Nature Watch with Goldsmiths) designed public engagement strategies, methods and interventions related to the My Naturewatch camera to increase engagement with nature for diverse groups; this project had wider impact on museums, conservation organisations and education providers. Phillips was provided internal funding from the RKE Office to participate in the NCCPE Engage Researchers' Academy (public engagement training), and to undertake further work for the Citizen Nature Watch project with research participants and users. Phillips was subsequently awarded an EPSRC Telling Tales of Engagement award worth £10,000 (one of only three nationally in 2019). These awards enable researchers to tell a tale of digital economy research impact through a series of public engagement events or activities over eighteen months. Phillips' work was also shared through the RKE Office-funded Design for Active Engagement Cross-College research symposium with colleagues and PGR students; the event involved colleagues from HHCD and the School of Arts & Humanities, V&A Dundee and the University of Brighton. Another example is **Gaudion's** (HHCD) research collaboration with the autism charity, Kingwood Trust. This collaboration included the project Green Spaces, which involved working with adults with autism and learning difficulties, and their family members and support staff, in researching and developing a green space in Kingwood College Gardens. The project also published guidance on designing positive sensory experiences in green spaces for adults with autism.

RCA research has an impact on the wider economy and society through engagement with a range of industry and cultural partners as well as research users and beneficiaries. **Brown and Oakley's** research and work with Professor Martin Smith on the AHRC-funded Digitally Printed Ceramic Surface projects led to the creation of a spin-out company (Smith & Brown), as well as to open-source CAD files allowing others to fabricate 3D parts to enable a particular laser printer to print on ceramic surfaces. **Baseman's** Wellcome Trust-funded collaboration with NHS psychiatrist and leading dementia specialist, Professor Julian Hughes (Bristol), on the 9-minute film *La La La La*, explored how care-home residents with dementia or other cognitive impairments might express authenticity and citizenship through artistic intervention. Baseman's film has been shared with the residents and presented nationally and internationally, alongside research publications. **Anderson, Hall and Ferrarello's** Saving Lives at Sea collaborative project for the Lloyd's Register Foundation (LRF; an independent global charity with the mission of engineering a safer world that works across 886 sectors and 173 countries) focused on finding tangible solutions for saving lives at sea and on rivers. The success of this project led to

a strategic-level commission of the Design for Safety Foresight Review which investigated the role of design in tackling the top major future global risks (e.g. climate change). LRF has developed a better understanding of the role of design in providing solutions for safety challenges, and as a result of the Saving Lives at Sea, both the United Kingdom Maritime Pilots' Association (UKMPA) and the Royal National Lifeboat Institution (RNLI) have altered their practices. RNLI is also using the new design-led approach in the early stages of its Lake Victoria project to reduce drowning in the fishing community.

The RCA's research contributes to the sustainability of art, design and architecture through its engagement with, and impact on, non-academic partners, users and audiences, as well as through interdisciplinary collaborations. The Research England-funded Design Age Institute is addressing the Industrial Strategy Ageing Society Grand Challenge, and, along with interdisciplinary academic and industry partners, aims to generate economic and societal impacts through designing for an ageing population. Internally funded GCRF projects by Jacoby, Oakley and Ramanathan/Simmons address United Nations Strategic Development Goals Sustainable Cities and Communities, Gender Equality, and Decent Work and Economic Growth. Sun's UKRI-funded Covid-Response grant to address mental health, resilience and wellbeing through nature-based solutions addresses both national and international priorities in the wake of Covid-19. Oakley's AHRC-funded Sustainable Materials in the Creative Industries interdisciplinary scoping study is contributing to the AHRC's exploration of future research initiatives, and addresses national and international priorities.

RCA academic staff actively engage with and contribute to the wider research base through a wide range of activities, including organising and chairing conferences, giving invited keynotes, lectures, panels and presentations, staging public performances, having work acquired for private and public collections, and membership of editorial boards and national and international committees.

RCA researchers have **organised or chaired over 60 conferences** during this period, including: **Teasley** (Design Policy Across Borders 2015, part of the AHRC-funded UK-China Design Policy Network, RCA); **Hughes** (Seoul Biennale of Architecture and Urbanism Thematic Symposium 2019, Dongdaemun Design Plaza, Korea); **Cheang** (Histories of Fashion and Cultural Exchange 2014, part of AHRC-funded *Fashion and Translation: Britain, Japan, China Korea*, V&A London); **Cranfield** (Conventions of Proximity 2016 interdisciplinary conference, performance event and film screenings, Birkbeck University of London); and **Boyd Davis** (co-Chair of The Design Research Society's 50th Anniversary Conference 2016, Brighton Dome Complex). Notably, **Lahoud** was selected to curate the first edition of the Sharjah Architecture Triennial, *Rights of Future Generations*. The triennial ran from November 2019 to February 2020 and was the first major platform for architecture and urbanism in the Middle East, North and East Africa, South and Southeast Asia, situating the built environment within the region's complex social, economic, and cultural contexts.

RCA researchers have been invited to give in excess of **100 keynote speeches** since 2014. Notable keynotes include: **Barfield** ('Useful Innovation' at Designing Future Techstyle 2019, Hong Kong PolyU); **Lahoud** ('Geographical Urbanism' at Milan Expo 2015); **Ramanathan** ('Picturing Words: Typography as Illustration', Tara Educational Research Society 2014, Chennai, India); **Grinyer** ('From Idea to Design' at Global Informatics Forum 2018, Kuwait); **Toomey** ('SOFT SYSTEMS: Neo Couture for the 4th Industrial Revolution' at Artificial Intelligence on Fashion and Textile International Conference 2019, Shanghai); **Blees Luxemburg** ('London Dust/Silver Forest' at (Re:)Thinking the Street - Urban Encounters 2015, Tate Britain); and **Robins** (The Matter of Material conference 2017, Turner Contemporary Margate). RCA staff have also given **over 450 lectures, panels and presentations** since 2014, nationally and internationally. Highlights include: **Richard** (Fifth UN Women Safe Cities and Safe Public Spaces Global Leaders Forum 2020, Rabat, Morocco); **Myerson** (Active and Assisted Living Forum 2018, Bilbao, Spain); **Torrisi** (Design Day at CERN 2018, Geneva, Switzerland); **Hamlyn** (Edinburgh Film Festival 2019, Edinburgh); **Ozden Yenigun** (American Institute of

Aeronautics and Astronautics SciTech Forum 2019, San Diego); and **Diels** (Car.HMI USA 2018, Detroit).

Staff have given **over 30 performances** in this period. Key performances include: **Schwabe** and **Fernandez Pascual** (CLIMAVORE: On Tidal Zones installation-performance, Isle of Skye, 2015-); **Davis** ('A Day in the Life of a City', Venice Biennale 2019); and **Strutton** ('Original Copy', De la Warr Pavilion, Bexhill 2015). *Avoidance-Avoidance* by **Ash** incorporates an evolving play in the form of a love story, performed amongst artworks, presented across four iterative exhibitions and performances in Rome, Florence, São Paulo and Graz (2014). The project has been performed in 5 languages and presented at *Index - The Swedish Contemporary Art Foundation* Stockholm, *CAC Bretigny* Paris, *Arnolfini* Bristol, *Museo Marino Marini* Florence, *Monitor Gallery* Rome, *Mendes Wood DM* São Paulo, and *Stericher Herbst* Graz.

Staff **work has been acquired by over 50 public and private organisations** since 2014. Notable acquisitions include: National Portrait Gallery and Imperial War Museum (**Kennard**); V&A Museum (**Taylor** and **Boyd**); Tate Gallery (**Thompson**); Smithsonian National Portrait Gallery USA, Arts Council Collection, George Eastman Museum USA, and Kadist France (**Satz**); MIMA (**Tatham** and **Baseman**); National Poetry Library (**Taylor**); Philadelphia Museum of Art USA and the Mint Museum USA (**Aylieff**); Museum Arnhem Netherlands, Fries Museum Netherlands and KRC Collection Netherlands (**Talbot**); V&A Dundee, Boston Museum of Fine Art USA, Little Rock Museum USA, Nelson-Atkins Museum of Art USA, Spencer Museum of Art USA, Scottish Parliament, Glasgow Life (**Boyd**); and Museum of London, Weltkulturen Museum Frankfurt, Fondation Louis Vicat France (**Blees Luxemburg**).

A sizable proportion of RCA staff undertake activities which shape and sustain the disciplines and support art, design and architecture research. Two members of staff were members of the REF2014 Sub-Panel 34: Art and Design: History, Practice and Theory (**Barfield, Boyd Davis**). Over the period, **20 staff** have been members of **Research Council Peer Review** Colleges: AHRC (15 total, including **Oakley, Phillips, Campbell, Hall, Fortnum, Golding, Jacoby**); EPSRC (3 total, including **Sareh** and **Gheerawo**); and ESRC (2 total; **Bichard** and **West**). Other funding bodies engaging RCA researchers as reviewers include: InnovateUK (over 30 reviews by **Grinyer**); NERC (**Sun**); Swiss National Science Foundation (**Diels** and **Buchan**); Austrian Science Fund (**Boyd Davis, Satz** and **Gheerawo**); Wolfson Trust (**McGinley**); British Academy (**Jacoby**); Leverhulme Trust (**Toomey**); Wellcome Trust (**Simmons**); and Horizon 2020 M-era.Net (**Ozden Yenigun**). **Boyd Davis** served as an assessor for the Research Assessment Exercise (RAE) Hong Kong panel. **Bichard** and **Diels** have served on the British Standards Institute Committee.

RCA researchers are involved in a number of other **international and national panels, boards and committees**, including: Research England Council (**Barfield**); ResearchFish Steering Board (**Oakley**); Design Council National Advisory Panel for TransformAgeing programme (**Gheerawo**); EPSRC E-Textiles Network Steering Board (**Toomey**); AHRC Design Leadership Fellow Advisory Group (**Triggs**); Global Disability Innovation Hub (**McGinley**); Design History Society, Chair of Equalities Working Party (**Cheang**); RSA Social Awards 2018 Panel Chair (**Gheerawo**); V&A Research Institute Steering Committee (**Barfield**); Ashmolean Museum Research Committee (**Teasley**); Research Collective for Decolonizing Fashion Steering Board (**Cheang**); Ceramic Art London adviser (**Aylieff**); British Council International Fashion Showcase judge (**Webber**); member Working Group on Models for the Assessment of Higher Art Education Institutions by the European League of Institutes of the Arts (**Barfield**); selected participant for AHRC/ICHR workshop 'Cultural Heritage and Rapid Urbanisation in India'; and American University of Paris conference board (**Broach**).

RCA researchers hold a number of **editorial positions** as well as **refereeing** academic publications which ensures RCA actively engages with the wider discipline. **Fortnum** is founding editor of *Journal of Contemporary Painting*, and **Buchan** is founding editor of *Animation: an Interdisciplinary Journal*. **Myerson** is the editorial director of *Worktech* Academy, and **Brooker** is commissioning editor of the series *Lund Humphries*. Editors include: **Sareh** (*Journal of Sensors*),

Watson (*bauhaus imaginista*, *Practice International*, and *Textiles Open Letter*), **Joseph-Lester** (*Transmission Annual*, *Walking Cities: London*), **AA Files** (**Giudici**), and **Hamlyn** (*Experimental and Expanded Animation*, *Kurt Kren Structural Films*). Other editorial positions: **Golding** (series editor, *Zetesis: International Journal for Fine Art, Philosophy & the Wild Sciences*); **Sommer** (scientific managing editor, *Journal of Integrative Bioinformatics*); **Campbell** (editor for expanded content, *Journal of Architecture*); **King** and **Joseph-Lester** (guest editor, *Journal of Writing in Creative Practice*); **Greenall** (guest editor, *Architectural Design*); and **Talbot** (guest editor, *Journal of Visual Arts Practice*). **Editorial and advisory board members** include: **Millar** (*Afterall*); **Oakley** (*Luxury: History, Culture, Consumption*); **Brooker** (*IDEA*, and *Interiors, Design, Architecture, Culture*); and **Fantini von Ditmar** (*Kybernetics*).

RCA researchers **refereed for over 60 academic publications** in this period, including: *The Design Journal* (**Gheerawo**, **Myerson**, **Bichard**, **West**); *Moving Image Review and Art Journal MIRAJ* (**Buchan**); *Journal of Material Culture* (**Oakley**); *Journal of Mechanical Engineering Science* (**Hall**); *Journal of Contemporary Painting* (**Tatham**); *Animation: an interdisciplinary journal* (**Simmons**); *International Journal of Human Computer Studies* (**Diels**); *Journal of Industrial Textiles* (**Ozden Yenigun**); *Journal of Architecture* (**Jacoby**, **Campbell**); and *Journal of Design History* (**Boyd Davis**, **Cheang**). Staff also peer reviewed for publishers including: Bloomsbury, SAGE, Routledge, RIBA, Goldsmiths Press, MIT Press, and Verso.

RCA researchers have **examined more than 230 PhD and MPhil submissions** at UK and international institutions, including: The Architectural Association, London; TU Delft; RMIT; UCL; University of Cape Town; Glasgow School of Art; University of Cambridge; Imperial College London; University of Ulster; India Institute of Technology; ETH Zurich; SOAS; Istanbul Technical University; Courtauld Institute of Art; IIT Bangalore; Lancaster University; University of Florence; University of Warwick; and Loughborough University.

Researchers hold leading positions in more than **50 professional subject associations and societies**. Notable positions include: Trustee, UK Association of Art Historians (**Neil**); Chair, Automotive User Interest Group (**Diels**); Executive Committee, Computer Arts Society (**Boyd Davis**); Advisory Board, International Association of Universal Design Council, Design Management Institute (**Gheerawo**); Fellow, Design Research Society (**Hall**, **Bichard**); Fellow, RSA (**Dare**, **Myerson**, **Bichard**); Fellow, Royal Anthropological Institution (**Oakley**); Fellow, Royal Commission for the Exhibition of 1851 (**Greenall**); Fellow, Theatrum Mundi (**Blees Luxemburg**); Fellow, Royal Society for the Encouragement of Arts, Manufactures and Commerce (**Anderson** and **Neil**); and Art and Design Advisor, British Mycological Society (**Ivanova**).

RCA researchers have received recognition with distinguished scholarly awards, fellowships, placements and residencies. Notable **Fellowships** include: **Ozden Yenigun**, Marie Skłodowska-Curie Fellow (2018); **Sareh**, EPSRC Innovation Fellowship (2018); **Ivanova**, London Doctoral Design Centre Creative Economy Post-doctoral Fellow (2019); **Wu**, AHRC Design Fellowship: Challenges of the Future (2020); **Smith-Granderson**, Queens Museum USA Jerome Foundation Fellowship for Emerging Artists (2018), **Harvey**, Ohio Arts Council USA Individual Artists Fellowship (2017); **Bichard**, Professorial Fellowship, University of Brighton (2016); **Broach**, Stanley Picker Gallery Design Fellowship (2014). Researchers have received national and international **artist- and/or curator-in-residence** positions at: Irish Museum of Contemporary Art (**Staton**, 2016); Mahler & LeWitt Studios, Italy (**Shani**, 2019); Arts Council Wales Newton – Emscher Residency (**Coutts**, 2015-16); Civitella Ranieri Foundation (**Smith-Granderson**, 2019-2020); Artspace Sydney, Australia (**Burns**, 2014); Leverhulme artist residency, John Hansard Gallery, University of Southampton (**Satz**, 2015-16); The London Library (**Matthews**, 2019-2020); Griffelkunst award, Germany (**Talbot**, 2017-18); and Casa Wabi, Mexico (**Schwabe** and **Fernandez Pascual**, 2019).

Staff hold visiting and **honorary positions** in over 25 institutions worldwide, including: **Myerson**, Visiting Professor, Oxford Institute of Population Ageing, University of Oxford; **Kaasa**, Visiting Professor, University of Toronto, Canada; **Campbell**, Visiting Professor, Southeast University,

China; **Hall**, Visiting Professor, Central Academy of Fine Arts (CAFA), Beijing, China; **Golding**, Honorary Professor, Duncan of Jordanstone College of Art & Design; **Torrisi**, Associate Professor, IE School of Architecture and Design, Spain; and **Ivanova**, Honorary Research Fellow, Kingston University.

Notable **awards** received by RCA researchers since 2014 include: **Richard**, ESRC Outstanding Impact in Society finalist for The Great British Toilet Map (2016); **Richon**, Royal Photographic Society Education Award (2017); **Luxemburg**, ART360 Legacy Award (2016); **Myerson**, Champion of Inclusive Design Award, Include Conference International Steering Committee (2015); **Tatham**, Arts in Public Places Award, Saltire Society Scotland (2016); and **Gaudion**, Autism Professionals' Award for Best New Technological Innovation, National Autistic Society and Network Autism (2014). Of particular note is **Shani's** Turner Prize 2019 which was awarded jointly to all four nominees as a collective for the first time in Turner Prize history. Shani and the other nominees (Oscar Murillo, Helen Cammoch and Lawrence Abu Hamdan) lobbied the judges to recognise "commonality, multiplicity and solidarity", requesting that they not single out one artist. The judges unanimously agreed to the nominees' request and chose to award the group as a collective.

The research leadership of the RCA's academic and research staff across the art and design field is evident in the broad and deep connections described above. This is what has enabled us to secure substantial increases in the range of our research specialisms and of our partners across the creative and cultural sectors, the major industrial sectors, the NHS and local community groups both close to our campuses and internationally. The significant growth in research-active staff, in research income, in the number, quality and funding of doctoral degrees, and in the creation of new, successful, interdisciplinary research centres and a successful new MRes programme are indicators of a rich research environment supported by investment in people, infrastructure and facilities. This sets the foundations of our work over the next decade, and our continued investment in support for research excellence and impact, research career development, and a supportive environment and infrastructure for specialist research within and across disciplines will enable the RCA to continue producing high-quality research with real-world impact in the future.