

2019 UCL Research Strategy (10 January 2019)

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Foreword – From the UCL Vice-Provost (Research)

Inspired by the utilitarian philosopher Jeremy Bentham, UCL’s founders committed our university to innovation, accessibility and relevance. Almost two centuries later, that commitment remains at the heart of our activity.

It falls to each generation of the UCL community to remind its successors of the special responsibilities gifted to us by our founders. And it falls to each successive generation to reinterpret UCL’s radical tradition in response to their contemporary circumstances and the needs of society. Introduced in 2014, our university’s institutional strategy, *UCL 2034*ⁱ, restates our founding ideals as a mission: “London’s Global University: a diverse intellectual community, engaged with the wider world and committed to changing it for the better; recognised for our radical and critical thinking and its widespread influence; with an outstanding ability to integrate our education, research, innovation and enterprise for the long-term benefit of humanity”.

Never has that mission been more critical. Regrettably, the key question for our generation of researchers has become: “How will society survive to the 22nd century?”

By survival, we do not mean simply the continued existence of the human race, but also of the environments, institutions, structures and values that underpin and enhance society and enable humanity to thrive. We also recognise the profound imperative to tackle the persistent injustices and inequalities in society today, and to help to deliver a more equitable future for all of humanity.

Society will not secure its survival without the knowledge and wisdom generated by multifaculty research-intensive universities. Such progress will inform the innovations needed to address the enormous and critical challenges that humanity faces. Investment in the pursuit of enquiry and advancement of knowledge is critical; so too is an absolute commitment to collaboration in the generation and application of knowledge, and to ensuring that knowledge benefits society. Researchers and their institutions cannot deliver the necessary insights if they operate in isolation.

UCL is well-positioned to make major contributions to help humanity survive and prosper. This is due not least to our distinctive ability to sustain a breadth, depth and diversity of expertise and research across disciplines and methods. The purpose of this strategy is to enable UCL’s individual researchers and our research community as a whole to maximise their contribution to public good. I believe this also requires us to consider: how our research environment supports our researchers, both as individuals and collectively; the cultural and structural barriers we may need to overcome to achieve our ambitions; and how we can redefine traditional concepts of leadership, collaboration and research impact to reflect, enable and drive the vision, aims and objectives set out in this strategy.

In this strategy, heeding Bentham, UCL endeavours to reach for the stars, while not forgetting the flowers at its feet. We define aspirations for our community while also seeking to address the interests of the individual. Our intent is to put most support into the bottom up ambitions of individual scholars, both empowering them to pursuing their own research agenda and enabling them to realise their ambitions through collaboration. This strategy recognises our achievements, but does not lose sight of the need for humility: we do not wish to bask in glory, but rather we must constantly challenge ourselves to do better.

– Professor David Price, UCL Vice-Provost (Research)

What we mean by ... a research strategy

This strategy provides a vision for the nature of UCL’s research over the next ten years, irrespective of geopolitical events. We seek to build upon the radical tradition – of innovation, accessibility and relevance – established by our founders and embodied by successive generations.

ⁱ <https://www.ucl.ac.uk/2034/>

This strategy asserts an adaptable framework through which we can sustain and add value to our academic excellence, thereby discharging our responsibilities to the people of the world and its future generations, as well as our debt to our visionary predecessors. It defines a series of mechanisms through which UCL researchers can, individually and collectively, fulfil their potential.

Ultimately, this strategy speaks to UCL's enduring qualities, values and philosophy, and describes how the fundamental aspirations for research at London's Global University can be achieved in a 21st-century context.

What this strategy does not do

This strategy is not intended to provide a detailed road map, nor does it attempt to craft solutions to unforeseeable geopolitical scenarios. It does not seek to predict the opportunities and challenges that will be created by future research breakthroughs. It does not define 'priority subject areas'; such an approach would undermine our university's agility and constrain the dynamism with which our research leaders determine the shape and future of their activities. That would be the antithesis of the disruptive thinking which characterises our academic community. There already exist effective and flexible mechanisms at departmental, faculty and institutional level to anticipate and respond to the rapidly and continually changing external environment. Institution-wide planning processes exist to examine and prioritise proposed major initiatives, while major support for cross-disciplinary themes comes from UCL Grand Challenges, UCL Research Domains and our cross-disciplinary centres and institutes.

This strategy does not seek to constrain research activity, but to provide a renewed context in which discovery, analysis and invention are part of a greater programme that engages with and delivers benefit to the world. We will encourage individual researchers, research groups, departments and faculties to interpret and respond to this framework in ways that reflect the circumstances of the day and their own specific aspirations.

What this strategy means for individual researchers

For the individual UCL researcher – and for those contemplating becoming one – this strategy seeks to define a nurturing environment in which: your research leadership is encouraged, cherished and sustained; your expertise can be creatively linked with and enhanced by that of other disciplines; impediments to you reaching across traditional boundaries are minimised; and the consequences of your work are amplified. We encourage all researchers – and professional staff supporting the research endeavour – to view their work as part of a collective effort to help UCL to make the most of its potential as a force for public good.

Executive summary

This strategy provides a vision for the nature of UCL's research over the next ten years. We seek to build upon the radical tradition – of innovation, accessibility and relevance – established by our founders and embodied by successive generations. We assert an adaptable framework through which we can sustain and add value to the expertise of our researchers, thereby discharging UCL's responsibilities to the people of the world and its future generations, as well as our debt to our visionary predecessors. We define a series of mechanisms through which UCL research can fulfil its potential.

What we seek to do

UCL is committed to using its position and unique set of strengths to develop and disseminate original knowledge, not only for its own inherent value but also to address the significant challenges facing the world today and those that will arise in the future. Our capacity to do so depends on our continued and expanded ability to fulfil this strategy's three aims: to inspire and empower research leadership; to cross boundaries to increase engagement; and to deliver impact for public benefit. UCL is uniquely placed to fulfil these aims, given the breadth of our research activity, our commitment to challenging orthodoxy and conventional wisdom, our rich culture of collaborating across disciplinary borders and beyond, and our enthusiasm for harnessing the value of our research to advance and enrich society.

We want to stimulate disruptive thinking across and beyond our university to transform knowledge and understanding, and to tackle complex societal problems. We wish to help to enable society not only to survive to the next century – an urgent challenge requiring unprecedented collective action and partnership – but also to thrive, so that the lives of future generations are worth living: prosperous, secure, engaged, empowered, fair, healthy, stimulating and fulfilling.

As a community of scholars and those who support them, we must each focus our efforts, based on our founding values and driven by our intellectual curiosity, to be a force for positive social change. The role of our university is to understand society in order to transform it, in particular increasing society's fairness and resilience.

This strategy seeks to enable and empower all our researchers to thrive as research leaders, providing opportunities for engagement and impact, while ensuring that they retain the freedom to steer their own course, experiment and develop in unique ways. We see this as crucial in order to maintain the richness and diversity of research at UCL.

Our aims

The three aims of this strategy describe our aspirations relating to research leadership, crossing boundaries and delivering public benefit.

Aim 1 – Inspire and empower research leadership: More than anything, our individual and collective research leadership underpins the contributions that we can make to humanity. We seek to identify, attract, inspire and empower those who demonstrate – or show their potential to develop – research leadership, regardless of their background. Leadership is exemplified in diverse ways, by researchers at all career levels. Research leaders advance their field, develop novel lines of enquiry, support and mentor their colleagues, and are engaged with the research community (within and beyond their discipline) and the wider world.

Our objectives

- 1.1 Support breadth and diversity
- 1.2 Nurture, develop and celebrate those engaged with research
- 1.3 Cultivate diverse forms of research leadership

Aim 2 – Cross boundaries to increase engagement: Rarely can the most interesting questions or the most significant societal challenges be adequately addressed by one discipline, one university or one sector alone. While disciplinary excellence is at the heart of everything that we do, to amplify and inform our research we need to cross conventional, but often artificial, boundaries – between disciplines, between communities (disciplinary, academic and otherwise) and between different kinds of activity – in order to increase mutual knowledge and engagement, and develop co-design and co-production approaches to research and complex societal problems.

Our objectives

- 2.1 Champion cross-disciplinarity
- 2.2 Build and support partnerships
- 2.3 Encourage our research to thrive beyond traditional boundaries

Aim 3 – Deliver impact for public benefit: We consider the pursuit of knowledge for its own sake to be a fundamental good and the basis of all our research impact. We also seek to maximise the public benefit resulting from our research, including by furthering academic disciplines and scholarship, enhancing our cultural contribution and engaging in public discourse, growing national and global prosperity, providing policy advice, informing professional practice, contributing to positive environmental change, and improving health and wellbeing. We will support activity of these kinds and the myriad other ways in which our research can deliver public value.

Our objectives

- 3.1 – Champion a broad definition of research impact
- 3.2 – Foster open and engaged research
- 3.3 – Stimulate societal impact through cross-disciplinarity and collaboration

Our cross-cutting themes

Our three aims describe what we are seeking to do. Each is reinforced by our three cross-cutting themes, which draw on our founding principles and current capability, and characterise how we will advance those aims through responsible research, our institutional influence and a global perspective.

Cross-Cutting Theme A – Pursue a responsible research agenda: *UCL 2034* states that we will ensure that our “research and education are rooted in our ethical principles”. The key elements of this are: understanding the distinctive role (and limitations) of the university in advancing knowledge and enquiry; nurturing cultures of integrity in all our research activities, and supporting rising standards across all fields; leading in ethical consideration of research and its applications; engaging with those who will be affected by our research activity; minimising the negative environmental impact of research; and enhancing the public benefit derived from research.

Cross-Cutting Theme B – Exert our institutional influence for the greater good: The growth in UCL’s size, breadth, impact and reputation in recent decades presents us with both opportunities and – drawn from our founding values – obligations. We have considerable potential to help shape the environment in which academic endeavour takes place, to influence others’ thinking and to advocate rational, evidence-based and inclusive decision-making.

Cross-Cutting Theme C – Maintain a global perspective: As London’s Global University, we will marshal our collective expertise to: extend our local and global knowledge in order to increase our cultural sensitivity, make us better partners and increase the ‘grassroots’ relevance of our research; support the growth of independent research capability globally, and facilitate partnership working at all levels; help our students to bring their research-based education to bear on their global careers and lives; and deliver impact to address global problems.

Introduction – The 2019 UCL Research Strategy in context

Previous versions of the UCL Research Strategy (published in 2008 and 2011) expressed our commitment to use our collective knowledge and expertise to benefit society. This refreshed iteration, the 2019 UCL Research Strategy, develops that vision in the context of our university's current scale and excellence, as well as more recent changes to the wider world, and provides an ambitious strategic framework for the next ten years.

Changes to UCL

Over the last decade UCL has experienced an unprecedented degree of growth. Our research income grew from £202m in 2007 to £486.5 million in 2017, an increase of more 140%. In the last ten years student numbers have grown by 104% to more than 39,000, including a doubling of postgraduate research students to nearly 6,000. We now have a community of more than 12,000 academics and researchers, compared to fewer than 6,500 in 2007.

Curiosity and cross-disciplinarity: Everything our university does should focus upon celebrating, encouraging and enabling curiosity-driven research and scholarly expertise across all fields of knowledge, which is essential to all that UCL endeavours to achieve. Equally fundamental is how our institution can become more than the sum of its parts. The concept of cross-disciplinary research grounded in disciplinary expertise has become central to how our university understands and projects itself. Several thousand of our researchers have engaged with cross-disciplinarity: whether informally, through central initiatives such as UCL Grand Challenges and UCL Research Domains, or through academic centres and institutes established in recent years to focus on the application of cross-disciplinary expertise to problems facing humanity.

Peer research assessment: More objective peer assessment – in the form of the UK's Research Excellence Framework (REF) 2014 – indicates that our growth has not come at the cost of quality. We were the top UK university for 'research power': the quality of our submission (the 'grade point average') multiplied by the full-time equivalent number of researchers submitted. Our 'research power' was rated top in each of the three assessed elements of REF2014: publications and other outputs, research environment and research impactⁱⁱ.

Strategic initiatives: Another key development has been the commitment to design and open a new campus at the Queen Elizabeth Olympic Park. As part of a wider education, innovation and cultural quarter for London, UCL East will create a world-leading university environment for experiment, learning and scholarship for students, staff, collaborators and the wider public, across the four themes of Experiment, Art, Society and Technology (EAST)ⁱⁱⁱ. This is complemented by institutional developments in neuroscience and vision, and planning for new ambitious academic initiatives such as the UCL School of Economics & Public Policy, the UCL Institute of Mathematical & Statistical Science and the UCL School of Future Media & Communications.

Building partnerships: We have continued to develop a range of external partnerships and collaborations to strengthen our research activity and our engagement beyond UCL. This includes leading collaborative initiatives such as the Dementia Research Institute and the Africa Health Research Institute, founding participation in national research bodies including the Francis Crick and Alan Turing institutes, and leading the £138m UK Collaboration for Research in Infrastructure & Cities. Regarding health, our university is a founding partner in one of the first academic health science partnerships, UCL Partners, while our major health-industry partnerships include three Biomedical Research Centres (UCL receives more NIHR funding than any other university) and the establishment of the Centre for the Advancement of Sustainable Medical Innovation with Oxford.

Global engagement: Our global partnerships have been strengthened by the implementation of the UCL Global Engagement Strategy, notably with Peking University as our first 'anchor' partner,

ⁱⁱ <http://www.ucl.ac.uk/ref2014/ref2014-results/UCL-REF2014-Results/research-power>

ⁱⁱⁱ <http://www.ucl.ac.uk/ucl-east>

and cross-institutional partnerships with the University of Toronto and Yale University, and those under development with higher education institutions globally, including in North America, India, Japan, South Africa and Europe.

Operational support for our research mission: The rapid growth in our research activity over the past five years is testament to the dedication and capability of our talented researchers. It is not, however, without its own internal challenges, including pressures around overhead recovery and funding sustainability, and increasing pressures on UCL's estate. We will need to develop improved institutional capacity to respond to a rapidly changing and increasingly unpredictable research funding environment. To deliver continued success (including remaining in the top two recipients of research funding in the UK), we will need to embed greater agility in our estate and research support planning and delivery, including both sustaining a broad research base (to position us to be able to respond to opportunities across the spectrum) and growing research capacity at short notice. We will also need to promote responsible costing and pricing for research proposals, alongside reasonable overhead recovery, while supporting researchers as they deal with the changing funding landscape; this will be helped by measures to increase the efficiency with which we use natural resources. We will also need to ensure that the estate provides our researchers with access to first-rate facilities, infrastructure and resources, including investment in the acquisition and maintenance of first-class equipment to enable pioneering research activity. This includes continuous development of the technical capabilities of technicians in response to new and emerging fields of research.

Integration with other institutional strategies: This strategy also reflects the other varied institutional strategies that have been adopted or adapted to support *UCL 2034*, such as those for: education, which commits us to research-based learning; global engagement, which seeks to co-create solutions to global problems and increase research capability globally; innovation and enterprise, which emphasises engagement with business and innovation partners, promotion of innovation and knowledge exchange, and bringing benefit to London, the UK and the wider world; public policy, which seeks to foster a two-way flow of knowledge between our researchers and policymakers, and to bring cross-disciplinary expertise to bear on public policy challenges; culture and public engagement, which advocates openness and creative connections drawing on our research; library services, which seeks to deliver a first-class user experience across our whole family of libraries; and sustainability, which aims to facilitate efficient and environmentally conscious practices; as well as policies and developments in open access (most notably, the establishment of UCL Press, the UK's first fully open access university press) and open science. We also seek to use our research, innovation and education to enhance London – including its education system, legal services, urban design and businesses – and to improve the lives of its workers, residents and students. This strategy has also been developed in the context of the launch of *It's All Academic*, UCL's philanthropy and engagement campaign, one priority of which is 'Disruptive Thinking', focused on encouraging radical, critical thought and action by our staff and students.

The 2019 UCL Research Strategy should therefore be read in the context of *UCL 2034* and as complementary to and integrated with our other institutional strategies. It seeks to enable research to enhance our education, innovation and enterprise, global collaboration, and public and civic engagement, and to contribute to making our institutional strategies more than the sum of their parts. Additionally, this strategy seeks to provide a long-term framework to interact with and respond to individual faculty strategies and ambitions, and ensure that collectively these will advance our research endeavour.

Today, UCL – London's Global University – is better equipped than ever to help to deliver the *UCL 2034* mission. The quality, characteristics and aspirations of our research, as described in this strategy, also underpin our ability to achieve our other institutional objectives.

Interaction with the UCL 2034 Key Enablers

Introduced in 2014, our university's institutional strategy, *UCL 2034*^{iv}, restates our founding ideals as a mission: "London's Global University: a diverse intellectual community, engaged with the wider world and committed to changing it for the better; recognised for our radical and critical thinking and its widespread influence; with an outstanding ability to integrate our education, research, innovation and enterprise for the long-term benefit of humanity".

Delivery of the 2019 UCL Research Strategy is fundamental to achieving the aspirations of *UCL 2034*. We therefore describe here how the former's objectives map onto *UCL 2034*'s six Key Enablers.

A: Giving our students the best support, facilities and opportunities: If we are to foster research leadership throughout our community and at every career stage, it is crucial that UCL provides a high-quality and fulfilling environment for our research students, who in many instances represent the future of our – and other institutions' – research endeavour. We will also work closely with the Office of the Vice-Provost (Education & Student Affairs) to support our research-based education and explore new ways of further integrating research and education, and with UCL Library Services to further strengthen its provision of digital resources and student skills development, and the enhanced role of UCL Special Collections in supporting research and outreach.

B: Valuing our staff and delivering on equality and diversity: Individual researchers, technicians and professional services staff are the bedrock of UCL's research endeavour. We must redouble our efforts to nurture staff and enable their talents to flourish, so that they feel appropriately valued and rewarded. This will include: giving staff a voice and ensuring regular dialogue; ensuring a high-quality and supportive research environment that supports work-life balance and wellbeing; celebrating a wide range of research-related achievements; and continuing our efforts to embed equitable approaches to recruitment, reward and promotion that enhance our community's diversity.

C: Financing our ambitions: UCL is committed to supporting a broad research base and investing in research disciplines across the spectrum. While we will engage with and respond to external funder priorities, we will also deploy Quality-Related and other flexible funding to support disciplines which may fall outside those priorities. We will continue to provide research facilitation support for major national funding streams such as the Industrial Strategy Challenge Fund and the Global Challenges Research Fund, which are likely to require shifts in the way we currently provide research support alongside more ambitious cultivation of appropriate partnerships. We will continue to press the government to secure a positive settlement for research as we prepare for the UK's withdrawal from the European Union. We will also work to achieving consistent best practice in costing and recording overheads, in increasing our overhead recovery rate, and increasing the efficiency with which we use natural resources. We will maximise the attraction of funding for research through the Campaign for UCL, including its Disruptive Thinking theme.

D: Delivering excellent systems and processes: We recognise that currently there is scope for improvement in many UCL systems and processes, including those dealing with recruitment and contracts, both to achieve greater effectiveness and efficiency, and to minimise the burden on researchers and professional services staff. We will work across our university to focus on: improving processes to support pre- and post-award research administration; research management information; and further developing our research platforms and research IT offering. We will also continue to deliver the necessary systems and processes to further advance our commitment to open access and open science, and to support UCL's Research Excellence Framework 2021 submission. We will review the accountability and governance structures needed to ensure smooth integration between the 2019 UCL Research Strategy and the operational delivery of its objectives.

E: Maintaining a sustainable estate to meet our aspirations: Our ambitions also require appropriate and sustainable investment in research facilities, infrastructure and resources, to

^{iv} <https://www.ucl.ac.uk/2034>

ensure that we can provide the necessary space for research on appropriate timescales, and can maintain 'first-rate' facilities in order to attract and retain research leaders. This will include upgrading current space, accommodating new research activity and responding appropriately to new or expanded needs. In particular we will explore the use of streams such as Quality-Related funding and the Research Capital Investment Fund to provide sustainable (in terms of both finance and environment) research infrastructure and will make the case for sustainable levels of funding to national research funders. Research facilities such as UCL Library Services' Research Grid and the UCL Student Centre's research-enabled spaces will further integrate research into the student experience. It will also be critical to ensure that our estates capacity and strategy remains sufficiently agile to enable us to succeed in a volatile research funding context; this will require both more integrated planning with faculties to identify key growth areas and building in flexibility to respond to a rapidly changing and unpredictable funding environment.

F: Communicating and engaging effectively with the world: How we communicate our research and engage others with it is crucial to how we can deliver public and societal benefits. We will make our research accessible to and open up dialogues with communities beyond our university, whose perspectives can enrich our activities. Institutional communications must do more than share new research findings and support an excellent reputation: they must support and reinforce UCL's research leadership and influence, and amplify our impact through compelling delivery mechanisms for our insights to those positioned to implement and benefit from them. We will need to ensure appropriate central institutional support for communication and engagement while also enabling and empowering our academics to undertake such activities directly.

Changes beyond UCL

While this presents challenges, it does not affect UCL's global outlook; indeed, we will seek to intensify our global engagement over the coming years.

As this strategy is being written, the UK's changing relationship with the European Union creates unprecedented uncertainty (and, ironically, coincides with our ascent as one of the most successful European universities in winning Horizon 2020 funding and early career researcher support, and in participation in collaborative proposals). While this presents significant challenges – not least for our academic community and our ability to attract talent, the continuation of established partnerships, and access to funding – it does not affect UCL's global outlook; indeed, we will seek to intensify our global engagement, including within Europe, over the coming years. (We will also continue to work alongside the wider sector to ensure our collective long-term sustainability and the global interchange of knowledge.)

Currently, UK universities face increased turbulence, with recent changes to higher education regulation and research funding, and ever-increasing pressures to demonstrate our economic and societal worth. In the short-term, the creation of UK Research & Innovation and the introduction of major, cross-cutting, thematic funding streams such as the Global Challenges Research Fund (GCRF) and the Industrial Strategy Challenge Fund (ISCF) are reshaping the nature of research funding and the ways in which universities must respond. In particular, the GCRF and ISCF require more concerted actions to develop external partnerships and collaborative research activities that build on our major research strengths. UCL must further develop our strategic relationships with business and other partners in order to fully embrace the opportunities afforded by the ISCF. The recent growth of national research institutes – our university is playing a leading role in the Francis Crick, Alan Turing, and Rosalind Franklin institutes – also represents a reshaping of national research capability; it will be important to ensure close engagement with and play a leadership role in these changes.

Many of the full consequences of these sector developments are yet to be seen. However, it seems clear that both the role and the expectations of universities are changing at an unprecedented rate. Regardless of the specific changes we will face at any given time, we expect that future circumstances will require us to remain agile, both intellectually and institutionally, and provide strategic planning that enables our researchers and support teams to respond rapidly and imaginatively to emerging priorities and initiatives. At the same time, we will need to be cognisant of the growing challenges to the sustainability of research funding and continuing pressures on research overhead recovery.

The 17 Sustainable Development Goals – set by the United Nations in 2015 and succeeding the Millennium Development Goals of 2000 – established a set of targets addressing social and economic development issues in the global context. They provide a framework through which UCL can respond to the agenda of governments, develop partnerships with civil society and communities, apply its research insights to pressing global problems and generate public benefit – in keeping with the aims of this research strategy.

On many fronts a distrust of academic experts (viewed as part of a detached establishment) has emerged. We must not assume that the value of university research – in particular, that of leading comprehensive research-intensive universities – is self-evident to the public; rather, we must improve how we demonstrate the benefits of our research (in both its applied and yet-to-be-applied forms) and engage with the public. In a ‘post-truth’ climate, we need to be unashamed about offering expertise, evidence and facts, but we must also ensure that we are able to speak to and address people’s everyday concerns. We must champion the pursuit of knowledge and curiosity, while recognising that genuine and reciprocal public engagement and dialogue is more important than ever before.

Over the last decade our competitors have not stood still. Many have embraced the idea that a university should apply its collective research capacity to address global problems. Some have echoed the UCL Grand Challenges approach (now also seen in the Industrial Strategy), establishing thematic problem-focused activity to address societal challenges. We regard this as a welcome development: our competitors are also our collaborators, and establishing productive research partnerships is one of the ways in which we can tackle global challenges. We believe that our university remains distinctive in the scale and breadth of its research, in its capacity for innovation, creativity and flexibility, and in its appetite for collaborating across disciplines and engaging beyond the university.

Growing our aspirations

Our university’s research and professional services staff have much reason to be proud of their contributions over the last decade. However, UCL must continue to stretch itself if it is to continue to fulfil its potential. We must become even more ambitious, strengthening our resilience to external events while upholding our core values. Hence this strategy and its accompanying implementation plan seek to build on our past accomplishments (and address past constraints) while setting out our ambitions for the future.

Research leadership remains key to this strategy, now expressed as a more holistic concept of traditional research excellence in combination with the pursuit of a sustainable, responsible and ethical research agenda. This reflects our ambition to redefine traditional notions of research leadership to reflect a more inclusive and collegiate approach, in response to the changing needs, expectations and roles of our researchers and our commitment to responsible research.

In 2011, we emphasised the need to overcome barriers between academic disciplines – as well as value disciplinary excellence – and stimulate what we termed ‘cross-disciplinarity grounded in disciplinary expertise’. We now understand the boundaries between disciplines to be a subset of the many types of barriers that can inhibit the fulfilment of our vision. We will redouble our efforts to identify, understand and overcome those more varied obstacles to ensure the maximum fulfilment of our research’s potential.

In this strategy, we are even more explicit about using our wealth of knowledge and intellectual capacity for public benefit, while continuing to cherish the expansion of knowledge for its own sake. This means intensifying our ambitions to generate new insights, to deliver impactful research across the sphere of our expertise, to build partnerships with those outside our university, and to inform how policy and practice can tackle societal problems – locally, nationally and globally. We also restate and expand our commitment to using all means to maximise the public benefit which can arise from our research, as well as to explore the productive synergies between those means.

This strategy emphasises the support that the institution intends to provide to its researchers, while describing the opportunities for our researchers to stretch themselves. These are spelled out in more detail in the section ‘What this strategy means for individual researchers’.

This strategy has been developed through extensive and widespread engagement with the UCL community, including through a UCL-wide consultation. We are grateful to all those who have provided comments, suggestions and provocations. The implementation of this strategy will be complex and challenging, and its success will rely on our capacity to continue to draw on the UCL community’s collective experience, expertise and imagination.

UCL’s distinctive position

Taken together, the following qualities position UCL, London’s Global University, uniquely well to deliver judicious insights and solutions, and to ensure that they are applied to the world’s major problems:

- **values** – inspired by the utilitarian philosopher Jeremy Bentham, our radical founders committed our university to innovation, accessibility and relevance. Almost two centuries later, that commitment remains at the heart of our activity and purpose. We continue to discuss and revisit them in new contexts, and to embody them in our work and values
- **pioneering tradition** – we pioneered disciplines now viewed as core academic activities – including architecture, civil engineering and medicine – and engaged in groundbreaking research that has helped to shape the modern world
- **research leadership** – across a wide spectrum of disciplines, as the bedrock upon which effective cross-disciplinary interaction is achieved
- **collegiality** – we pride ourselves on sharing a collective purpose, and are uncommonly willing and able to work together in a spirit of collaboration, mutual respect and trust in each other’s expertise, perspective and abilities
- **integrity** – a deep commitment to ensuring our research generates reliable, repeatable and applicable outcomes, disseminated and promoted responsibly and as openly as possible, avoiding risks to participants or misleading peers or users
- **openness** – exemplifying the values behind open access and open science, sharing our research outputs with the world of scholarship and new communities
- **intellectual and cultural resources** – we benefit from world-leading library services, information resources and collection management
- **breadth of excellence** – we have world-leading activities and individuals across the full range of subject areas and in different types of research. We have tremendous power in key professional disciplines such as law, education, medicine and the built environment. We are world-leaders in cross-disciplinary fields such as neuroscience, computer science, area studies and quantitative social sciences, as well as in innumerable disciplines in the arts, humanities, sciences and engineering
- **scale of excellence** – we have grown to be truly one of the powerhouses of global research, as demonstrated by our research spend and our performance in the Research Excellence Framework 2014
- **flexibility** – we strive to remain agile, both intellectually and institutionally, in the context of strategic planning that enables our researchers and support teams to respond rapidly and imaginatively to emerging priorities and initiatives
- **student participation** – we are committed to being a global leader in the integration of education and research. We want students at all stages to participate in the creation of knowledge, so that they will understand working at the ‘edge of knowledge’. Their lives and careers will spread the influence of our research around the world
- **in, of and for London** – we value our home in the heart of a global capital, with a remarkably diverse population. We are proud to contribute to Bloomsbury’s cultural, economic and intellectual energy. We benefit from our proximity to Westminster and Whitehall, the City, the media, courts, galleries, museums, libraries and our world-class hospital partners, and have unlocked further the opportunities presented by the development of UCL East
- **recognition of our national role** – as a leading UK university, we recognise our obligation to identify, analyse and address national challenges in order to enhance the prosperity, wellbeing and sustainability of the UK

- **global perspective** – beyond our ambition to benefit the people of London and the UK, our global perspective recognises and reflects the interconnectedness and interdependence of people around the world
- **dedication** – we have an ongoing purpose to enhance prosperity and wellbeing, and to contribute to the development of just and fair solutions to the economic and social challenges facing the world.

What this strategy seeks to do

UCL is committed to using its position and unique set of strengths to develop and disseminate original knowledge, not only for its own inherent value but also to address the significant challenges facing the world today and those that will arise in the future. Our capacity to do so depends on our continued and expanded ability to fulfil this strategy's three aims: to inspire and empower research leadership; to cross boundaries to increase engagement; and to deliver impact for public benefit.

Universities remain unique institutions in their ability to foster enquiry, to push the boundaries of knowledge and to advance our understanding of humanity.

Only a handful of universities – those with enduring excellence across the disciplines, a critical mass of expertise, the ability to enable cross-disciplinary collaboration, effective mechanisms for wider engagement, a commitment to impact for public good in its broadest sense and the financial sustainability to allow for long-term investment – can cultivate and deliver judicious solutions on the scale and with the speed required by the world's current crises. UCL is among that number.

Such universities are capable of developing and sharing the paradigm-shifting insights that can secure the long-term survival, and prosperity, of society. We want to stimulate disruptive thinking across and beyond our university to greatly expand knowledge and understanding, and to tackle the complex problems facing humanity. We wish to help to enable society not only to survive to the next century – an urgent challenge requiring unprecedented collective action and partnership – but also to thrive, so that the lives of future generations are worth living: prosperous, secure, engaged, empowered, fair, healthy, stimulating and fulfilling.

We believe, however, that we cannot do so in isolation but only in open collaboration with wider society. We must play an increasingly important role in connecting public and private actors, in brokering knowledge between different sections of society and in engaging with external partners to tackle the global challenges facing humanity.

This also places a responsibility on us, as a university, to create an environment and research culture that enables the necessary pursuit of curiosity, collegiality and collaboration. This requires us to: value collective, as well as individual, excellence; incentivise teamwork, as well as competition; and recognise our responsibilities to colleagues, including the next generation of researchers. We do not seek to create a culture which celebrates only a few lone 'star academics', but rather one in which every individual researcher is valued and supported as part of the collective whole.

As a community of scholars and those who support them, we must each focus our efforts, based on our founding values and driven by our intellectual curiosity, to be a force for positive social change. The role of our university is to understand and reflect society in order to transform it, in particular increasing society's fairness and resilience.

Our aims

The three aims of this strategy describe our aspirations relating to research leadership, crossing boundaries and delivering public benefit.

Aim 1 – Inspire and empower research leadership: More than anything, our individual and collective research leadership underpins the contributions that we can make to humanity. We seek to identify, attract, inspire and empower those who demonstrate – or show their potential to develop – research leadership, regardless of their background. Leadership is exemplified in diverse ways, by researchers at all career levels. Research leaders advance their field, develop novel lines of enquiry, support and mentor their colleagues, and are engaged with the research community (within and beyond their discipline) and the wider world.

Our objectives

1.1 Support breadth and diversity

- 1.2 Nurture, develop and celebrate those engaged with research
- 1.3 Cultivate diverse forms of research leadership

Aim 2 – Cross boundaries to increase engagement: Rarely can the most interesting questions or the most significant societal challenges be adequately addressed by one discipline, one university or one sector alone. While disciplinary excellence is at the heart of everything that we do, to amplify and inform our research we need to cross conventional, but often artificial, boundaries – between disciplines, between communities (disciplinary, academic and otherwise) and between different kinds of activity – in order to increase mutual knowledge and engagement, and develop co-design and co-production approaches to research and complex societal problems.

Our objectives

- 2.1 Champion cross-disciplinarity
- 2.2 Build and support partnerships
- 2.3 Encourage our research to thrive beyond traditional boundaries

Aim 3 – Deliver impact for public benefit: We consider the pursuit of knowledge for its own sake to be a fundamental good and the basis of all our research impact. We also seek to maximise the public benefit resulting from our research, including by furthering academic disciplines and scholarship, enhancing our cultural contribution and engaging in public discourse, growing national and global prosperity, providing policy advice, informing professional practice, contributing to positive environmental change, and improving health and wellbeing. We will support activity of these kinds and the myriad other ways in which our research can deliver public value.

Our objectives

- 3.1 Champion a broad definition of research impact
- 3.2 Foster open and engaged research
- 3.3 Stimulate societal impact through cross-disciplinarity and collaboration

Our cross-cutting themes

Our three aims describe what we are seeking to do. Each is reinforced by our three cross-cutting themes, which draw on our founding principles and current capability, and characterise how we will advance those aims and implement our objectives.

Cross-Cutting Theme A – Pursue a responsible research agenda: *UCL 2034* states that we will ensure that our “research and education are rooted in our ethical principles”. The key elements of this are: understanding the distinctive role (and limitations) of the university in advancing knowledge and enquiry; nurturing cultures of integrity in all our research activities, and supporting rising standards across all fields; leading in ethical consideration of research and its applications; engaging with those who will be affected by our research activity; minimising the negative environmental impact of research; and enhancing the public benefit derived from research.

What we mean by ... responsible research

Responsible research and innovation can be broadly defined as ensuring that research and innovation practices are inclusive of all those affected by research and that they strive towards sustainable, ethically acceptable and socially desirable outcomes^v. We advocate the following general principles, while recognising that these will evolve as we take into account public concerns and priorities:

- valuing a diversity of knowledge, experience, research, outputs and outcomes
- addressing societal challenges and seeking to deliver public value, including by engaging with members of the public and organisations to identify and address their concerns
- fostering an inclusive research agenda that supports public engagement, co-production, participatory research and citizen science
- enabling creativity and collaboration across the whole UCL community, in a spirit of collegiality
- being honest, open and generous in partnerships at all levels
- pursuing open science, including ensuring open access to research findings and data

^v https://www.rri-tools.eu/documents/10184/107098/RRITools_D1.1-RRIPolicyBrief.pdf/c246dc97-802f-4fe7-a230-2501330ba29b

- conducting research in ways that maximise the efficiency of our use of natural resources
- promoting diversity and gender equality in our research community
- embedding a robust ethical framework
- committing to the responsible use of research metrics
- nurturing our researchers at all stages of their career, and recruiting from the broadest talent pool.

Cross-Cutting Theme B – Exert our institutional influence for the greater good: The growth in UCL's size, breadth, impact and reputation in recent decades presents us with both opportunities and – drawn from our founding values – obligations. We have considerable potential to help shape the environment in which academic endeavor takes place, to influence others' thinking and to advocate rational, evidence-based and inclusive decision-making.

Cross-Cutting Theme C – Maintain a global perspective: As London's Global University, we will marshal our collective expertise to: extend our local and global knowledge in order to increase our cultural sensitivity, make us better partners and increase the 'grassroots' relevance of our research; support the growth of independent research capability globally, and facilitate partnership working at all levels; help our students to bring their research-based education to bear on their global careers and lives; and deliver impact to address global problems.

Our aims and objectives

Aim 1 – Inspire and empower diverse research leadership

More than anything, our individual and collective research leadership underpins the contributions that we can make to humanity. We seek to identify, attract, inspire and empower those who demonstrate – or show their potential to develop – research leadership, regardless of their background. Leadership is exemplified in diverse ways, by researchers at all career levels. Research leaders advance their field, develop novel lines of enquiry, support and mentor their colleagues, and are engaged with the research community (within and beyond their discipline) and the wider world.

UCL should strive to be the destination and home of choice for the very best researchers, those with the ability to determine their own research direction, based on their own curiosity about and commitment to their chosen subject area, including their capacity to critically interrogate it and their desire to inspire others. We will provide the environment, facilitation and support to attract, retain and nurture them. We will listen to and learn from them.

UCL will support its researchers in addressing long-term questions of high significance, influencing the thinking of their peers, students and successors, developing the connections of their work to other fields and practices, and maximising the public benefit of their insights. We seek to inspire them to lead through collegiality and collaboration, within and beyond the university.

What we mean by ... research leadership

Enduring individual intellectual excellence is the prerequisite, but not the limit, of research leadership. Our conception of leadership is not the traditional one based on privilege, power and authority. Rather, this strategy intends to support diverse and non-conventional forms of leadership. UCL expects its researchers to exemplify leadership through:

- contributing to their discipline's advancement and the development of novel lines of enquiry
- supporting the intellectual life and collegiality of their department and faculty
- nurturing the development of early career researchers
- supporting those colleagues whose work underpins research
- disseminating the results of their research with honesty and as openly and responsibly as possible – through scholarly outputs and, as appropriate, education, civic and public engagement, translational research, commercial and social enterprise activity, and influence on public policy and professional practice – and, where possible, making accessible the data underpinning their research
- being open to and enabling engagement with cross-disciplinary collaboration, for example through participation in cross-disciplinary centres and institutes
- ensuring that their public research profile (currently through the UCL Institutional Research Information Service) is comprehensive, accessible and up-to-date
- engaging outside the university to enable greater research impact for public benefit, for example through productive collaboration or engagement beyond UCL, significant impact beyond UCL, influence on research and related policy, and provision of expert advice to government and other groups
- ensuring the highest standards of integrity in their research, and actively encouraging and supporting such standards in others' research
- applying the principles of responsible research to their thinking and conduct
- supporting UCL's efforts to exert its institutional influence for the greater good
- maintaining a global perspective.

Research leadership underpins and is a pre-requisite of this strategy's two other aims: crossing boundaries to increase engagement and delivering impact for public benefit.

Our objectives

Objective 1.1 – Support breadth and diversity

Become the destination and home of choice for the most talented researchers: UCL should become the destination and home of choice for the best and most promising research leaders – from early career to established – by providing a research environment which: supports them in career development and the attraction of funding; offers first-rate facilities and resources, including digital; supports their engagement with other disciplines and with external partners; and demonstrably recognises their achievements. We will be alert to the opportunities and challenges associated with international researchers moving to the UK. Ultimately, our university's culture should be one in which researchers feel valued for pursuing their intellectual curiosity, fulfilling their potential and maximising the impact of their research. We will listen to and value the opinions of our all of our researchers, not simply those of the loudest or most dominant voices.

Foster a diverse research community from the widest possible talent pool: Highly talented and promising researchers come from all backgrounds. We will recruit from the widest possible talent pool to ensure an increasingly diverse and open research community, as the model that can best address the challenges of a global society. We will implement innovative mechanisms for identifying outstanding individuals and research groups from different parts of the world and diverse backgrounds – including those from beyond academia. We will also work with and empower people from under-represented groups to develop systems and change cultures – including recognising intersectionality – to ensure that research leaders, particularly those at higher career levels, reflect the diverse communities that they serve.

Sustain a broad research base: UCL's breadth of disciplines is one of its distinguishing strengths, and we will ensure that thriving and engaged communities provide leadership across the research spectrum: from arts, humanities and social sciences to the basic and applied sciences and medicine. We will create and maintain international leadership in selected areas where we have demonstrably outstanding strengths and critical mass, while sustaining a broad base of academic disciplines through which future priority areas can be developed and nurtured. In the context of changes to the external funding environment, we will sustain the diverse environments needed to support such leaders in different fields, and value a variety of knowledge, research activities and research outputs. Our research policies will be sensitive to disciplinary variation, and resist unnecessarily uniform approaches.

Objective 1.2 – Nurture, develop and celebrate those engaged with research

Enable and celebrate our researchers: We will improve the systems through which we: track opportunities, applications and awards; record, manage and promote research activity and expertise; and monitor and support external engagement and research impact. We will support our academic research staff to disseminate the results of their research through appropriate channels, including scholarly outputs, education, civic and public engagement, translational research, commercial and social enterprise activity, and influence on public policy and professional practice (as reflected in the new Academic Careers Framework). We will also ensure that the exceptional achievements of our researchers are suitably recognised and celebrated.

Nurture research students: The recruitment and development of high-quality research students are critical to our university's long-term success. UCL will provide the very highest-quality learning environment for the research students, and develop additional ways to offer a demonstrably better research student experience than its peer institutions. This will include the continued development of strategic and innovative programmes to which many of its finest research leaders across many disciplines contribute. We will not only support our research students to progress in academic careers but also prepare them to apply their skills elsewhere should they choose to pursue other professions.

Support the development of early career researchers: We intend to increase the number and range of postdoctoral awards to allow the very ablest students to continue their research after graduation, in order to support them in producing those highest-quality research outputs that will

accelerate their progress into academic or non-academic research careers, or to apply their skills in other professions. We will promote the finest subject-specific and generic skills development, such as that provided by the UCL Doctoral School and UCL Library Services. We will create opportunities for early career researchers to maximise the impact of their research on policy and practice, and take leadership roles around new initiatives. We will provide outstanding early career research staff with stable career paths that break the cycle of short-term and precarious contracts.

Support those colleagues whose work underpins research: We will seek to ensure that those professional staff who provide support – in all its forms, including technical expertise – for research are in turn provided with clear policies and effective processes, are respected as colleagues in the research endeavour, and have opportunities for career progression. Taking inspiration from our pledges in relation to the Science Council’s Technician Commitment, we will seek to ensure progress in five key areas – visibility, recognition, career development, sustainability and evaluating impact – for all those whose work underpins research.

Objective 1.3 – Cultivate diverse forms of research leadership

Enable research leadership in all its forms: We will encourage and support our researchers as they exemplify leadership and will celebrate diverse manifestations of leadership across a wide spectrum of research and research-related activities. We will be vigilant against threats to the fundamental academic freedoms required by leadership. We will promote the physical, emotional and mental wellbeing of our researchers, so that a research career at UCL is personally fulfilling and part of a rich and balanced life. Recognising the pressures on researchers, including in their teaching and administrative roles, we will consider how best to provide the time and space required for the pursuit of curiosity, experimentation, and the independent, disruptive and long-term thinking that are integral to leadership.

Strive for responsible research leadership: Leadership is possible only if our research is trustworthy, reliable and reproducible. We will encourage researchers to lead by example – at local levels and across our university, as well as in their interaction beyond UCL – in nurturing cultures of integrity in all their research activities and supporting rising standards across all disciplines. We will update the Code of Conduct for Research to provide more practical, detailed guidance on researchers’ responsibilities with regard to ensuring the integrity of their research, as well as within their personal conduct as researchers. We aspire to lead, and to support our researchers’ leadership, in open science and responsible research, as we have in open access. We will provide relevant training and skills development for our researchers so that they can embody and exemplify responsible approaches to research.

Engage in and support leadership across the UK research community: Our responsibilities begin at home, in shaping the beneficial research culture advocated in this strategy. However, researchers from a university of UCL’s scale, breadth, impact and reputation have a responsibility – for example, through service within their discipline and membership of funding agencies or other public and private bodies – to help shape the environment in which academic endeavour takes place, to influence dialogue and debate, and to advocate rationale, evidence-based and inclusive decision-making. We will encourage and support our researchers to do so. We will seek to exploit the opportunities offered by membership of and engagement with external organisations, be responsive to the strategic objectives of others and play a prominent role in helping to inform and shape those agendas, including through continuing to lead and partner in major new collaborative research institutes and initiatives.

Enable global research leadership: Research leadership necessarily adopts a global perspective, since research is both informed by and affects an interconnected and interdependent world. We will continue to enhance research facilitation support for UCL researchers to engage with global funding and partnership opportunities, including with EU institutions and in support of the Sustainable Development Goals. As a globally engaged research institution, we will endeavour to learn from international approaches and trends, with the ambition of leading nationally and globally in the ways that we support and advance research. Inspired by the UCL Global Engagement Strategy, our commitment to a global perspective will produce a virtuous circle, in which connections around the world inform and improve the quality and consequences of our research, our researchers can act as our global advocates and ambassadors, our students are

prepared to bring their research-based education to bear on their global careers and lives, and our global reputation supports the fulfilment of our vision for research.

Aim 2 – Cross boundaries to increase engagement

Rarely can the most interesting questions or the most significant societal challenges be adequately addressed by one discipline, one university or one sector alone. While disciplinary excellence is at the heart of everything that we do, to amplify and inform our research we need to cross conventional, but often artificial, boundaries – between disciplines, between communities (disciplinary, academic and otherwise) and between different kinds of activity – in order to increase mutual knowledge and engagement, and develop co-design and co-production approaches to research and complex societal problems.

Cross-disciplinary collaboration between experts can produce a much more nuanced and holistic understanding of any given question. Although fostering cross-disciplinary activity is not unproblematic, over the past decade it has been embraced by many researchers across the breadth of UCL, and has become engrained as an approach that distinguishes our university.

Crossing the boundaries between disciplines is fundamental to our aims, but is not the extent of our ambitions. If we are to maximise the positive effects we can have on the world, we need to overcome the conventional barriers between the research endeavour and the societal needs that can inform it, and between the mechanisms through which research can engage with, for example, policymakers, businesses, community stakeholders and practitioners. We will also develop opportunities to facilitate collaboration between our researchers and our professional services staff to devise research and develop solutions relevant to our institutional challenges, for example carbon reduction, wellbeing, or diversity and inclusion.

We believe that such connections and partnerships for the co-creation of knowledge must grow more widespread if research is to fulfil its potential to address significant issues. There is not one mode, but many emerging models, of how these boundaries are crossed. UCL's flexibility and collegiality will allow it to explore these many approaches simultaneously, learning and sharing lessons openly.

What we mean by ... cross-disciplinarity

We use 'cross-disciplinarity' to mean collaboration between experts in different disciplines that transcends subject boundaries.

Cross-disciplinarity at UCL provides a flexible framework for individuals and groups to adapt their own preferred mode of working – from integrating disciplines and forging new fields, synthesising knowledge and developing challenge-based research, to undertaking research across and between several disciplines, and pursuing careers that move across and between disciplines.

Our objectives

Objective 2.1 – Champion cross-disciplinarity

Foster cross-disciplinary opportunities: We will continue to support the outstanding problem- and curiosity-driven research conducted by individuals and small groups that is the bedrock upon which all our achievements are built, and to value disciplinary excellence. We will support further interaction between disciplinary experts to make our collective subject-specific knowledge greater than the sum of its parts. In doing so, we will further consider how to address barriers and disincentives to working across disciplines. We will further develop the rich multi- and cross-disciplinary environment that ensures that our academics have greater potential to be better researchers than those working in a deeply siloed institute.

Further embed cross-disciplinarity within UCL: Much cross-disciplinary interaction occurs spontaneously, but in order to foster it at scale we will further develop a more directed and proactive approach. This includes, for example: supporting those academic departments that adopt a cross-disciplinary approach; establishing new academic units to address problems demanding diverse expertise; continuing to provide the coordination of research and funding opportunities, and supporting engagement beyond our university, through our research facilitation functions and our problem-focused UCL Research Domains; continuing to revise and develop the UCL Research Themes that encourage and facilitate cross-disciplinary interaction; and supporting those researchers who can make a distinctive contribution to research through undertaking trans-disciplinary career journeys. We will seek to ensure the sustainability of existing and new cross-disciplinary centres and institutes, recognising their critical role in developing cross-disciplinary endeavours and sharing best practice. We will also explore further ways of sharing facilities for research support across disciplinary boundaries.

Extend the reach of UCL Grand Challenges: In the second phase of UCL Grand Challenges – our flagship programme to stimulate cross-disciplinary approaches to addressing global problems – we have augmented our focus on building our university’s capacity to cross boundaries between disciplines with an emphasis on partnership with others. We are committed to embracing external engagement in all of our activity, including with relevant policymakers, businesses, community stakeholders and practitioners. This will better enable the co-identification of problems and co-development of activities to address them.

Support and promote our existing and new cross-disciplinary centres and institutes: UCL’s cross-disciplinary centres and institutes conduct a substantial amount of cross-disciplinary work. We will further develop our community of such units and support their sustainability. We value the agile leadership they provide in convening stakeholders and providing bridges across boundaries, both internally and externally. We will seek to facilitate the pioneering new roles they are developing within academia, geared to the hybrid task of providing research leadership, championing and delivering impact, and brokering knowledge both across UCL and with the external stakeholder landscape.

Objective 2.2 – Build and support partnerships

Forge and enhance effective external partnerships: UCL will continue to form both local and global strategic partnerships – for example with other universities and research organisations, learned societies, commerce and industry, policy bodies, third sector organisations and healthcare providers – that can bring together complementary strengths, help us to share and gain knowledge, and enhance our research and deepen its impact. We recognise the value of a spectrum of partnerships that can deliver innovation and societal impact. We will respond proactively to government initiatives in partnership with other institutions and, where appropriate, support and build on initiatives led by individual research leaders and groups. In particular, we will ensure that we position our research capability to engage with industrial partners and others and pursue shared endeavours in the context of the Government’s Industrial Strategy; we will improve our practical capacity to respond quickly to new opportunities, negotiate contracts and sustain partnerships.

Use UCL’s influence to develop connections and interaction: In order to help us and others to cross boundaries, we will further exploit our convening power, bringing together parties with common (or divergent) interests, and being a ‘honest broker’ of candid conversations. As we explore ways in which our social engagement can be made greater than the sum of its parts, we will draw on the experiences of other knowledge-based institutions and invite them to draw on ours, while recognising that each will wish to adapt lessons to their own circumstances and agendas.

Cross boundaries in a global context: The impact of research, whether positive or not, inevitably crosses boundaries in an interconnected and interdependent world. Addressing global challenges requires sustainable and mutually beneficial global partnerships, drawing (where appropriate) on the framework provided by the Sustainable Development Goals. As a global research powerhouse, we will extend our local and global knowledge in order to increase our

cultural sensitivity, make us better partners and increase the 'grassroots' relevance of our research.

Objective 2.3 – Encourage our research to thrive beyond traditional boundaries

Pursue responsible external engagement: Research as an endeavour is of and for society: UCL's research should be – to the greatest extent possible – accessible to, engaged with and inclusive of those it affects. The development of knowledge should be guided by the interests of the full range of stakeholders, including community and civil society groups. We will foster an inclusive research agenda that supports participatory research, co-design and co-production, and civic and public engagement in many forms. We will stimulate an ongoing dialogue with the UCL community and those outside the university, challenging existing assumptions and ensuring that we are a responsive and responsible research institution.

Further integrate research into undergraduate and postgraduate taught education: We celebrate the fact that our community both creates new knowledge through research and disseminates it through education, and increasingly view these not as parallel activities but as deeply connected. We will further integrate research into the education process, building on the Connected Curriculum to ensure that students benefit from a high-quality and well-resourced research environment that offers access to world-class academics, equipment and facilities. We will ensure that our learning and teaching is informed by our research activities, is delivered by experts in the field, and provides opportunities for students to undertake their own research. Where appropriate, we will also contribute to more cross-disciplinary undergraduate and postgraduate taught curricula. This will include increasing both UCL Grand Challenges' and cross-disciplinary centres and institutes' engagement with students – beyond the successful Global Citizenship programme – embedding awareness of the potential impact of societally focused cross-disciplinary research and analysis.

Support engagement with different communities: Our research will be enhanced through work with communities and other partners to define and tackle societal problems. UCL researchers have pioneered methods for civic and public engagement with research, including through citizen science, patient involvement, and co-design and co-production of research. We will support our researchers in exploring and refining approaches to overcoming barriers between academia and the rest of society. We will further develop an active, reciprocal culture of engagement as a means to enrich our research.

Expand our engagement with professional practice: We will continue to support those research fields in which integration with professional practice is so extensive as to be part of the basic character of the discipline – such as in law, medicine, education, engineering and cultural professions. We will enable researchers to engage in other areas of practice that, for example, support ecosystems, deliver public services or produce creative outputs. We will seek to remove cultural and other barriers that would impede such partnerships (for instance approaches to funding, publication and intellectual property that fail to respect the contributions made by the non-academic partners). We will also seek to support further participative research with and by practitioners.

Cross boundaries between varied forms of social engagement: We are justly proud of the wealth of specialist skills and expertise developed across the many fields of social engagement, such as those focused on business, culture, health, professional practice, public policy, media, civic society and the public. We will explore how to cross the boundaries between these varied practices, with professionals and researchers gaining new insights and mutual benefit from engaging with the diversity of specialist knowledge, perspectives and methodologies. We will explore cross-fertilisation of such activities as a means making our collective social engagement greater than the sum of its parts.

UCL East

We have made the crossing of boundaries fundamental to our vision for the first phase of our new campus at the Queen Elizabeth Olympic Park. As part of a wider education, innovation and cultural quarter for London, UCL East will create a world-leading university environment for experimentation, learning and scholarship for staff, students, collaborators and the wider public.

In our single largest development since the founding of our university in 1826, we are designing the facilities to have a fluid, open character, ideal for participative development and learning across the themes of Experiment, Art, Society and Technology (EAST).

Embodying UCL's commitment to creating and sharing knowledge for the benefit of all, the new campus will build on and reinforce activity in our Bloomsbury home.

Pool Street West will house the Future Living Institute, a new multi-disciplinary home for discovery, bringing together researchers from at least five faculties, comprising:

- a centre for Robotics & Autonomous Systems, part of a wider set of Experimental Engineering Labs covering a wide range of unique and innovative fields of study
- the Global Disability Innovation Hub, London's new global research centre to bring together the top minds in disability, design and innovation
- the Culture Lab (Poole Street West), offering teaching, research and engagement spaces, underpinned by new programmes in making, media, conservation and heritage, and public history – including a new foundation studio for the UCL Slade School, and a London Memory Workshop supporting the study of UCL's East London collections as well as oral histories of the area
- Nature-Smart Centre, using the Olympic Park a 'living lab' for research and teaching on three key themes: enhancing biodiversity of cities; understanding urban ecosystem services and wellbeing benefits; and using citizen science to engage people with the natural environment
- the Urban Room, in collaboration with the London Memory Workshop, forming part of the UCL Bartlett School's focus on urbanism and the built environment, and a major public and community space for debating the past, present and future of London.

The academic vision for Marshgate is still in development, but activities to be accommodated include:

- the Culture Lab (Marshgate), which will offer teaching, research and engagement spaces, underpinned by new educational programmes in making, media, conservation and heritage, and public history – including a media lab, an object-based learning laboratory and a suite of conservation facilities
- the Experimental Engineering Labs, with new academic activities in unique, innovative and multidisciplinary fields of study, including advanced propulsion and manufacturing futures
- the Institute of Making, a multidisciplinary research club for those interested in the made world: from molecules to buildings, synthetic skin to spacecraft, soup to diamonds, and socks to cities
- Urbanism & the Built Environment, a series of shared spaces specialising in new approaches to global urbanisation, ethical built-environment practice and the strategic use of ICT in sustainable, prosperous urban futures
- the Lab of Innovative Finance & Technology (LIFTech), providing leadership and training for future financial and business leaders, enabling close collaboration between research, financial innovation, industry and government.

Aim 3 – Deliver impact for public benefit

We consider the pursuit of knowledge for its own sake to be a fundamental good and the basis of all our research impact. We also seek to maximise the public benefit resulting from our research, including by furthering academic disciplines and scholarship, enhancing our cultural contribution and engaging in public discourse, growing national and global prosperity, providing policy

advice, informing professional practice, contributing to positive environmental change, and improving health and wellbeing. We will support activity of these kinds and the myriad other ways in which our research can deliver public value.

UCL cherishes curiosity and imagination, and believes that the generation of knowledge and scholarship is in itself of public value: it is a fundamental element in the development and improvement of society, and expands the potential of human thought and action. We will continue to value and support the pursuit of knowledge for its own sake, and maintain our strengths in fundamental research.

In addition to this – building on the concept of ‘chrestomathia’ (or ‘useful knowledge’) defined by our spiritual founder Jeremy Bentham – we hold that every opportunity should be taken to consider how our research can contribute to positive social change.

UCL does not pursue research impact simply in response to policy and funding trends, but because we believe that the research endeavour is rooted in the complementary purposes of pursuing knowledge and delivering societal benefit. We believe that a desire to undertake research that can improve lives inspires each one of our researchers and academics. We have a responsibility to work for the public good within our local, national and global communities. We will promote diverse forms of research design and dissemination – and the delivery of impact not only upon, but with, external communities.

We recognise that all researchers will consider the impact of their research in the way that makes most sense for them at any given time. We fully support this approach and encourage researchers to be continually ambitious in how they can further expand the impact of their research and deliver greater public benefit. We recognise that research requires significant consumption of materials and energy, and will support efforts to mitigate such consumption. We want UCL’s research capability to continue to push the boundaries of how we engage externally, of the ways in which our research impacts on the wider world, and of how we generate public value.

Our objectives

Objective 3.1 – Champion a broad definition of research impact

Recognise and nurture a wide range of research impact: We will value the full breadth of research impact for public good, be it on academic disciplines and scholarship, through cultural contribution and engaging in public discourse, or by generating income and supporting business, providing policy advice, or improving health and wellbeing, or the myriad other ways in which our research can deliver public value, including physical and digital interactions. We recognise that timescales for societal impact vary from hours – for example, as experts offer wise commentary on contemporary events – to centuries, as fundamental discoveries play out their full benefits to civilisation. In the context of research metrics we will consider a range of measures, including those that are emerging.

Objective 3.2 – Foster open and engaged research

Share our knowledge as openly and widely as possible: The maximisation of benefit cannot happen if only those within academic institutions have access to our research outputs and data. UCL will continue to fully endorse open access to – and introduce open science approaches for – outputs as a vital way of allowing the widest possible sharing of knowledge. We will build on the success of UCL Press – the UK’s first fully open access university press – as well as promote open access findings wherever they are published. We will further develop the UCL Institutional Research Information Service (or its successor) as a window on our research activity and a resource for internal and external stakeholders who want to learn more about the extent of our activity in a particular area. We will also work to develop accessible and comprehensible abstracts to be published on UCL Discovery alongside research outputs. We will appropriately contextualise and frame research findings, with uncertainties and scope clearly indicated. As a natural extension to open access we will support, where possible, full access to research data.

Amplify our impact through communications: UCL communications channels will continue to ensure that our reputation reflects the quality and purpose of our research; a major element in this will be the responsible public promotion of specific research outcomes as exemplars of our mission. Institutional communications, however, must do more than support an excellent reputation: they must support and reinforce our research leadership and influence, and amplify our impact through compelling delivery mechanisms for our insights to those positioned to implement and benefit from them. We will also proudly champion the role of expertise and evidence – and how they are relevant to and can enhance people’s lives – in public discourse.

Pursue responsible impact: Consideration of how our research delivers public benefit is central to a responsible research agenda. We will strive towards sustainable, ethically acceptable and socially desirable outcomes. We will seek to understand and minimise the potentially negative consequences of our innovations, while ensuring that their benefits are shared widely. The development of knowledge should be guided by the interests of the full range of stakeholders, including community and civil society groups, and we should do our best to anticipate the needs of people whose voices may not be heard and the interests of groups that have not yet formed; in this way, innovations will come better prepared for responsible application to deliver impact for public good within the real, complex and contested world.

Objective 3.3 – Stimulate societal impact through cross-disciplinarity and collaboration

Focus UCL Grand Challenges on impact: The second phase of UCL Grand Challenges is characterised by an emphasis on societal impact as the ultimate purpose of the programme. While UCL Grand Challenges will continue both to nourish ideas naturally arising from academics’ concerns and curiosities, and to coordinate institution-wide responses to external agendas where our expertise can contribute, we will focus on those activities with the potential to contribute to the resolution of aspects of social problems.

Enable UCL’s cross-disciplinary centres and institutes to enhance their impact strategies: We will engage with cross-disciplinary centres and institutes to enhance their work in convening internal and external stakeholders, engaging diverse audiences, enhancing research impact, and coordinating responses to issues of emerging public interest, ranging from policy input to social enterprises.

Foster public collaboration in research to benefit communities: Since we should not presume that we necessarily have a clear sense of the concerns of the wider public, we must do a better job at listening to their concerns and interests, and engage in responsible and responsive dialogue to inform our research agendas. We must also make a concerted effort to explain more clearly what a university such as UCL can offer as a partner in terms of insights, analysis and impact. We will support our researchers to understand and respond to the public’s varied concerns, beliefs and behaviour, to engage with and inform public opinion, to develop further innovations in citizen science and to address the barriers to adapting individual, organisational and mass behaviour change. We will also support the UCL Culture Manifesto’s vision to open our university to different public groups, foster creativity and mobilise researchers to engage with the wider world.

Support our research to inform public policy: We seek ultimately to embed a culture of public policy engagement across UCL so that external agencies can identify sources of relevant knowledge, and so that we can better anticipate and respond swiftly to emerging policy issues. At the level of individual researcher or department, and through to the flagship institution-wide UCL Public Policy programme, we will continue to stimulate policy-focused outputs, foster greater academic-policy interaction and support the development of evidence-informed policy formation through innovative mechanisms and activities. We will also encourage more faculty- and department-led activities and explore new ways of informing public policy from cross-disciplinary perspectives.

Contribute to improving human health and wellbeing: We will build on our exceptional strengths in biomedical and related sciences and strong relationships with our partner hospitals to improve health systems. We will support better links between research and frontline healthcare delivery, recognising that this often requires the establishment of new processes and facilities. We will look to the major challenges facing populations across the globe, such as the social

determinants of health and wellbeing, and the condition of the natural and built environments. We will apply a range of academic expertise beyond biomedicine, develop new forms of engagement with the corporate and public stakeholders within the health system, and engage with the medical research charity sector to understand the issues it faces. We will work with UCL Culture to support the alignment of public engagement with patient and public involvement in research across our university, in order to develop better links between researchers, clinicians, and health service users and stakeholders.

Support commercial and social enterprise: The UCL Innovation & Enterprise Strategy describes our university's commitment to widespread collaboration with commercial and social enterprises in order to tackle the barriers to knowledge exchange, while maximising the societal impact of our research. We will seek to maximise the myriad opportunities for our research community to provide expertise, skills, services and products to external partners, collaborators and customers, for example through contract research, consultancy, licensing and continuing professional development. We will link together numerous piecemeal interactions into more valuable and more rapidly responsive sustained, strategic relationships. Recognising that corporate policies and practices have a significant impact on global issues, we will proactively share research findings with business leaders through our thematic communities and institutes. We intend to establish our university as a leading research collaborator and provider of knowledge-based services to the commercial and voluntary sectors, drawing on the expertise, programmes and networks of UCL Innovation & Enterprise, UCL Culture and the Voluntary Services Unit.

Benefit London and our local community: UCL research will be brought to bear on the city that is its home. The capital itself poses a set of complex and systemic problems which can be resolved only through the deployment of cross-disciplinary expertise in collaboration with local communities, government bodies, policymakers and practitioners, local business and other London organisations. We intend that our work with London will develop beneficial outcomes that can be applied elsewhere and on other scales.

Contribute to the prosperity, wellbeing and sustainability of the UK: Recognising that our research is strongly connected to and profoundly impacts upon the UK's economy and society, we will maximise its potential to deliver public good and address national challenges. We recognise UCL's responsibility, as a leading university, to both respond to societal, government and funder imperatives and to influence their agendas. We will take a broad view of prosperity that recognises the value of both economic impacts and wider factors, and will seek to drive transformative dialogue and action to improve wellbeing and sustainability in ways that benefit all citizens.

Maximise our global impact through co-creation: UCL defines itself as a global university, and many of our research activities are international in nature, whether because of subject matter or partnership. In alignment with the UCL Global Engagement Strategy, we seek to co-create judicious solutions to enduring and emerging global problems, help to increase independent research capacity globally and establish strategic international partnerships, in order to maximise our impact on social, environmental, cultural, economic, legal and health issues globally – including those identified in the Sustainable Development Goals.

What this strategy means for researchers

Implementation of this strategy will take place at multiple levels. Its implementation plan (in development) defines mainly institution-level actions. We also hope that individual researchers will reflect on and embrace the aims of this strategy, and implement it in the context of their own work.

The intentions expressed under the objectives in the preceding section of this strategy mainly describe activities at the institutional level. These will be defined in more concrete terms in the implementation plan under development. This will set out nine work programmes (reflecting the strategy's nine objectives), each with specific goals; it will propose detailed actions, with delivery partners, timelines (both short- and longer-term) and indicators of progress identified. We intend the plan to be a 'living document', designed to respond to the rapidly changing environment in which we operate; progress against its actions will be reported on regularly, and proposed future activities consulted upon.

For the individual UCL researcher – and for those contemplating becoming one – this strategy seeks to define a nurturing environment in which: your research leadership is encouraged, cherished and sustained; your expertise can be creatively linked with and enhanced by that of other disciplines; impediments to you reaching across traditional boundaries are minimised; and the consequences of your work can be amplified. We hope that all researchers – and professional staff supporting the research endeavour – will view their work as part of a collective effort, helping UCL to make the most of its potential as a force for public good.

It is unlikely that every researcher will be able to respond directly to every objective of this strategy at every point in their career, but we hope that its aims and objectives will reinforce a culture in which individual researchers are enabled to develop further their own talents, interests, engagement and impact.

We also recognise the importance of and scope for leadership by those colleagues in professional services roles, including those leading and supporting research networks. We are a community, and the full breadth of skills and roles are needed to deliver on the full potential of UCL's research.

Described below are some of the ways in which we hope that researchers will respond to this strategy.

Research leadership

Enduring individual intellectual excellence is the prerequisite, but not the limit, of research leadership. Our conception of leadership is not the traditional one based on privilege, power and authority. Rather, this strategy intends to support diverse and non-conventional forms of leadership. Researchers are encouraged to embody leadership through:

- contributing to their discipline's advancement and the development of novel lines of enquiry
- supporting the intellectual life and collegiality of their department and faculty
- nurturing the development of early career researchers
- supporting those colleagues whose work underpins and enables research
- disseminating the results of their research with honesty and as openly and responsibly as possible – through scholarly outputs and, as appropriate, education, civic and public engagement, translational research, commercial and social enterprise activity, and influence on public policy and professional practice – and, where possible, making accessible the data underpinning their research
- being open to and enabling engagement with cross-disciplinary collaboration, for example through participation in cross-disciplinary centres and institutes
- ensuring that their public research profile (currently through the UCL Institutional Research Information Service) is comprehensive, accessible and up-to-date
- engaging outside the university to enable greater research impact for public benefit, for example through productive collaboration or engagement beyond UCL, significant impact

beyond UCL, influence on research and related policy, and provision of expert advice to government and other groups

- ensuring the highest standards of integrity in their research, and actively encouraging and supporting such standards in others' research
- applying the principles of responsible research to their thinking and conduct
- supporting UCL's efforts to exert its institutional influence for the greater good
- maintaining a national and a global perspective.

Crossing boundaries

Crossing boundaries requires dedication and openness on the part of our researchers, who are encouraged to enhance their research by, for example:

- pursuing appropriate opportunities for cross-disciplinary interaction and adopting a collaborative approach in working with colleagues across disciplines
- remaining open to engagement with, and valuing the perspectives of, external partners and those communities with an interest in research outcomes
- where applicable, connecting their research to professional practice and public policy
- considering how they can embed co-design or co-production in their research
- drawing on and exploring methods and practices for overcoming barriers between disciplines, and between academia and the rest of society
- extend their local and global knowledge in order to increase their cultural sensitivity, make them better partners and increase the 'grassroots' relevance of their research.

Delivering impact

We recognise that all researchers will consider the potential impact of their research in the way that makes most sense for them. Researchers are encouraged to be ambitious in how they can further expand the impact of their research and deliver greater public benefit, for example by:

- going beyond compliance with open access, such as by sharing the relevance and excitement of their research through mainstream, specialist and social media, and other communications channels
- considering how they can effectively engage beyond the university, including through open science
- exploring the potential for their research to maximise its benefit, such as through engagement with public policy, health systems, and commercial and social enterprise
- disseminating and applying relevant research findings to people, groups and institutions in London, nationally and internationally.

Responsible research

Researchers are encouraged to demonstrate their commitment to a responsible research agenda, including through:

- adhering to the four principles in the UCL Statement on Research Integrity^{vi}: Rigour, Honesty, Open & Transparent Communication and Care & Respect
- striving towards sustainable, ethically acceptable and socially desirable outcomes, and seeking to maximise the beneficial impact of their research while understanding and minimising its potentially negative consequences
- conducting trustworthy, reliable and reproducible research that is appropriately contextualised and framed, with uncertainties and scope clearly indicated
- leading by example – at local levels and across our university, as well as in their interaction beyond UCL – in nurturing cultures of integrity in all their research activities and supporting rising standards across all disciplines
- developing an inclusive research agenda that engages, as appropriate, with civic and public engagement in many forms, including participatory research, co-design and co-production
- striving constantly to do better, by valuing a diversity of knowledge and remaining open to reflections and questions about whether and how they can improve.

^{vi} <http://www.ucl.ac.uk/research/integrity/integrity-at-ucl>

Influence for the greater good

Researchers are encouraged to help shape the environment in which academic endeavor takes place, to influence others' thinking and to advocate rationale, evidence-based and inclusive decision-making, including through:

- serving within their discipline and through membership of funding agencies, and other public and private bodies
- building diverse academic networks beyond UCL, locally, nationally and globally
- bringing their expertise and experience to bear on the research policy, funding and regulatory environment
- being responsive to the strategic objectives of other groups and helping to inform and shape those agendas.

A global perspective

Researchers are encouraged to explore and develop a global perspective, including by:

- extending their local and global knowledge in order to increase their cultural sensitivity, make them better partners and increase the 'grassroots' relevance of their research
- seeking to co-create judicious solutions to enduring and emerging global problems
- helping students to bring their research-based education to bear on their global careers and lives
- engaging with global funding and partnership opportunities
- helping to support the growth of independent research capability globally, and facilitating partnership working at all levels.

Drawing on our collective experience, expertise and imagination

We recognise the many and varied obstacles to achieving the objectives of this strategy, and are keenly aware that overcoming them will require us to draw on the experience, expertise and imagination of the whole UCL community.

Developing the optimal practical and operational support and processes to enable UCL's vision is complex. There are many difficult issues where we do not have immediate answers, but where we wish to enlist the UCL community in order to make progress. We will therefore convene a small number of researcher-led working groups to consider some of the most intractable barriers to achieving our ambitions, and propose practical actions to mitigate or remove these. These groups will analyse and work with existing initiatives within and beyond our university. Any member of the UCL community is welcome to nominate themselves for membership of a working group, or to respond to working groups' calls for evidence and examples of good practice.

Enabling research leadership

We have heard concerns from academic colleagues that people need 'breathing room' to allow some respite from external pressures in order to think longer-term, explore more cross-disciplinary collaboration, and take more risks in research. This working group will consider how best to enable the time and space needed for the pursuit of curiosity, experimentation, and independent, disruptive and long-term thinking.

Supporting equality and increasing diversity in research

While UCL has made substantial progress in supporting greater equality in our research community, there remains much more to do. This working group will explore how to create a more inclusive research community so that a diversity of voices and perspectives are heard, and we avoid hegemony in our conceptions of research quality or research leadership.

Stability for early career researchers

The precarious nature of early career research pathways is a serious cause for concern. The instability in the current cycle of short, fixed-term contracts risks a drain of talent and impedes our researchers' ability to pursue leadership. There are number of complex inter-related factors, such as: sustaining a healthy dynamism in our research community to enable us to continue to recruit and progress the best early career researchers; exploring new funding models; and better understanding and valuing the roles that early career researchers play in our institution. This working group will explore how best to support and advance our early career researchers in establishing stable career paths, to help grow and retain our research talent.

Cross-disciplinary collaboration

The concept of working across individual research disciplines is not new; yet it remains highly challenging and outwith mainstream research reward and incentive structures (e.g. in terms of funding and publishing). The pursuit of cross-disciplinary collaboration requires: dedicated and sustained effort, over time; the sharing of ignorance and the establishment of trust; and a willingness to embrace and engage with different perspectives. UCL's many cross-disciplinary centres and institutes have created important cross-disciplinary platforms for engaging both internal researchers and external stakeholders across our disciplinary structures. UCL Grand Challenges has made tremendous headway in fostering cross-disciplinary communities focused on particular societal problems, yet we know that for all the academics who have engaged in that programme there are many more who have not. This working group will explore the barriers to cross-disciplinary collaboration that persist, at our university and more broadly – whether these are cultural, intellectual or practical, or are found in particular disciplines – and understand how we can more effectively mitigate or remove them.

Conclusion

Previous versions of the UCL Research Strategy (published in 2008 and 2011) expressed our commitment to develop and disseminate original knowledge, not only for its own inherent value but also to address the significant challenges facing the world today and those that will arise in the future. This reflected our university's founding principles of innovation, accessibility and relevance.

This refreshed iteration, the 2019 UCL Research Strategy, develops that vision in the context of our university's current scale and excellence, as well as more recent changes to the wider world, and provides a strategic framework for the next ten years.

We have expanded the scope of our three aims, in order to reflect UCL's capacity and commitment to inspire and empower research leadership, to cross boundaries to increase engagement and to deliver impact for public benefit. Our three cross-cutting themes – relating to pursuing a responsible research agenda, exerting our institutional influence for the greater good and maintaining a global perspective – characterise how we will approach those aims.

As a UCL researcher or an enabler of research – or as a person who aspires to be one – we invite you to find motivation and empowerment in our university's radical tradition of innovation, accessibility and relevance. In doing so, you will inspire future generations of our university's researchers to fulfil their own potential. As a researcher or a professional supporting the research endeavour, we encourage you to view your work as part of a collective effort to help UCL to make the most of its potential as a force for public good.