

Institution: University of Dundee
Unit of Assessment: UoA32 Art and Design: History, Practice and Theory
1. Unit context and structure, research and impact strategy

Overview: Duncan of Jordanstone College of Art and Design (DJCAD) is one of ten academic Schools within the University of Dundee (UoD). Founded in 1881, DJCAD became part of the University in 1994. It has a well-established research environment, community and culture that is fully aligned to the Unit of Assessment in Art and Design (UoA32). Our submission comprises **45.45FTE** Category A staff (44.5FTE, REF2014), including an independent researcher (**Leuzzi**) and two Architecture colleagues (**Holm, Berdos**) with related research from the School of Social Sciences. Six Category B staff are included in the submission, reflecting a period of change and renewal during the census period. Our outputs include artefacts, exhibitions, publications, software and multi-component outputs, with 37 (33%) outputs identified as interdisciplinary.

Context & Structure of UoA32: The UoA32 research community and strategy is led by the DJCAD Associate Dean Research (ADR, **Colvin**) who reports both to the Vice-Principal Research (VPR) at University level and the Dean of School (**Taylor A**). The ADR is a member of the School Senior Executive Group (SEG) comprising the Dean, School Manager, five Associate Deans: Learning & Teaching, Quality & Academic Standards, Internationalisation, Research, Public and Community Engagement. Research-led teaching and learning is delivered across four Discipline Groups - Contemporary Art Practice, Communication Design, Design & Craft, Social Digital - with c1300FTE students enrolled on ten Undergraduate programmes, six Taught Postgraduate programmes and Research Degrees in Art, Design and related subjects supported by 65FTE academic staff. Research is undertaken across all of these Discipline Groups, with interdisciplinary research and teaching a distinctive feature of our provision. Art, Design, and Architecture are co-located within the Matthew Building, and work closely together in research and teaching delivery.

Research & Impact Strategy: The University's core purpose is to **transform lives locally and globally** through the creation, sharing and application of knowledge. The **Strategy to 2022** emphasises the mutuality of research, teaching, and knowledge exchange and the creation of a **high-performance community** committed to excellence, integrity, valuing people, working together, and making a difference in the wider world. Interdisciplinary research is focussed within four thematic, challenge-oriented priorities - **Health and Wellbeing, Creativity and Design, Innovative Technologies** and **Social Justice** – that maximise our institutional impact on the UN Sustainable Development Goals (20th worldwide, 2019). The organisational structure of the University fosters and facilitates both specialist and interdisciplinary research, teaching, and public engagement that make positive and transformational impacts on our communities, our partners, and in wider society. UoA32 contributes significantly to University achievements, with projects such as GROW (**Woods**), the Cooper Gallery programmes (**Hao**), and the partnership with **V&A Dundee** contributing to the University becoming Scotland's first university (third in the UK) to receive a Gold Watermark from the National Coordinating Centre for Public Engagement (NCCPE, 2020), and recognition in the Times Higher Impact Rankings (2020) as being in the top 10 UK institutions (44th globally).

In keeping with the University values and aims, UoA32 research fosters life-enhancing creativity, innovative design and technologies, and promotes societal and cultural transformation to enhance social justice, diversity and socio-economic prosperity. We aim to develop and sustain influential and impactful research that addresses fundamental issues of our time, through the contribution of

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art and design and in interdisciplinary spheres. Together with influential industry, research, civic and community partners, we aim to deliver 'real world' change by devising and developing innovative solutions for local, national, and global beneficiaries. Our aim is to demonstrably make lives better by identifying and addressing societal, civic, cultural and economic challenges through art and design in innovative, ethical and sustainable ways. This is achieved through impactful research, a research-engaged portfolio of academic programmes that foster the generation of new knowledge and understanding at the heart of learning, and our industry, and public engagement that reflects the intrinsic nature of our research and innovation to everyone we work and engage with. An open and inclusive research environment allows for a diverse range of researchers to generate new insights and understanding into key issues of the 21st Century.

REF2014 Strategy: Implementation, Achievements & Impact: The plans and aspirations stated in the REF2014 submission focused on the development of a permanent research and knowledge exchange agency as an engine for economic growth in Scotland via the progression of plans for *Design in Action* and *V&A Dundee*; development of new and existing external partnerships with Dundee City Council, Dundee Contemporary Art, V&A Dundee and Dundee's creative cluster, and closer integration with Engineering, Computing, Forensics, Life Science and Medicine within the University. Visualisation of Big Data and user-centred products and services were identified as key growth research areas for our 3D visualisation, digital products, and service design research groups; along with the establishment of an Art/Science Research Programme with the School of Life Sciences. Sustained investment in academic research posts and the development and retention of PDRAs supported these aims and underpinned a period of successful consolidation, ambitious development, and extensive impact.

The flagship research programme *Design in Action*, a £5M AHRC-funded Knowledge Exchange Hub for the Creative Economy (led by Follett, 2012-2017) played a vital role in Dundee's designation as the first UNESCO City of Design in the UK (2014) and was pivotal to securing the development of *V&A Dundee* as the first V&A Museum in the world outside of London, opening to the public in 2018. Designed by Kengo Kuma as the centrepiece of a £1B waterfront development, Scotland's first design museum delivers and provides world-class research and resources in Scottish design heritage, innovative design and curatorial practice. Two full-time DJCAD appointments are seconded to V&A Dundee, a Curator (More/Maxwell) and the Research Manager (**Ballie**) of the V&A Dundee Design for Business programme. This programme is delivered with Scottish Enterprise and industry experts in design thinking, realising the aim of a permanent research and knowledge exchange engine for economic growth in Scotland and is further complemented by our own MSc Design for Business programme (led by **Latter**). University-wide liaison groups, convened by the DJCAD Associate Dean for Public and Community Engagement, ensure collaborative planning, programming and communication across all strands of the University partnership, and University representation on the V&A Dundee Board (Design Dundee Ltd, **Taylor A**) ensures contribution to governance and strategic direction. The exhibitions programme has included *Hands of X* (**Pullin**, 2019), *Sewing Box for the Future* (**Ballie**, 2020), and *Now Accepting Contactless* (2020) featured our collaborative NHS-Industry-Community-University PPE design and production project, highly commended in the Go Awards Scotland COVID-19 Outstanding Response Award.

Our aim for **Visualisation of Big Data** and development of user-centred products and services concentrated on industry collaboration and R&D, and realised significant outcomes through visual communication of real-world data and stories in interdisciplinary contexts: **i)** The **3DVisLab** worked on significant projects (to the value of £3.2M) with national and international Government departments, EU projects, research councils, and industry partners over the period and continues

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to flourish with national and international demand for its methods of visualisation in a range of spheres including subsea visualisation, detecting terrorist activity, health settings, climate change, heritage settings and immersive cultural events and experiences. **ii)** The AHRC-funded InGAME (Innovation for Games and Media Enterprise, (£11.5M, 2018-23) is an R&D Centre led by a consortium of Abertay (lead), Dundee and St Andrews Universities with local and international industry partners that supports product, service and experience innovation across the Dundee Games Creative Cluster as a model for UK-wide games sector innovation with Co-Investigators from DJCAD (**Head, Taylor A., Valentine, Vaughan**) as well as the Schools of Humanities (Livesey) and Business (Beech); **iii)** The OpenDoTT and Internet of Things Studio (Rogers) was established as a ten-year collaboration with leading internet non-profit Mozilla (awarded €1.5M, with University income of £110K); Rogers was seconded to Mozilla in Berlin for 3 years (2016-19, £283K) to advocate for a more trusted, and safe, Internet of Things (IoT) and to develop a large international community of professionals with expertise relating to technology, design and policy; **iv)** The Living Digital Group (Moncur, total income £651K) carried out research into lived experience in the digital age, focussing on online identity, reputation, trust and cybersecurity with industry partners such as Microsoft (funded 3-year PhD Scholarship £75K), Royal Bank of Scotland, Government Office for Science, Centre for Research and Evidence on Security Threats (CREST).

A pioneering Science-Art Research Gallery and Residency Programme, **LifeSpace**, was established in collaboration with the School of Life Sciences in their new building (2014). LifeSpace was cited as 'evidence of excellent practice in public engagement in exploiting the intersection of art and science' in the School of Life Science's Faculty Gold Watermark Award from the NCCPE in 2017. It provided a vital impetus and resource for the development of a new collaborative MFA Art, Science and Visual Thinking, approved in 2019/20. The **Visual Research Centre** relocated from **Dundee Contemporary Arts (DCA)** in 2018 to the DJCAD Matthew Building and was reimagined to form an expanded **DJCAD Research Hub** at the heart of the Art, Design and Architecture provision and as a centre for all UoA32 research. The **Global Centre for Art, Design and Innovation (GCADI)**, a partnership with Sichuan Fine Art Institute (SFAI) was initiated to develop a joint Innovation Centre in Dundee and Chongqing (2019).

The research environment, culture and community has seen investment and consolidation through the cultivation of partnerships, thematic research groupings and critical mass to grow and ensure our impact in local, national and international contexts from our disciplinary base of **Architecture, Contemporary Art Practice, Communication Design, Design & Craft, Social Digital**. During the period, the six research centres identified in REF2014 were reviewed with the aim of consolidation and sustainability, enabling trans-disciplinary and inter-disciplinary research with permeable boundaries across disciplines, providing connective networks for all of our researchers, with PhD students aligned.

- **Interdisciplinary Design and Innovation** brought together Design in Action and Design for Services with other interdisciplinary design research including Design for Business; Disability, Design and Culture; Design for Health; Sustainable Design, Materials & Innovation; Creative Economies. [**Ballie, Bruce, Cook A, England, Ferraro, Follett, Gault, Glazzard, Pullin, Latter, Lim, O'Neill, Woods, Wilson, Valentine, Vones**]
- **People, Landscape and Environment** brings together a community of researchers undertaking Environmental Art & Design Practices including Architecture and Urban Planning; the Centre for Remote Environments; Citizen Science & Environmental Monitoring; and projects engaging with and reflecting upon climate change, sustainability of

landscape and place. [**Braham, Berdros, Dalziel, Dunlop, Faithfull, Hemment, Holm, Milligan, Modeen, Scullion, Shemilt, Woods**]

- **Secure Digital Futures** includes 3D Imaging & Visualisation (3DVisLab); Digital Products & Futures; Living Digital Group; Open IoT Studio; and has increased our capacity for visualisation of Big Data and user-centred products and services that address environmental, archaeological, medical, scientific, and security-related challenges. [Alessandrini, **Baxter, Body, Head**, Moncur, Rogers, **Rowland, Skelly**, Taylor N, Thomas, **Watterson**]
- **Visual Practice, Curation and Critique** expanded the Archives & Curation research centre to include individual and collaborative research projects through a range of Contemporary Art Practices; Media, Culture and Critical Theory; Curation, Collections and Archives; Identity, Voice, Society. [**Bodor, Colvin, Eyres, Fagen, Fusco, Gorrill, Hao, Harrison E, Harrison P, Herd, Keay, Kovats, Lockhart, Lushetich**, McArthur, **Myles, Notaro**, Partridge, **Peter, Plummer, Spence, Taylor A, Vaughan, Watson, Wood**]

Open Research: UoA32 is proactive in encouraging an open research culture in keeping with the San Francisco Declaration on Research Assessment (DORA) and open access publication funding is available through central funds managed by the Library and Learning Centre (LLC). UoA32 researchers actively participate in events hosted by the Library during Open Access Week where topics include open FAIR research practices and measuring impact through non-citation-based metrics. Library liaison staff also provide in-house training regarding the creation of researcher profiles via the Discovery Research Portal. The Unit goes above and beyond the REF Open Access policy by supplying draft versions of books and chapters to the LLC, who liaise with publishers to make them open access via the green route where possible and coordinate the Discovery website where all research within the University is made outwardly accessible, cross-linked with ORCID and SCOPUS. DOIs are also routinely assigned to 'grey literature' such as reports and online toolkits, again, ensuring greater access and re-use. DJCAD actively promotes Open Data, developing Open Platforms and Tools that promote analysis, sharing, and management of research data and has made significant projects with large data-sets available in this way. The Grow Observatory 'WeObserve' data sets were assigned DOIs and CC-BY licenses, enhancing online discovery and increased openness through MOOC learning platforms. This included offering a £5K prize for best data re-use within the citizen sensing community to encourage this. DJCAD facilitates access upon request for its archives and collections, where ownership of artworks lies with the artists or their estates (*Demarco Archives, MacLennan Archives*).

Research Integrity: The University's Research Governance and Policy Sub-Committee ensures appropriate governance and policies for research conduct. An easy-to-use 'policy roadmap' guides Principal Investigators and research staff to the policies that govern particular research activities. School-level Research Integrity Leads (Moncur, **Dunlop**) are responsible for promoting a culture of research integrity within the School, and act as an independent and impartial source of advice for staff and students on the responsible conduct of research. The DJCAD Research Ethics Committee (Chair, **Wilson**) promotes and maintains standards of ethical practice and respect for research participants. An active peer-review process for research ethics applications from undergraduate module leaders, PGR and TPG students and staff ensures GDPR compliance, makes decisions within three weeks, and reports to the University Research Ethics Committee. Annual training in research ethics is held to ensure all active researchers are up-to-date and aware of best practice.

Future Research Plans and Impact Strategy 2021-2026: Over the next period, we will continue to sustain and develop a coherent and vibrant programme of leading and influential research in collaborative and interdisciplinary contexts. This includes a significant body of research in and through creative practice disseminated through the origination of artefacts, exhibitions, immersive experiences, publications, software and citizen-science initiatives. Our aim is to be recognised as a compelling academic incubator for research and industry with both local partnerships and global reach across industry, professional and government sector bodies, nationally and internationally.

The continuing development and consolidation of our core strengths in research and innovation in Art and Design will be reflected in the evolution of research centres and groups, designed to extend and integrate external partnerships, generate funded projects, and align with the development of our postgraduate community and provision. The implementation of our Taught Postgraduate Portfolio Review (2019/20) will lead to a revitalised postgraduate offer, reflecting disciplinary strengths, enhancing progression to research degrees and/or employment and supporting the creative and cultural industries through provision of relevant qualifications including upskilling, micro-credentials, a Professional Doctorate, continuing professional development as well as research and innovation, and knowledge exchange.

Investing in our people will mean recruiting and developing outstanding talent at all stages of research careers, nurturing a talent pipeline from early career researchers to a world-leading professoriate. Along with investment in infrastructure, and physical and virtual resources to ensure opportunities for colleagues to co-create and collaboratively generate new ideas in an effective, connected, supportive, critically reflective and vital community. We will continue to contribute and be informed by participation and leadership in national and international debates with research agencies, councils, and peers. We will continually review our plan to contribute ideas, applications and bids for research funding. Impact will be achieved, monitored and measured via a range of mechanisms supported by the ambitious public and community engagement, and knowledge exchange and innovation agendas of the University, that are realised through projects, programmes and events, co-created with our partners and participants to achieve outcomes with impact for our beneficiaries.

Over the next **five years** our **priorities** are to:

1) Deepen and extend our capacity for knowledge exchange and innovation by: **i)** Investing in our research partnership with V&A Dundee to achieve the national and global potential of Design for Business and generate new interdisciplinary projects that focus on the creative and cultural economies and ecologies in the city and beyond; **ii)** Review the strategy for the Global Centre for Art, Design and Innovation to ensure a sustainable and impactful plan as a global innovation hub in the context of new ways of working post-pandemic; **iii)** Develop and deploy our knowledge exchange, R&D, and commercialisation strategy, catalysed by the appointment of an industry leader as our first Entrepreneur-in-Residence in 2021 supported by the University Research & Innovation Services.

2) Invest in our strategic research initiatives by **i)** Building on our achievements, resources, track record in Collections, Archives & Curation to enhance and co-locate resources to ensure they are both public-facing and at the heart of the DJCAD provision as vital learning and research resources; delivering further investment on our AHRC Collections and Capability Award; implementing TPG Upskilling modules, short courses and CPD in collaboration with our local, national and international cultural partners; **ii)** Establishing a trans-disciplinary Centre for Drawing

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that builds upon our substantial practice, curation, collections and published resources (including the Trinity Buoy Wharf Drawing Prize Project) and growing critical mass of drawing researchers along with expertise across the University in forensics, engineering, medicine and education; **iii)** Building on our research in the creative economies, architecture, placemaking, urban planning, the UNESCO Creative City of Design designation and participatory civic culture, to establish a multi-disciplinary research centre or project that focusses on creative publics, creative cities and their ecologies; **iv)** Continuing to build the capacity of the 3DVisLab as a major strategic initiative to ensure sustained success and succession planning; **v)** Establishing a dedicated studio/lab to expand design practices for disabled clients and healthy ageing and build on this and other initiatives (including the MSc Design for Health) to scope and develop a Design for Health Innovation Centre with the School of Medicine by 2025.

3) Continue to develop our research community by investing in researchers at all levels, support staff, PDRAs and funded doctoral candidates. A key aim is to enhance our research capacity and profile through recruitment and to diversify the research community, including the attraction of funding to address this strategic priority. This currently includes plans to secure a PDRA for the Black Atlantic Research Dundee (BARD) group and a joint appointment of a BAME Curatorial Research Fellowship for Cooper Gallery in partnership with the Scottish National Gallery of Modern Art during 2021/22.

4) Continue to develop and implement research and enterprise informed Taught Postgraduate programmes as the outcome of the 2019/20 Taught Postgraduate Review, thereby growing the postgraduate community and enhancing and increasing progression to Research Degree study, early career roles and/or employment across Art and Design through new programmes such as Curatorial Practice in Art & Design and Drawing.

2. People

Since 2014, DJCAD has developed research capacity by investing in researchers at all levels (Professors, Readers, Senior Lecturers and Lecturers, Fellows, Early Career Researchers, Post-Doctoral Research Assistants, PhD students). Throughout the period, the School recruitment and retention strategy has been to: **i)** consolidate established research strengths aligned to its current and developing academic portfolio; **ii)** expand the scope of collaborative projects with industry and international partners; **iii)** make appointments that further interdisciplinary and cross-disciplinary research; **iv)** ensure equity and equality of opportunity for those applying for all roles and studentships. This strategy has been pursued through the appointment of Early Career Researchers and the recruitment of key experienced senior staff to enhance activity, provide leadership, and to ensure succession planning for a vibrant and vital research community integral to a vibrant academic offer.

In the REF2014 submission, it was noted that the staff demographic had an ageing profile with few Early Career Researchers. Subsequently, there were four retirees and ten long-serving staff members moved elsewhere (Alessandrini, Cook, Hemment, Moncur, Partridge, Robertson, Rogers, Taylor N, Thomas, Valentine). In 2014, the University invested in a number of Dundee Fellows with the aim of stimulating new areas of research; DJCAD benefitted from five full-time appointments who successfully developed research capacity and significant outcomes (**Myles**) and academic career trajectories and established new strategic initiatives such as LifeSpace (Cook). In 2020, the Dundee Fellows scheme was renewed with a focus on recruiting and identifying early career researchers with the potential for an accelerated academic career trajectory and two Baxter

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Fellows (**Bodor, England**) were appointed in strategic areas of growth in Art and Design (Creative Economies, Curatorial Practice) as part of a University-wide cohort.

Reflecting UoD's commitment to sustain a critical mass of world-leading art and design research and practice, five Professors (**Fusco, Head, Kovats, Lushetich, Taylor A**) were externally recruited to UoA32, augmenting five internal promotions to Chair (**Fagen, Modeen, Pullin, Wilson, Woods**) during the assessment period. This significant professorial investment has substantially strengthened research capacity, bringing further new expertise in Drawing and Making, Fine Art, Interdisciplinary Theory, Interdisciplinary Writing, 3D Visualisation. A further 20 academic staff on Teaching and Research contracts were appointed in 2019/20. This included a number of ECR's (**Baxter, Cook A, Eyres, Gault, Hao, Herd, Lockhart, Nevay, Skelly, Watterson**) of whom five were former PhD students (**Cook A, Nevay, Baxter, Gault, Herd**) and PDRA's (**Baxter, Watterson**) in keeping with the 2014-20 strategy. An increase in funded projects has enabled appointments of PDRAs, two new Professional Services Administrative staff to support PhD students, as well as an increase of six Technical Support staff who enhance and support this research community.

The research community is augmented by a number of honorary roles appointed for renewable three-year periods and aligned to research projects. Honorary Research Fellows include Iain Biggs (People, Landscape, Environment), Stephen Farthing RA (Drawing), Elena Hill (Healthy Ageing), Gary Sangster (Elastic Space) and Honorary Professors include the Director of V&A Dundee, Wendy Moncur (Living Digital) and Jon Rogers (OpenDott) on leaving UoD, retaining involvement with Secure Digital Futures research. Visiting Researchers included a Leverhulme Visiting Professor (Dr Alasdair Foster, 2018), Leverhulme Early Career Fellowship (Dr Emile Shemilt, 2014), Fulbright Scholars (Angelique Szymanek, 2019/20; Jessica Dandona, 2018/19; Nicole Jacquard, 2017/18; Jan Johnson, 2015/16; Peter Christensen, 2014/15).

DJCAD actively builds research community through lunchtime talks, a bi-monthly forum for debating research agendas and presenting research in progress. Sessions capitalise on visiting international researchers and offer an open environment where senior and junior staff; PDRAs and PhD researchers can present future research directions and gain feedback. There is an additional institutional forum (Committee for Development of Research Staff) for PDRAs, which is delivering the revised Concordat agenda for developing the research and professional careers of research assistants. An Annual Research Away Day and exhibition informs staff about the research landscape, provides an opportunity to deliver papers and exposition, and supports ECRs, PDRAs and PhD students to situate their work.

Maintaining and Developing Research Excellence: Research excellence is monitored through the Annual Research Review (ARR) process overseen by the University VPR and managed locally by ADR's. The ARR is designed to evaluate quality and drive expectations in relation to the quality of outputs, grant funding and the shaping of future research plans. Reviews of individual outcomes and plans are undertaken by at least three peers against set criteria and discussed at a specially convened panel chaired by the ADR. The outcomes inform recommendations to the Dean of School guiding discussions about staff workloads for the coming academic session. Staff returning from maternity leave or illness, and staff contributing to research projects in a supporting role, are allocated research time as appropriate.

This provides a transparent variable balance of duties allocation model between teaching, research and other duties, based on the qualitative annual peer review and a quantitative analysis of research activity and income generation. Formal workload allocation modelling (WAM) takes place

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in a line-management cascade from the School Executive through research group leaders via the annual Objective Setting and Review (OSaR) process.

All research-oriented staff are allocated a minimum of 30% research time, with further percentages allocated to Principal or Co-Investigators leading large projects up to a maximum of 70% research time in their contract. Research leave is available for all research staff and granted upon application to the ADR who makes a recommendation to the Dean and VPR. Research leave may be for short or longer periods, and most commonly for a few weeks or a semester. Research Leave schemes from the British Academy, Leverhulme Trust (**Colvin**), Royal Society of Edinburgh are supported and matched by UoD (for instance, Rogers, three-year secondment to Mozilla). Training, research goals, projects, staff development, and other duties are agreed, as well as the allocation in the balance of duties managed via the TRAC-compliant WAM.

All research staff are supported through investment in on-going professional and career development, fully utilising wider University resources. Research facilities include offices, workshops, studio and exhibition spaces and a range of technical support. Staff development is further supported through the grant application peer-support and review process; PhD Supervisory Training; PDRA development; research workshops; an annual research symposium and exhibition alongside a well-established mentoring system. Part of the UoA strategy has been to encourage and support staff to gain research degrees; this is not restricted to academics, and currently two professional services staff are undertaking study for doctorates and one for a Masters by Research.

Staff members may apply to change contracts from Teaching & Scholarship (T&S) to Teaching & Research (T&R), and vice versa, based on information gathered via the annual OSaR and ARR exercises. Since 2019, staff on any contract may apply to change their contract by writing to the Dean and ADR through a formal process, if a substantial and verifiable body of research work is made evident through the ARR or OSAR. During this period, two members of the Professional Services teams successfully transferred to research contracts in recognition of their research career trajectory (**Hao, Lockhart**). Candidates for transfer to research contracts propose a two-year plan of research activity with an appointed mentor and submit this to the Dean and ADR for recommendation for School Executive approval. Candidates and mentors meet regularly over the two-year transition period and at the end, a decision is made regarding transition to a T&R contract with the standard 30% research time allocation, or to remain on the standard T&S contract as before. Staff moving to a T&R contract may have completed or be working towards the completion of a doctorate and/or will be disseminating high quality research outputs as well as submitting applications for, or have been awarded, external funding.

Recruitment and Support for Early Career Researchers: The School recruitment policy seeks to appoint research active (T&R) academic staff wherever possible. On appointment, academic staff are assigned a personal mentor, engage with mentoring sessions and bespoke workshops, and are encouraged to participate in UoD's comprehensive portfolio of programmes offered by the Organisational and Professional Development (OPD) unit. The School induction programme includes a presentation on the School's research by the ADR, followed by new staff research presentations, ensuring an effective introduction to the School's research community, themes and networks. During their three-year probation period, ECR's have a protected workload balance of duties with a 40% research and orientation allocation in order to facilitate the development of networks, outputs and funding applications, and to nurture their research career. Following probation, this is normally adjusted to a standard 30%. ECRs assume a range of research-led duties alongside their teaching, such as PhD thesis monitoring, PhD supervision training and,

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when appropriate, begin a second supervision. They also contribute to the research committee. Every ECR has a mentor whom they meet regularly. Additionally, the research studio culture enables a level of community engagement and peer support within the UoA.

All research staff have access to an annual individual research account (IRA) to support routine research activity (such as travel) and facilitate scoping of new areas of investigation. Individuals can apply for DJCAD research funds on a case-by-case basis for further support (international travel, conference fees, artist residencies, subsistence, accommodation costs). They can also access additional funding through the deposit of awards, prizes, fees, consultancy and other research funds. PDRAs have been supported by awards from EPSRC, AHRC, Horizon2020, government agencies, Ferring Pharmaceuticals Ltd, ADUS Deep Ocean. PDRAs are active members of their research groups and appropriate School committees and have status as ECRs contributing to the full range of School fora and programmes of career development and mentoring, embracing the spirit as well as the letter of the Concordat to Support the Career Development of Researchers.

PGR Student Community: During the period, there have been 43.65FTE research degree completions. Our PhD students mostly receive funding support through research grants and awards; with a growing proportion of self-funders, averaging 7 to 10 per year. Funding sources include Research Councils (4 AHRC, 7 EPSRC), 1 Carnegie Award, a further 20 funded by foreign governments, private and public trusts, other universities, and industry. UoA32 has been part of the Scottish Graduate School for Arts and Humanities (SGSAH) since inception in 2014, and **Taylor A** became a member of the SGSAH Executive Group in 2020. SGSAH has transformed the environment for our doctoral researchers by expanding the number of generic and subject-specific training programmes available to them. We currently have two PhD students on SGSAH scholarships.

An enhanced focus on support for doctoral candidates for proposal writing has boosted acceptance rates and is reflected by a growing PGR community. The current cohort comprises 45 PhD students, with 76% of the cohort studying full-time. There are four students enrolled on the recently introduced University-wide Professional Doctorate programme to which DJCAD contributes taught modules as well as supervision with the first students completing in 2023. Masters by Research in Art or Design was introduced in 2020 to support progression to PhD study. The 2019/20 review of the Taught Postgraduate Portfolio further augments the opportunity to prepare and progress students to PhD study.

The interdisciplinary ethos within the School is reflected in increasing numbers of applicants requesting supervision teams across the School and University. Interdisciplinary topics and research methods have led to real growth in these multi-disciplinary areas of development, with 47.9% of PhD students engaged in inter/multi-disciplinary research (*Fig. 1*). Currently, there are 17 PhD supervisors from other Schools or prominent professional roles within external partner organisations. PhD students have received major accolades, including the Scottish National Portrait Award (Huang, 2020); Scottish Government Awards Climate Change Fund: 'Local Food for Local People' (Donkers, 2015/16, 2016/17); Winner of the AHRC Research in Film Awards (**Baxter**, 2016). Graduate PhD successes include employment as a Senior Policy Advisor for the Scottish Executive and art psychotherapy in the National Health Service.

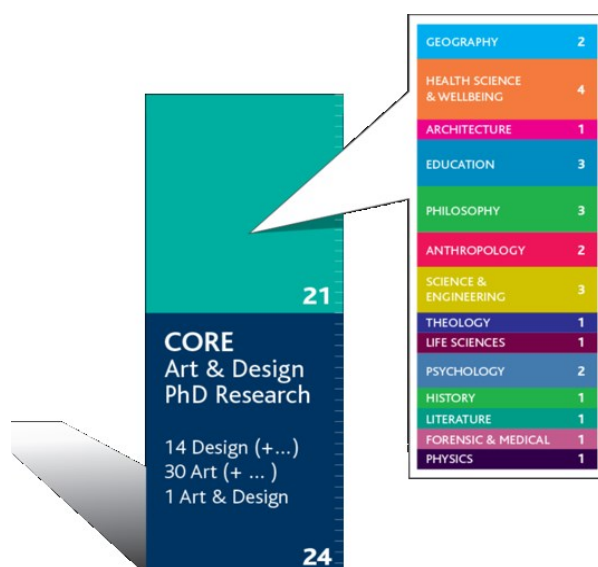


Fig 1: 47.9% of current PhD students in Art and Design conduct interdisciplinary research.

A supervisor training programme is conducted by the School PhD Coordinators (**Modeen, Notaro**), comprising in-house one- and two-day workshops delivered bi-annually by internal and external specialist staff and trainers. This is conducted with reference to the wider University programmes including those of the recently established University-wide Doctoral Academy (2019) providing comprehensive student support and supervisor training, aligned with UKRI expectations for Postgraduate Research, the QAA UK and University's Quality Codes for Research Degrees. Workshops and seminars are specifically tailored to the needs of our institution, unit and staff, based around real-world case-study materials in art and design. Workshops are conducted for new supervisors, refresher workshops for supervisors wishing to update their skills, and advanced workshops dealing with wider frameworks related to PhD supervision such as examination and progression. Annual PhD Programme Reviews, to which students, supervisors and administrators contribute, are filed with the Doctoral Academy with the aim of guaranteeing and improving quality of the doctoral study experience. In parallel with DJCAD supervisor training, the University and Doctoral Academy provide a compulsory Supervisor Training Scheme delivered by the OPD team. Training is further enhanced by events held by SGSAH and the Scottish Graduate School for Social Sciences. All research staff are invited to contribute to Thesis Monitoring Committees (twice annually for full-time students; once annually for part-time students), effectively sharing the content and progress of PhD projects within the research community and developing awareness and experience of supervision.

Equality, Diversity & Inclusion (EDI): We promote an intercultural and inclusive environment across all aspects of our work and equality of opportunity underpins all that we do. School-level EDI Coordinators were appointed in 2017 and are vitally important in promoting equality, diversity and inclusion amongst staff and students, and in providing direction to the School SEG on strategic and day-to-day equality matters. The School EDI Committee has representation across academic disciplines and professional services teams. All staff undertake mandatory Equality & Diversity training modules; and from 2020, all DJCAD staff and students undertake Unconscious Bias training to raise awareness within the academic context and community. We promote and ensure EDI via mandatory online training for all staff and by recording and monitoring protected characteristics as part of the recruitment, probation and promotion process. Our *Dignity at Work and Study Policy* and procedures for staff and students implements our commitment not to tolerate

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discrimination, harassment or bullying, including the support available through our Harassment Advisers Network.

All Category A staff research activities are treated equally regardless of position or type of contract. The transparent WAM makes fair provision for administrative duties by allowing for adjustment of the proportion of teaching against administration, thus protecting research time. Care is taken to ensure that the expectations of staff on fractional contracts are duly considered with excellence acknowledged at all times.

Construction of the REF Submission: Outputs were selected and attributed to individual staff by the UoA32 Planning Group (comprising 50% female/male staff) consistent with the institutional REF Code of Practice with the aim of maximising the overall quality profile for the submission. All REF-returnable staff were invited to propose impact cases studies and those chosen reflect the strongest impacts arising over the REF period as deemed by the UoA32 Planning Group. The proportion of outputs attributed was broadly consistent with the gender balance of the UoA. Other comparisons based on protected characteristics (ethnicity, disability, age) also indicate no bias in output selection. Consistent with our institutional REF Code of Practice, bespoke training relating to unconscious bias was developed for all staff involved in REF management and due process followed for all eligible staff with individual circumstances to be taken into account.

A number of our researchers (**Bodor, Fagen, Gorrill, Pullin, Shemilt**) are actively engaged in investigating research questions of equality, diversity and inclusion. Cooper Gallery, a key research and academic resource, is recognised for its inclusive and intersectional exhibitions and events programming. This central provision celebrates the diversity of artists, designers, curators and others in the creative and cultural industries at the heart of the academic community. The School and Cooper Gallery also contribute to the programming of the University-wide Black History Month and LGBTQ+ History Month. International recruitment of staff and students adds a global dimension to our aims for diversity within our community. School-level workshops and awayday activities promote EDI initiatives across DJCAD, and a School-level Athena Swan application is in preparation for submission in 2023. The University is a member of the Race Equality Charter and is preparing an application for an AdvanceHE Race Equality Charter Award, with a self-assessment team including **Gorrill, Notaro, Taylor A.**

3. Income, infrastructure and facilities

Income: The total value of reported research income during the REF2021 census period was £11.1M. Generating £98,718 income per FTE placed the Unit in the top three UK research units in Art & Design in the latest Higher Education Statistical Agency (HESA) openly reported data made available in 2018/19.

Our research is supported via income streams from research councils, national and international government agencies, charitable foundations, large and SME industrial partners, cultural organisations with significant partnership and additional in-kind support. Researchers also undertake a significant volume of projects and commissions in partnership with commissioning bodies, galleries, museums, publishers and others that are directly funded to cover professional fees, studio production, presentation, publications, events, promotions and dissemination costs. The total reported income also excludes the value of income from other sources that support key research projects and strategic initiatives. The Cooper Gallery programmes and projects drew c£257K from sources including Creative Scotland, Henry Moore Foundation, Kingston University, British Council, Goethe Institute Glasgow, Fluxus (**Hao**); and the Trinity Buoy Wharf Drawing Prize

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Project, supported by Trinity Buoy Wharf Trust at £65K per year (until 2023) plus income generated annually to cover full project delivery costs and in-kind support (**Taylor A**).

During the census period, **Interdisciplinary Design and Innovation** generated **£2.6M** from Arts & Humanities Research Council (AHRC), Engineering and Physical Sciences Research Council (EPSRC), Royal Society Edinburgh (RSE), NESTA, Creative Scotland, The European Commission, Royal Society of Arts, Chest Heart & Stroke, and industry. **People, Landscape and Environment** generated **£1.6M** income from philanthropic and charitable sources including Ferrings Pharmaceuticals Ltd, The Friends of South Georgia Island, Paulson Foundation, AHRC, Leverhulme Trust and Carnegie Trust. **Secure Digital Futures** secured funded projects with a total income of **£5.5M** including national and international Government agencies, Mozilla Foundation, AHRC, EPSRC, Horizon2020, Microsoft, Novalia, Unlimited Theatre Company, Royal College of Surgeons, Advanced Underwater Surveys Ltd, Chief Scientist Office, Leverhulme Trust, Royal Society Edinburgh (RSE). **Visual Practice, Curation and Critique** secured income from AHRC, Wellcome Trust, Trinity Buoy Wharf Trust, British Council, Scottish Arts Council, RSE, Biological and Biotechnology Research Council (BBSRC), Leverhulme Trust, Carnegie Trust, European Commission, Creative Scotland, Economic & Social Research Council (ESRC) amongst others to the overall total of **£1.45M** and generated consultancy income for digitisation of video and sound works for Tate. The **£11.5M** AHRC Creative Industries Clusters Programme, **InGame** (2018-23) awarded **£1,658,483** to the University with **£214,613** apportioned to this UoA.

We are active players in the University's Dundee Interdisciplinary and Innovation Forum (DIIF) programme of events, contributing to ideation and design stages of collaborative bids involving researchers from all Schools, and in developing and agreeing the collective University-wide thematic and challenge-oriented priorities for research and innovation. This has led directly to new collaborations, partnerships, and development of major collaborative bids submitted to ESRC and other funding bodies. 33% of the UoA32 outputs involve trans/inter-disciplinary research. The interdisciplinary ethos of the University extends to the annual series of 'Discovery Days' where new Professors present and share their research to a shared internal and extensive public audience, providing opportunities to identify confluences of aims and ambitions and shared priorities that may lead to the development of funding bids.

Researchers within UoA32 actively respond to individual, collaborative and interdisciplinary funding calls; and where relevant, a range of methodologies from design sprints, sandpits and think-tanks are used by existing and prospective research teams to generate and focus ideas. Proposal development is further supported through mentoring and peer review in preparation for submission; for large-scale project and research centre proposals, such as those supported by ESRC or Leverhulme, competitive internal University-wide processes are in place, with peer review mechanisms and selection processes supported by panels drawn from the most relevant experts across the University and managed by the University Research Office.

Research Infrastructure: The University and School have consistently committed investment in research infrastructure to increase capacity and achieve sustainable growth within this Unit. The research support infrastructure, both human (academics, administrative, research assistants, fellows, technicians) and physical (Digital MakeLab, Research Hub, Archives and Collections, Library, studios, workshops), has developed steadily over the past twenty years, along with significant investment in research leadership and management.

A **DJCAD Professoriate** was established in 2019 as a leadership community in Art and Design to support and develop strategic priorities, enhance inter-disciplinary and transdisciplinary research,

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and identify opportunities for collaboration and funding. The ADR is supported by the 12 Professors, Senior Researchers, REF Coordinator, a full-time Research Administration Lead (ARL) and two general support administrators.

The **DJCAD Research Office** supports delivery of research projects and provides mentoring and individual guidance. They assist with the writing of grant applications and research contract bids and with their implementation; working closely with the University Research & Innovation Services (RIS) and Research Finance Office to provide support and advice on the development of research bids, costings, knowledge transfer and consultancy, and the formulation of strategic bids to the Scottish Funding Council, Research Councils (such as Block Grants and Doctoral Training Partnerships) and major bids to the European Commission. The Research Office produces regular research newsletters and email communications and disseminates research news, information on funding calls and strategic initiatives.

The **School Research Committee** oversees implementation of the Research Strategy, monitors development and progress of initiatives, projects, studentships, research integrity and ethics at School level, and is aligned to the University Research & Knowledge Exchange Committee (RKEC). The Committee ensures support and allocates discipline-focused funds that enable early career staff to establish their research agenda; and facilitates hybrid research practices, methodologies and emergent domains of knowledge as well as supporting established researchers appropriately through international benchmarking, maximising dissemination opportunities and by sharing good practice and successes. Reporting to the School Board and University RKEC, the Committee ensures regular and transparent dissemination of research activities and processes, including oversight and management of the REF2021 submission.

Research Facilities: As a research-informed, industry-facing incubator for art and design, we sustain a physical environment designed to foster creativity, thinking through making, design thinking, entrepreneurial exploration, risk-taking, technological and skills development, innovation and public engagement.

The £1.12M investment in 2018 in the new **Research Hub**, Labs and specialist Art, Design & Architecture Library provided a focal point for all UoA32 research. The resultant high-quality space engenders a cultural vitality, augments our well-established assets for dissemination and public engagement and houses major research projects and teams such as GROW, OpenDott, and Centre for Remote Environments. Facilities include the, Digital Suite, Matthew Gallery, 'Research Kitchen', Research Office, Research Studio, and associated administrative and social facilities. This in turn brings together the academic, postdoctoral, PhD, and professional services team, altogether in one place to promote ideas, generate collaborations and networks and effectively foster and co-create our research community.

Having the capacity to host international conferences, such as the Annual Conferences of the European Academy of Design (Valentine) and Architectural Humanities Research Association (**Holm**) has been transformational. The creation of an **Annual Research Expo** (2019, 2020) has ensured a vibrant programme of dissemination within DJCAD, the University and for our partners and publics of significant research outcomes and strategic areas of focus. This has included presentation of exhibitions in the Matthew Gallery of *The Constructed Worlds of Calum Colvin* (2020), *Alastair McLennan, Actuations & Other Works* (**Watson**, 2019) and 2020 performance, *Wave by Waive*.

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The Research Hub provides a central location for our Archives and Collections. A recognised centre for collections in non-traditional archives within the UK, the Artists' Book Collection Dundee (*abcD*), MicroCinema and REWIND were enhanced by the Demarco Archives and Alastair MacLennan Archives in 2018. Widely acknowledged as the most significant British performance artist of his generation, MacLennan's archive includes slides, photographs and videos of c600 performances, several hundred drawings, performance objects, and publications. An Art 360 Foundation Award (**Lockhart**) supported digitisation, and RSE funding for the 'Living Archive' was secured (**Bodor** (2020)). Use of these important archives and collections has expanded during the period, including *The Water Hen / Kurka Wodna; Kantor, Demarco and the Edinburgh Festival* (McArthur, **Watson, Lockhart**, 2015), and promoted awareness of these resources to independent researchers and organisations nationally and internationally.

An AHRC Capabilities and Collections Award (£242K, **Colvin**, 2020) enables an extensive upgrade of our digital preservation equipment, supporting further collaboration with the University Museums, the Scottish Centre for Comics, and creative and cultural organisations such as British Film Institute and Tate. The University Museum has extensive art, design and architecture holdings related to the history of DJCAD and other collections such as the D'Arcy Thomson Zoology Museum inspire interdisciplinary research projects (**Body**). While managed by the University Museum Services, *abcD* relocated to the DJCAD Library (2018) and comprises 1400+ books by Scottish and international artists including John Cage, Nathan Coley, Marcel Duchamp, Ian Hamilton Finlay, Douglas Gordon, Yoko Ono, Julian Opie, David Shrigley, Andy Warhol, and **Faithfull**. The Scottish Centre for Comics was formed in 2014 by researchers in UoA 27 and UoA32 (**Herd, Vaughan**), reflecting the comics heritage of the city.

The **3DVisLab** has a secure studio environment and specialist technology for its work with research partners in government and industry. A rolling programme of films are constantly displayed on a dedicated monitor in the public spaces of DJCAD, ensuring visibility and engagement with their projects on climate change (**Baxter**), subsea visualisation (**Rowlands**), cultural heritage and archaeology (**Watterson**).

Established in 1953, **Cooper Gallery** is the oldest purpose-built contemporary art gallery in Dundee and the largest University exhibition unit in Scotland. Curated by **Hao**, its acclaimed programmes place curatorial research and public engagement at the centre of the academic community and forefront innovative practices, creative and critical discourse in contemporary art, design and visual culture as an integral part of the cultural offer of the city. **Cooper Gallery** presented 38 exhibitions from 2014-2020, including Naiza Khan, Kathrin Sonntag, Ulay, Bruce McLean, Phil Collins. Jasmina Cibic's *The Pleasure of Expense* (2019) was accompanied by a '12-Hour Non-State Parade' a choreographed performative think tank, with contributions from storytellers, dancers, playwrights, writers, poets, film makers, and international women's community choir with keynotes by Birgitta Jónsdóttir, Pinar Aksu, Rebecca Gordon-Nesbitt.

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

Ensuring the contribution of Art, Design and related areas to the research base, economy and society is integral to our mission, and evident across our research projects and outcomes. Our Impact Case Studies - 3D Sub-Sea Visualisation, Co-Creation for Environmental Monitoring, Design Meets Disability, Digital Archiving for Curation and Dissemination – reflect our trans-disciplinary research areas. Characteristically, they achieve cultural, social and economic impacts through sustained collaborative and interdisciplinary initiatives and partnerships that reverberate widely.

Our dynamic institutional partnership with **V&A Dundee** stems from substantial research and knowledge exchange projects since 2005. These projects led to the aspiration for, and development and realisation of, the museum as a major civic, community, educational and research asset, with 'Making it Happen' publicly launching the project in 2009 (Follett). As a founding partner, we collaborated with Dundee City Council who developed the £80M museum as the centrepiece of a £300M 30-year plan for the Dundee waterfront, along with Abertay University, Scottish Enterprise and Victoria & Albert Museum in London. Since its opening in 2018, V&A Dundee has become a beacon within the creative and cultural ecology of Dundee and, by February 2020, had attracted 1M visitors. In its first full year of operation, it was found to have had a £75M economic impact across Scotland, generating £21M into the Dundee economy. *Design for Business*, a joint initiative between V&A Dundee and DJCAD (**Ballie**) supported by Scottish Enterprise, has delivered more than 68 design innovation workshops for 1100+ professionals from 680+ Scottish businesses and organisations since inception. Design for Business is a founding member of the *Global Design Thinking Alliance* of practitioners and research institutions, promoting excellence in design thinking worldwide.

We work closely with creative and cultural providers as contributors to the civic fabric of the City and wider Tay City Region including Dundee City Council Cultural Partnerships, Creative Dundee, DCA, Discovery Point, Hospitalfield, McManus Galleries, Verdant Works, Wasps Studios and Generator Projects (co-founded **Harrison P**), with **InGame** co-located with a number of the city's gaming companies. As a founding partner of DCA (1996) a strong partnership has been sustained through collaborative projects including *Print City* (**Harrison P** 2017) and exhibition loans from the D'Arcy Thompson Collection to *Seized by the Hand* (2020). Other major initiatives in the City include **Eden Scotland** and **Michelin Science & Innovation Parc**, with both actively engaging with our researchers during their feasibility and development stages (2019-20).

A wide range of individuals in the creative and cultural industries and publics used our research with co-created outcomes. Academic partners include the universities of Aberdeen, Abertay, Concordia, Edinburgh, Iceland, Imperial College, Malta, New South Wales, St Andrews, Stirling, UTS, amongst others. Our **key research users** include a range of national and international Government agencies; industry users include Microsoft, Mozilla, Celestial, BBC, BFI, Bookworks, Hauser & Wirth, RA Magazine; research has been devised with British Council, Crafts Council, Creative Scotland, Design Council, Jerwood Arts, Institute of Goldsmiths, Trinity Buoy Wharf Trust.

Examples include commissions by the Ministry of Defence including underwater surveying and recording of war grave shipwrecks through 3D visualisation (HMS Hampshire, 2016; HMS Vanguard, 2017; HMS Royal Oak, 2018-19); excavation and recovery of crew remains from WWII aircraft lost at sea is of major significance to national cultural heritage and military history. This work is held in high esteem by partners and stakeholders resulting in further commissions from US Defence POW/MIA Accounting Agency, University of Malta, and others. Research undertaken with Celestial contributed to the Edinburgh Hogmanay 2020 (**Head**) a large-scale immersive event broadcast over 3 days, with 6M+ direct views from over 50 countries. We work closely with a range of cultural organisations such as Royal Scottish Academy (RSA), Scottish National Gallery of Modern Art, Tate. **Fusco** collaborated with BBC Radio 4, National Theatre Wales and ArtAngel; **Kovats** was Guest Curator for the Edinburgh International Book Festival (2018); **Dalziel + Scullion** were commissioned for the *14-18 NOW*, WW1 Centenary commemoration.

Staff interact with a range of beneficiaries, partners and audiences to develop impact from their research. *'Hands of X: Design meets disability'* (**Pullin, Cook A**) developed an EPSRC-project,

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socio-technical materials for prosthetic hands (Co-I Miodownik, UCL Mechanical Engineering), curated by V&A Dundee. This exhibition recreated a prototype consultation service originally installed in an eyewear shop, unpacking the distinctive participatory process that brought people with limb difference and amputees together with designers, prosthetists and makers. Visitors contributed to the next phase of the research by exploring how choice and participation can bring a sense of ownership in the design process.

Wider activities and mechanisms that contribute to the research base, economy and society and sustainability of the discipline include those of **Cooper Gallery**, designated the only Plus Tate organisation in an educational setting in Scotland in 2020 and one of four in the UK. Exhibitions such as *Politics of Small Places* (2018), a dialogue between Turner Prize nominee Paul Noble and the archival diagrams of pioneering Scottish urban planner [Patrick Geddes](#) (1854-1932) engaged wide professional, public and academic audiences with issues of sustainability, social struggle, and collective effort, linking to the work of The Geddes Institute (**Holm**). As part of a nationwide programme '*GENERATION: 25 Years of Contemporary Art in Scotland*' (National Galleries Scotland (NGS), Creative Scotland, Glasgow Life), **Hao** curated *Studio Jamming: Artists' Collaborations in Scotland*, the first discursive survey to research, annotate and contextualise artists' collaboration as a constituent phenomenon of artistic practice. *GENERATION* also featured exhibitions by **Harrison P, Myles, Peter, Dalziel+Scullion**. Held at major venues across China (Shanghai, Beijing, Wuhan), **Hao's** curation of *Current* presented seminal *1970s & 1980s* video works from REWIND alongside a screening programme of 24 emerging artists' moving image works from Scotland, >>FFWD, British Council, Creative Scotland, Scottish Government, Shanghai International Culture Association (£163K).

GCADI presented a tri-national exhibition, *Confluence: Tradition in Contemporary Art* at Montclair State University USA (2019) in conjunction with their international *Leaders of the World* conference, with participants from 19 countries; 1000 copies of the dual language exhibition publication distributed across the USA. The exhibition of 46 artists will be presented at SFAI (postponed due to COVID-19) along with a global conference with 30 countries invited.

The RSA exhibition *Ages of Wonder: 1540-now* (2017-18) curated by **Watson** was an extensive survey of works collected by the RSA in partnership with the NGS, dating from 1540 with the most recent work created during the exhibition. The largest collections exhibition ever mounted by the RSA with more than 450 works by 270 artists and architects, it generated national media attention and record attendances (67,178 people); live projects in the galleries revisited the Academy's Life School, artists' engagement with printmaking, and artist-in-residence **Colvin**, whose installation towards a photographic portrait of the Scottish poet and polemicist Hugh MacDiarmid stimulated ongoing debate and public events around Scottish cultural identity within current political uncertainties. Both **Colvin's** Leverhulme-funded *Jacobites By Name*, Scottish National Portrait Gallery (SNPG, 2015-16) and **Fagen's** exhibition for the *56th Venice Biennale (2015)* reflected on identity. *The Slave's Lament* (2015) focussed on legacies of slavery in Scottish and Caribbean culture and featured a cross-genre group of musicians (*Ghetto Priest, Adrian Sherwood, Scottish Ensemble*) in a reworking and restaging of Robert Burns' eponymous song; with wide international reach, it toured from Venice to Jamaica to Scotland and was acquired by NGS and Tate.

The Open Drawing Exhibitions (**Taylor A**) is delivered in partnership with Jerwood Charitable Foundation (to 2017) and Trinity Buoy Wharf Trust/Urban Space Management (since 2018) in London and with tour and educational partners generates participation, dialogue, and understanding of current drawing practice to the benefit of practitioners, participants, curators, educators and publics. From 2014-20, 19,432 drawings were submitted, 27 distinguished selectors

Unit-level environment template (REF5b)

drawn from the cultural and creative industries were appointed, and 7 annual touring exhibitions presented, with 4,274 submissions received from 42 countries in 2020. The biennial Evelyn Williams Drawing Award, resulted in Barbara Walker's exhibition, *Vanishing Point* (Jerwood Gallery, 2019/20), exploring black subjects in The National Gallery collections through drawing. National Gallery loans were supported by the Weston Loan Programme with Art Fund.

Exemplars of interdisciplinary research include the Citizen Science and Environmental Monitoring projects (**Woods**) focused on environmental issues for research and innovation in the Rural Economy supported by Horizon2020, ESRC, AHRC, Newton Fund, Scottish Informatics and Computer Science Alliance, Creative Scotland (2014-2016). *Making Sense* comprised research on citizen sensing and environmental monitoring of pollution in air, noise and gamma radiation across three cities over three years, creating content that could be usefully shared and replicated by policy makers, urban planners, environmental interest groups and academia. A new model for action-orientated citizen sensing, novel service design tools, methods, case studies and recommendations to policymakers and stakeholders were devised through the authoritative but accessible *Making Sense Toolkit*. Working with communities experiencing environmental issues related to climate change, the GROW Observatory captured data using open technology devices, crowdsourcing and fieldwork, created new tools such as the *Co-Design Climate Services Kit*, enabled training for more than 30,000 people worldwide through Massive Open Online Courses (MOOCs), communicating critical research insights to a wide array of stakeholders and the public.

Watterson's use of 3D imaging of artefacts from Nunalleq in Alaska (2018-19) gives voice to the history and culture of an underrepresented minority community through outcomes presented as a community learning resource for the 27 schools in the Lower Kuskokwim School District in collaboration with Quinagak Community and Aberdeen University. **England** has worked with Crafts Council UK on craft and creative economies, the *Higher Education and Policy for Creative Economies in Africa: Developing Creative Economies*, and the impacts of COVID-19 on the creative economy in the United Arab Emirates.

Wilson has developed new metal alloys, surface finishes and applications from precious metals recovered from electronic waste with colleagues at University of Edinburgh including new methods of gold recovery from waste stream processes (EPSRC £399K, Dundee awarded £41K). Along with Chemical Recycling of Precious Metals from Electronic Waste in India (EPSRC GCRF), new value chains are created from material consumption that support sustainable livelihoods for local artisans. **Vones** explores the role that smart materials and microelectronics play in the creation of objects that respond dynamically to their environment and that explore potential to support creation of sustainable communities within Indian Maker Spaces in projects funded by the Carnegie Trust Research Incentive Grants scheme for ECRs and Horizon 2020 Innovation Action under the *WEAR Sustain Creative & Technology Collaboration Funding* (€50K). **Vones'** research surveying 3D printing in India and Africa, and **Woods'** research in Citizen Science and soil have led to new technologies that empower local communities in international contexts. The Centre for Remote Environments (CRE) focusses on environmental and industrial-cultural heritage protection in South Georgia (**Shemilt**). Working closely with the South Georgia Heritage Trust, South Atlantic Environmental Research Institute and Paulson Family Foundation, CRE recontextualizes the complex environmental significance of South Georgia's industrial and cultural ecology, developing a live mapping interface and tools for visualising environmental data. **Dunlop** examines the role of technologies, militarisms and scientific imagery in changing landscapes through film and video, and as Co-I on the AHRC *Sounding Coastal Change* submitted evidence to the House of Commons Environment, Food and Rural Affairs Committee.

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Health and wellbeing initiatives include **Dalziel+Scullion's** *Rosnes Bench*, 30 bespoke recumbent benches positioned in twelve locations over a 300 square-mile site in collaboration with Wide Open Ltd, The Forestry Commission Scotland and Scottish Natural Heritage. With a dedicated website, receiving 40K+ visits each year Rosnes Bench is a popular outdoor trail within Dumfries & Galloway; *Imagining Technologies for Disability Futures* (Wellcome Centre); A Sense of Ownership in Rehabilitation Services: Disability-Led Design and Improvement Studies' (**Pullin**); Interdisciplinary research collaboration to devise innovative technologies and approaches to enhance healthcare using wearable sensors (EPSRC SPHERE, **Head**). **LifeSpace** presented 18 exhibitions and 4 commissions/residencies with jointly devised programmes with partners including UNSW Galleries (Australia) and Sheila C. Johnson Design Centre (The New School, USA) supported by The Wellcome Trust Institutional Strategic Support Fund, The Leverhulme Trust Artist in Residence in the Dundee Imaging Facility, The Wellcome Centre for Anti-Infectives Research.

Contributions to secure futures include: *H-unique* (**Rowland**) with the Centre for Anatomy & Human Identification (UoD Science and Engineering) in collaboration with Lancaster University, a €2.5M European Research Centre programme (2019-2023), the first multi-modal automated interrogation of visible hand anatomy pioneering new methods to characterise and capture anatomical details used for identifying persons of interest in the context of security screening; *Imprints: Public Responses to Identity Management technologies and practices* – EPSRC (£1.9M, Dundee awarded £132K, **Wilson**) which led to better understanding of the fluid nature of identity and how to embed this within wearable technologies, in partnership with universities of Northumbria (Psychology), Essex (Political Science), Loughborough (Communication Studies), and contributed evidence to Government Committees on security and identity management. The Living Digital Group (Moncur) carried out empirical investigations of human behaviour in digital contexts using qualitative and quantitative methods to develop insights and to design technologies, emphasizing applied, impactful research. Collaborating with researchers from multiple disciplines, including Human-Computer Interaction, Psychology, Design, Law, Sociology and Health Sciences working with project partners including Microsoft, Royal Bank of Scotland, Bristows, with UTS Australia via collaborative PhD supervision and visiting appointments, the Centre for Research and Evidence on Security Threats at the University of Lancaster, and Microsoft Research UK continuously involved since 2011.

Board, committee and panel memberships include: Council for Higher Education in Art and Design (CHEAD) Research Alliance Strategy Group (**Bodor**); Board of Directors, Scottish Outdoor Education Centres (**Bruce**); Board Memberships of The Common Guild, Dundee Contemporary Art (**Fagen**); British Council International Ambassador for Writing (**Fusco**); British Art Network Steering Committee, Live Art Sector Review Steering Group for Arts Council England (**Hao**). Board member, *The Design Journal* (**Lim**); Chair of Trustees of CHEAD, Director of V&A Dundee Design Ltd, Member of the Tay Cities Culture and Tourism Thematic Board, President of Wells Art Contemporary, Trustee of Stroud Valley Arts (**Taylor A**). Editorships include: 'Critical Theory for the 21st Century' Atheneum Books (**Lushetich**). AHRC Peer Review College Members include **Fusco, Notaro, Taylor A**; Carnegie Trust Research Assessor (**Notaro**); Creative & Performing Arts Panel for the Hong Kong REF2014 (**Taylor A**).

The vibrant research environment at UoD has sustained an extensive range of activities, public engagement and outputs since 2014. Almost 1,000 public engagement events are recorded on the institutional repository as well as other roles including expert advisors (3), Chairs (21), consultants (2), contributors (33), editorial board members (5), examiners (17), guest editors (2), invited and keynote speakers (47), other speaking engagements (171), memberships of various bodies (37), programme committees (13), visiting researchers (7); with 147 solo and group exhibitions

Unit-level environment template (REF5b)

recorded. Works and artefacts have been included in collections such as the SNPG, NGS, Tate (**Fagen**); Elizabeth Sackler Center for Feminist Art, Brooklyn Museum, USA (**Gorrill**); Sammlung Verbena Collection, Vienna (**Shemilt**). Awards gained by staff include: **Colvin's** OBE, The Saltire Award for Art in Public Places was awarded to **Dalziel + Scullion** (2016), RSA Morton Award for Lens-based Art (**Dunlop**, 2015) and AHRC Research Film of the Year 2019 Shortlist; Sobey Award Shortlist (**Eyres**, 2017); Aesthetica Art Prize Shortlist (**Spence**, 2020); Creative Bath Award (**Taylor A**, 2020); Electronica, STARTS Prize EU (2018), Land and Soil Management Award (2017), ADIM Conference Award (2019); University of Dundee Stephen Fry Awards for Public Engagement 2020 (**Woods**); AIA: Outstanding Work in Digital Archaeology 2021 (**Watterson, Baxter** 2020).

Visiting roles such as Cameron Visiting Professor of Circumpolar Research at the University of Alberta, Canada (**Harrison P**); Andrew W Mellon Research Fellowships (**Milligan** 2019; **Myles** 2016, 2018); AHRC Leadership Fellow, Visiting Fellow National University of Singapore (**Lushetich**); Visiting Research Fellow Institute for Advanced Studies, University of Minnesota, (**Modeen**); Adjunct Professor, University of Sydney, Sydney College of the Arts (**Taylor A**); 8 elected RSA Academicians (with **Watson**, Past Secretary, Past President). Speaking invitations included 'World Design Talks: Sustainable Cities' conference, Ljubljana (**Milligan**, 2019); The Hydrographic Society AGM (Rowlands, 2020), Keynote, Xi'an Academy of Fine Arts (**Taylor A**). Contemporary Art Practice exhibitions are largely at the invitation of galleries and museums and solo exhibitions included Modern Institute, Glasgow (**Myles** 2017); Baltic (2019), Copenhagen Contemporary, Denmark (**Peter**). **Dalziel + Scullion** installed permanent works, 'Nomadic Boulders' (John O'Groats) and 'Rain' (Saudi Arabia). The 2015 Scotland + Venice presentation at the Venice Biennale featured **Fagen's** solo exhibition at Palazzo Fontana.

We believe that our research environment has strategically supported, facilitated and nurtured excellent research outcomes that have impacted upon and transformed lives locally and globally through the creation, co-creation, sharing and application of our research and knowledge. These comprehensive achievements provide confidence in our future strategies which, alongside our reinvigorated research estate, researchers and infrastructure, present a bright and confident future for UoA32 as a specialist and interdisciplinary research unit thriving on the synergies afforded by the wider University and community collaboration. It provides an excellent foundation for our future enhancement as a vibrant centre of excellence for Art and Design research set in a thriving and globally networked creative city.