

A photograph of four people (two men and two women) gathered around a table, looking intently at a large map or document. The man on the left is wearing a grey shirt, the man next to him has a beard and glasses and is wearing an orange shirt, the woman in the center has blonde hair and is wearing a dark blue sweater, and the woman on the right has dark hair in a bun and is wearing a grey hoodie with 'SMITH' visible. They are all focused on the map in front of them.

Strategic Framework for Research at the University of Amsterdam

Strategic Framework for Research at the University of Amsterdam

Contents

3	Summary
8	Introduction 3
10	1. The UvA in an evolving research environment
21	2. The research vision of the UvA
30	3. Innovation and infrastructure
37	4. Strategic positioning and collaboration
42	5. A more effective link with society, the city and the UvA's profile
47	6. Academic integrity and open science
53	Sources

Summary

The UvA is a comprehensive research-intensive university, where high-quality research takes place across the board and where education and research are inextricably linked. To maintain the high level of research quality at UvA and to continue to play a leading role internationally, several issues must be addressed. A core element of this is a more strategic positioning of the UvA research. This means more attention to the relative position of UvA research in the academic world and the societal positioning of that research.

More strategic positioning based on the UvA's intellectual footprint

In implementing this research policy, the UvA will focus more attention on the relative position of the UvA. The starting point here is the uniqueness, the 'intellectual footprint' of the research at UvA. This concerns the specific contribution, the unique perspective of the UvA within academic disciplines. This may be a choice for certain topics, focusing on certain methods, working from specific paradigms, a multi- or interdisciplinary approach etcetera. In the research strategy for the coming years, more emphasis is placed on that intellectual footprint as a basis for the positioning of the UvA research.

In concrete terms, this means that all faculties are asked to develop a faculty research strategy, in which they identify faculty priorities with regard to research. They do this on the basis of their competitive advantage: the areas with which the UvA distinguishes itself internationally or can eventually distinguish itself. This means that sharper choices must be made and the scarce resources deployed in a more targeted manner. A more strategic course also means that the relevant priorities are better coordinated with the researchers involved with the thematic choices of the second and third funding stream.

The faculty strategy is also aimed at achieving *innovation in research*. The UvA wants to facilitate researchers in this even better. This renewal involves, for example, setting up new (promising) research themes, methodological innovation or innovative interdisciplinary research. The UvA also wants to support

innovation by focusing more on interdisciplinary cooperation. Collaboration across the different disciplines can be an important source of innovation. The UvA does keep in mind that the deepening of disciplines is a necessary condition for being able to conduct innovative research across the boundaries of disciplines.

Another part of the more strategic positioning of the research is a *greater commitment to team science* within the university. A sharper definition of complementary roles within a group of researchers can be of added value for the group as a whole. This could be at the level of the program group or research institute, but also across disciplinary boundaries. By paying more attention to team performance, and by including this in the strategic HR policy, space can be created for projects or pathways that are of strategic importance to the research group or institute and not necessarily to the individual researchers.

For a more strategic positioning, the UvA also wants to work *more closely with external parties*. The intention is to increase the participation in (inter)national networks and consortia aimed at the acquisition of external resources. Participation in such consortia and networks must entail substantive added value, aligning with the faculty strategic priorities. Existing reaching partnerships, such as U21 and LERU, can in this respect be exploited more (substantively) than is currently the case.

Better connection with society and city; a stronger profile

Another component of a more strategic positioning is a better connection between research and societal questions. Much of the UvA research has already been inspired by societal or economic questions, but that does not alter the fact that the UvA wants to further increase its involvement with societal organizations and challenges. The starting point is that *academic research and societal questions reinforce each other*. Science can contribute to the (evidence-informed) solving of societal problems and conversely the questions and challenges of societal parties can be of inspiration to researchers. Cooperation with third parties may also provide other benefits for researchers, such as the access to new data sources.

When connecting to societal themes, the UvA is looking for sustainable connections. More attention should be paid in the faculty research strategies to *strategic relationships with societal organizations / companies*, for example in long-term research projects, in cluster organizations and when formulating societal research agendas.

A unique and specific element of the connection with society is the relationship with a wide range of governments, organizations and companies in the *Amsterdam metropolitan region*. In order to shape the connection with Amsterdam and to improve innovative capacity, the policy in the coming period is aimed at better embedding the UvA in various networks in and around Amsterdam.

The UvA wants to put more effort into the *profile of its research*. This profiling helps to be more recognizable for both societal partners and the general public. In addition, the profiling contributes to clarifying the societal relevance of the UvA research and thus also to public legitimacy.

Facilitate researchers with research facilities and infrastructures

State-of-the-art research facilities are becoming increasingly important to conduct high-quality research. The UvA continues to invest in specific research facilities on the various campuses. The aim is to offer excellent facilities for researchers, among other things through a (Amsterdam-specific) concentration of research facilities and infrastructure. The policy also aims to make better use of existing facilities and infrastructure, both internally and by external parties. In addition to better exploitation, this also offers new opportunities for collaboration.

Another important movement is the digitization of science: research is becoming increasingly data-intensive in many fields. With this in mind, the UvA is investing in the coming years in an *advanced IT infrastructure* that optimally facilitates researchers at the UvA and lowers the thresholds for use. The UvA is developing a cloud infrastructure that provides for networks, computing capacity and data storage. In addition, low-threshold and appropriate solutions are being developed for the storage of data during the various phases of the research.

Research integrity and open science as necessary preconditions

Research integrity is a necessary condition for the quality of research and the progress of science and scholarship. The UvA endorses the VSNU's Code of Conduct for Research Integrity and the principles of honesty, scrupulousness, transparency, independence and responsibility mentioned therein. The UvA also endorses the duties of care referred to in the code. This means that the UvA looks after a work environment in which good research practices are promoted and guaranteed. In 2017, a UvA working group advised the Board on how good research practices can be further promoted within the UvA. The UvA's policy is also focused on the implementation of the recommendations in the advisory report.

Furthermore, it is important that the *knowledge* gained through research is *shared quickly and fully*. The UvA shares the idea that open science promotes the progress of research, and supports the goals of open science. The UvA considers it important in this context that open science actually offers added value to science and scholarship, and does not harm the interests of the UvA and its researchers. The pursuit of open science entails major changes for researchers and for the organization of research. The implementation of open science should not result in new barriers to researchers. The administrative burden must remain limited, costs should be manageable, the necessary investments should be manageable, and the intellectual property of data and research may not be endangered. The UvA will actively take a national and international stand and promote the transition to open science in such a way that it advances and enhances university research.

The move to open science requires changes in the personnel or adjustment of the current evaluation and appraisal systems. The UvA strives for a more balanced evaluation of its employees, with less emphasis on quantitative indicators of individual successes, such as the number of publications and citations and the acquisition of research funding. Open science-policy requires special attention to the training and career of PhD students. They must be able to develop their skills in an open research culture.

A balanced personnel policy also means a policy that is more focused on *diversity within research groups*. This means that the UvA will continue to pay attention to diversity in the background of all researchers and women in higher research positions.

Introduction

The University of Amsterdam (UvA) is a comprehensive, research-intensive university that operates in an environment that is constantly evolving. High-quality research is carried out at the UvA across the entire breadth of its programmes. In order to continue that research, the UvA must be agile enough to respond to the dynamics of science and scholarship and that of the changing environment. To this end, the UvA has formulated a Strategic Framework for Research.

Researchers operate in a rapidly changing environment and this Framework is aimed at supporting them as much as possible, so they can continue to focus on scientific and scholarly progress. The aim is to provide a Framework for positioning UvA research more strategically. It in no way aims to increase the workload of researchers or support staff by requiring even more of them. More strategic positioning can even reduce the burden on each individual employee, for example through more teamwork.

The Framework is a policy guidance for the coming years. It is intended as a general framework for the entire University, serving as a guide for faculties and research institutes to formulate their own research strategies, with the distinctiveness and unique position of the research groups as the point of departure. The deans will each be asked to formulate a faculty research strategy for the duration of the new Strategic Plan. The Strategic Framework for Research must be considered in conjunction with other policy documents, such as the Strategic Framework for Teaching and Learning, the HRM agenda, etc.

In order to achieve an UvA-wide Strategic Framework for Research, roundtable talks were held at the faculties in the autumn of 2018, with the Rector Magnificus visiting each faculty to consult with the dean, researchers and policy staff. In addition, consultations were held with the University Advisory Committee on Research (UOC), representatives of the Central PhD Council and the AMC PhD Student Association and the Senate. The results of these consultations have been incorporated into this Strategic Framework, thus bringing the perspective of researchers into university-wide policy questions by way of roundtable

consultations at the faculties. The next step, namely drafting and implementing the faculty-specific research strategies, brings everything back to the level of researchers.

The first chapter contains a brief analysis of the current position of UvA research and an outline of key trends in the environment. The second chapter sets out the UvA's research vision, on the basis of which the contours of the new research policy are set out in subsequent chapters. Key objectives are outlined for each component, which will be developed by the relevant UvA units (faculties, services, Board) in the years to come.

1. The UvA in an evolving research environment

The UvA: a comprehensive university conducting high-quality research

The UvA is a comprehensive, research-intensive university. The research conducted at the UvA is of high quality, as regular research evaluations (following the Standard Evaluation Protocol, SEP) have shown.¹ The UvA also scores well in rankings² and on metrics such as the volume of research output and citation scores, with research in the social sciences and humanities in particular achieving high scores in global rankings. As such, UvA research is of high quality across the board, occupying a prominent position in virtually all of the domains in which it operates. The broad scope of the University of Amsterdam is a key starting point that should be fostered and can be developed further.

Further analysis shows that in recent years the UvA has been successful in attracting individual grants (such as the VENI-, VIDI- and VICI-grants, ERC grants, etc.). The UvA performs relatively well when it comes to personal research grants for junior and mid-level researchers in particular. The UvA's position is less strong when it comes to acquiring (thematic) programme grants. At the national level (NWO), the UvA still performs relatively well, but at a European level it occupies a relatively weak position with these types of funding.⁴ The UvA also participates very little in European consortia. The

overall picture is that the UvA's research culture is individualistic in nature and that its acquisition capability is not strongly oriented towards societal thematic programmes or participating in international consortia.

The UvA is a comprehensive university with seven faculties. The faculty research profiles vary greatly. There are significant differences in their ability to acquire external funds (through indirect government funding and contract research funding), in their personnel structure (number of professors, number of PhD students and the relationship between the two) and in the allocation of academic staff in research. Broadly speaking, the research profiles of the faculties are comparable to sister faculties in the Netherlands.

¹ University of Amsterdam, *Onderzoeksbeoordelingen [Research Assessments]*, 2018.

² Rankings do not play a leading role in UvA policy. Nevertheless, it is prudent to examine on which components the UvA has achieved higher or lower scores than other research-intensive universities.

³ According to the QS World University Rankings by Subject 2019, the Social Sciences and Management domain ranked in 41st place, with the Social Sciences domain ranked in 21st place according to Times Higher Education 2019, and with the Social Sciences and Humanities domain taking 8th place according to CWTS Leiden Ranking 2019.

⁴ D. Koppejan en J.R. Smit, *Kenniskaart Horizon 2020 University of Amsterdam*, December 2017.

A changing financing landscape

The UvA finds itself in a changing landscape. A key trend in the funding of research is the increased share of the second and third flows of funds. In recent years, the share of research with direct funding has remained more or less the same (whereas the education component increased slightly), while the share of research in the second and third flows of funds increased steadily.⁵ As a result, researchers have increasingly had to rely on external (competitive) financing for the funding of their research, with less money being available for long-term projects. As the IBO study concluded as far back as 2014: ‘Universities are experiencing funding constraints as a result of increasing pressure on direct funding, and require more stability and predictability with regard to funding from the first flow of funds.’⁶ A further consequence is that matching funds has led to the erosion of the space for free research, as was the conclusion of the CHEPS report *Bekostiging van het Nederlandse hoger onderwijs: kosten-determinanten en varianten* [Funding Dutch Higher Education: cost determinants and variants] in 2018.⁸ External financing is increasingly determining internal flows of funds. The Rathenau Institute has demonstrated that the budget of Dutch universities is driven by competitive project funding to a much greater extent than is shown by official figures.⁹

⁵ The Association of Universities in the Netherlands, *Ruimte voor investeringen en talent. Inzicht in de ambities en knelpunten van de Nederlandse universiteiten en mogelijke financiële oplossingen* [Space for investment and talent. Insight into the ambitions and bottlenecks of Dutch universities and possible financial solutions], September 2018.

⁶ Ministry of Finance, Interdepartementaal Beeldsonderzoek (IBO) *Wetenschappelijk Onderzoek*, [Interdepartmental Policy Survey (IBO) Scientific Research], May 2014.

⁷ As a rule, funding bodies or sponsors will not reimburse all costs – universities are required to contribute a given percentage: matching.

⁸ Center for Higher Education Policy Studies (CHEPS), *Bekostiging van het Nederlandse hoger onderwijs: kostendeterminanten en varianten* [Funding Dutch Higher Education: cost determinants and variants], August 2018.

⁹ Rathenau Instituut, *Chinese borden. Financiële stromen en prioriteringsbeleid in het Nederlandse universitaire onderzoek*, [Juggling plates. Financial flows and prioritisation policy in Dutch university research], 2016.

The size of the second flow of funds is not only increasing, but other emphases are also being placed on different aspects by research funders. In its new strategy, the Netherlands Organisation for Scientific Research (NWO) will place yet more emphasis on the societal relevance of research. This will be achieved in the years to come through the creation of thematic grant programmes that focus on the challenges facing society. This also means that the NWO will be placing more emphasis on multidisciplinary and interdisciplinary research, collaboration across various chains (from fundamental research towards more applied, practice-based research) and closer involvement of users. Furthermore, the NWO will also look more closely at opportunities for the valorisation of research results. Finally, the NWO will be reinforcing its commitment to team science, with previously initiated Top Sector policy remaining in force.¹⁰

The Committee on the Funding of Higher Education and Research (*Commissie Bekostiging Hoger Onderwijs en Onderzoek*)¹¹, led by Martin van Rijn, concluded that ‘competition has overshot the mark and that dependence on temporary financing from second and third flows of funds has got out of hand.’ Whether and how the recommendations of the report (of May 2019) will be adopted and implemented by the Minister is as yet unclear. The recommendation that part of the NWO funds be transferred to direct university funding may have a positive impact, but it will depend for example on whether it is achieved using the thematic NWO funds or the funds for free competition. The report also recommended that the transfer of these funds be approached in a policy-driven manner, ‘with clear agreements on cooperation, profiling and division of responsibilities in relation to the national priorities.’ So although the consequences are as yet unclear, what is clear is that the research funds of universities will increasingly be allocated in a ‘policy-driven’ manner.

¹⁰ Netherlands Organisation for Scientific Research (NWO), *Nieuwe NWO-strategie 2019-2022. Verbinden van wetenschap en samenleving* [New NWO Strategy 2019-2022. Connection science and society], 2018.

¹¹ Advisory committee on Funding Higher Education and Research, *Wissels om. Naar een transparante en evenwichtige bekostiging, en meer samenwerking in hoger onderwijs en onderzoek* [A change of direction. Towards transparent and balanced funding and more cooperation in higher education and research], 2019.

Societal impact is also a key area of focus within the research and innovation programme of the European Commission, Horizon Europe (2021-2027). Although Horizon Europe is still under development, the programme proposal shows that part of the programme is aimed at solving societal challenges. This is similar to Horizon 2020, the research and innovation programme which runs from 2014 to 2020.¹² Horizon Europe, however, will introduce so-called research and innovation missions in which researchers, citizens, stakeholders, the European Parliament and EU member states will work together to tackle problems in society.¹³ Societal problems usually require an interdisciplinary approach, which means that the creation of interdisciplinary consortia for specific programme lines of Horizon Europe is essential. In order to have access to the thematic funding of Horizon Europe, it is vital that the UvA participate in the mission-driven approach, submit applications in consultation with other disciplines and involve societal actors. This may be challenging, primarily for researchers in the social sciences and humanities, but also presents opportunities, given that their expertise is needed within various programmes lines.

The general trend is a growing emphasis on the societal relevance of academic research, and the use of instruments that require collaboration across multiple disciplines and cover the entire knowledge chain (from more fundamental research to applied research). The UvA will have to respond to this trend if it wishes to retain access to external funding. This is critical, given that the dependence on the second flow of funds is significant and not expected to decrease.

¹² Netherlands Enterprise Agency, *Horizon 2020: Onderzoek en Innovatie* [Horizon 2020: Research and Innovation], n.d.

¹³ See European Commission, *Horizon Europe – the next research and innovation framework programme*. How Horizon Europe is being designed, legal framework, factsheets, reports and timeline, n.d.

The National Research Agenda

The National Research Agenda (Nationale Wetenschapsagenda, NWA) was launched in 2015 to connect society, research and innovation with one another.¹⁴ The NWA has four key pathways, including the 'Research along Routes through Consortia'¹⁵ pathway. Based on open competition, researchers, citizens, businesses and other civic partners will work together to resolve problems and challenges facing society. The purpose of the NWA is to encourage multidisciplinary collaboration between researchers, policy makers and innovators in the context of research and innovation. The government has earmarked an annual amount of €130 million for the NWA for the years to come.¹⁶ It is through this provision that the government will be focusing more on the societal relevance and the thematic implementation of research at universities.

The impact of digitisation on science and scholarship

Not only is the funding landscape shifting, but changes are also afoot within society as a whole. One key development is the ongoing, further digitisation of society. The explosive increase in digital data raises new questions and challenges for the research community. For example, the vast amount of data, including open source data, offers new opportunities for research. At the same time, scientists and scholars are needed to engage with that data in a meaningful way. There is a high demand for models, methods and types of technology to unlock, search, analyse and visualise this vast amount of data. In addition, new methods such as Artificial Intelligence (AI), are being developed, which may, and in some cases already do, influence the way in which we carry out research. Whereas at present information technology is still regarded as a support service, these developments show that it is also creating new opportunities for research. The impact of the data explosion and new methods, such as AI, may potentially

¹⁴ Netherlands Organisation for Scientific Research, *Nationale Wetenschapsagenda* [National Research Agenda], 2019.

¹⁵ Netherlands Organisation for Scientific Research, *Programma Nationale Wetenschapsagenda* [National Research Agenda Programme], 2019.

¹⁶ SMinistry of Education, Culture and Science, *Uitwerking investering wetenschap en onderzoek* [Elaboration of science and research funding], March 2018.

have a significant impact on the research carried out in certain fields. The UvA must be aware of these changes, evolve in tandem with them, or even take on a leading role.

Open science

In the Netherlands and the EU, open science is a hot topic. Open science aims to make research more accessible and transparent, both in terms of publications (open access) and research data (open data). Open science serves various purposes: to increase availability for (re)use, to broaden participation and to increase applicability.¹⁷ Open science should lead to a more transparent, more controllable and reproducible, faster, more efficient and more sustainable research process and, as such, to more rapid knowledge development. In addition, companies and citizens will be able to benefit faster from the public information available, in order to innovate for example.¹⁸

The Open Science Policy Platform (OSPP) of the European Commission distinguishes eight focus areas for open science policy:^{19, 20}

1. *Future of Scholarly communication*: the (future) dissemination of various types of research, such as publications, data and software in an open manner.
2. *European Open Science Cloud*: the EOSC is an initiative of the European Commission and aims to connect research data through a virtual environment.
3. *FAIR Data*: this is an endeavour to make research data findable, accessible, interoperable and reusable.
4. *Skills*: in order to facilitate the transition to open science, skills are needed that can be integrated into curricula for doctoral researchers and students.

¹⁷ European Commission, *Open Innovation, Open Science, Open to the World. A vision for Europe*, 2016.

¹⁸ Please see the website of the National Platform Open Science: <https://www.openscience.nl/>.

¹⁹ European Commission, Directorate-General for Research and Innovation, *Open Science Policy Platform Recommendations*, April 2018.

²⁰ League of European Research Universities, *Open Science and its role in universities: A roadmap for cultural change*, May 2018.

5. *Research Integrity*: open science increases the transparency of research and in this way is able to contribute to research integrity.
6. *Rewards*: changing evaluation and valuation systems so that they align with open science.
7. *Altmetrics*: including other forms of output than publications when measuring the quality and impact of research.
8. *Citizen Science*: Citizen Science relates to the practice of research by volunteers ('citizens') who are not affiliated with a research organisation as professional researchers.

In order to stimulate open access (and to break open contracts arrangements with publishers), 'Plan S' was recently launched.²¹ Plan S states that, as of 1 January 2021, eleven national research funding bodies and the European Commission will make open access publications of publicly funded research compulsory. The details of the development of Plan S will be announced over the course of 2019, when the schedule of the implementation of the various measures will become clear. There are also several national and international initiatives in respect of open data, in the field of Research Data Management, such as the Dutch National Coordination Point Research Data Management (LCDRM)²² or the European Open Science Cloud (EOSC).²³

The challenge facing the UvA is to respond to these developments and to ensure that open science is implemented in such a way that it actually strengthens research.

²¹ cOAlition S, *Plan S*, 2019.

²² Please see the website Dutch National Coordination Point Research Data Management: <https://www.lcdrm.nl/>.

²³ Please see the website of the European Commission: <https://ec.europa.eu/research/openscience/index.cfm?pg=open-science-cloud>.

The current evaluation, recognition and reward system under pressure

In recent decades, a research system has emerged in which a strong emphasis is placed on (numbers of) publications and citations. This system has garnered increasing criticism, as it focuses on the number of publications in reputable journals with a high impact factor and leads to a culture of ‘publish or perish’. Various initiatives are trying to change this system.

In 2012, the Declaration on Research Assessment (DORA) was signed by a large number of knowledge institutions (including by the Association of Universities in the Netherlands (VSNU) on behalf of all Dutch universities). DORA ‘recognises the need to improve the ways in which the outputs of scholarly research are evaluated’.²⁴ The Science in Transition initiative was launched in the Netherlands in 2013. The movement aims to change the research system to ensure it centres on another way of recognising research.²⁵ Besides the desire for research to be evaluated differently, other ways of recognising and rewarding people is also a key area of focus. The VSNU, for example, recently launched an initiative on ‘recognition and reward’ of academics.²⁶ According to the VSNU, there ought to be more attention to different scientific career pathways by ‘placing emphasis’ on aspects such as research, education, knowledge valorisation or leadership. The UvA supports this initiative, which is also in line with the LERU recommendation *Delivering talent: Careers of researchers inside and outside academia*, which highlights the importance of preparing academic staff for various career pathways available both inside and outside academia.²⁷

²⁴ Please see the website of the Declaration on Research Assessment: <https://sfdora.org/>.

²⁵ Please see the website for Science in transition: <https://scienceintransition.nl/>.

²⁶ The Association of Universities in the Netherlands, *Waarderen en belonen van wetenschappers* [Valuing and rewarding scientists], n.d.

²⁷ League of European Research Universities, *Delivering talent: Careers of researchers inside and outside academia*, June 2018.

2. The research vision of the UvA

Introduction

The UvA carries out high-quality research. In order to maintain this quality level and continue to play a prominent role internationally, several crucial issues must be addressed, such as sufficient flexibility for the creativity of researchers, state-of-the-art research facilities and infrastructure, talented researchers, a sufficient degree of responsiveness (to the fluxes both inside and outside the research community) and adequate funding. Ideally, these elements would be addressed as effectively as possible at the UvA. The UvA is a comprehensive, research-intensive university where teaching and research are inextricably linked and where each discipline has various research areas in which the UvA excels relative to other European universities.

The aforementioned elements are partly safeguarded in the current positioning of UvA research. Researchers enjoy a great deal of freedom and autonomy at the UvA, there are many talented researchers and there is a great deal of focus on their development. Across the entire breadth of the University, there are strong research groups making use of advanced research facilities. In other areas, there are clear gains to be made. The IT infrastructure supporting UvA research stands to be improved, for example. The extent to which funding is sufficient for these IT challenges varies for each faculty (and occasionally for each individual research group). It would also be beneficial if the responsiveness and visibility of UvA research could be increased further.

To realise these ambitions, it is important to maintain our strengths and develop a policy to work on areas needing improvement. To achieve this, new focus areas in research policy are needed. This Strategic Framework will set out the broad strokes of such a policy. A core component of the Framework is a more strategic positioning of UvA research. First and foremost, this relates to greater focus on the relative position of the UvA: having an even keener eye for those research areas where the UvA is, or could be, a leader in the research community.

Secondly, a more effective response is needed to developments in the research environment, meaning among other things, better alignment with societal challenges and the City of Amsterdam, as well as greater collaboration inside and outside the UvA. The UvA also believes that research facilities are an important factor in the quality of research and scientific and scholarly progress. To this end, the UvA will also have to make investments in research infrastructure.

The section below looks at the various elements of the research vision in greater detail. The UvA realises that the new areas of focus in research policy will at times cause tension with existing practices. There is, for example, friction between the significant degree of autonomy of researchers and a more strategic approach. Another area of potential friction is the desire to place responsibility and resources as far down in the organisation as possible while simultaneously creating more space for new initiatives across the boundaries of groups and institutes. Choices regarding the positioning of research are also partly at odds with choices regarding education. Research-intensive education is the cornerstone of UvA policy. The link between research and education is a guarantee both for the breadth of the research and for the academic quality of the education provided. However, this link cannot be the only basis for research policies. The most important or best research is not necessarily associated with the programmes that have the most students. As such, within research policy, decisions will have to be made that are more or less separate from education. The challenge will be to find the correct balance in these areas of tension.

Greater focus on the intellectual footprint of UvA research

The UvA aims to carry out high-quality research. But what determines the quality of research? In the current system, the quality of research is often measured according to a very limited set of indicators (numbers of publications and citations, acquisition of external research funds). The UvA believes that quality essentially relates to the contribution a researcher (or research group) makes to scientific and scholarly progress. It is about the extent to which researchers are able to innovate, push boundaries or be at the forefront of a certain discipline. Scientific and scholarly progress can be achieved in different ways, such as by collaborating across disciplinary boundaries, using innovative methods, exploring new frontiers supported by research facilities, building and

using new databases in cooperation with third parties or working tirelessly to achieve a breakthrough. It's about the intellectual contribution (the intellectual footprint) that the UvA makes to scientific and scholarly progress, which is only partly captured by the predominant indicators used in our current academic system.

The term intellectual footprint also relates to the idiosyncrasy of UvA research and concerns the specific contribution, the unique perspective of the UvA within academic disciplines. This can be the choice of specific research topics, a focus on specific methods, working within specific paradigms, a multidisciplinary or interdisciplinary approach, etc. To a large extent, the intellectual footprint determines the UvA's identity and affects its visibility: how does the UvA distinguish itself from other universities and what does the UvA want to be known for?

The research strategy for the coming years will place more emphasis on that intellectual footprint as a basis for positioning UvA research. This will mean being mindful of research that makes, or has the potential to make, a significant contribution to scientific and scholarly progress and taking decisions that draw on, and strengthen, the uniqueness of UvA research.

Strong commitment to research infrastructure

Research practice is changing, with state-of-the-art facilities being crucial to being able to carry out the research. In many fields, an effective research infrastructure as well as facilities to process large amounts of data are critical to achieving further advances in science and scholarship.²⁸ This is not only true for medicine and the natural sciences, but also for the social and behavioural sciences and humanities. The UvA wishes to invest in an advanced research

²⁸ Netherlands Advisory Council for Science and Technology Policy, *Maatwerk in onderzoeksinfrastructuur. Strategisch investeren in grootschalige onderzoeksfaciliteiten* [Custom research infrastructure. Strategic investments in large-scale research facilities], 2013. Netherlands Organisation for Scientific Research, *Nationale Roadmap Grootschalige Wetenschappelijke Infrastructuur* [National Roadmap for Large-scale Scientific Infrastructure], December 2016. Technopolis, *Rol en meerwaarde van grote onderzoeksfaciliteiten* [Role and benefits of large research facilities], 2011.

infrastructure for the entire University and specific research facilities at the various campuses, as well as in better use of the facilities – by multiple disciplines and by external parties, where possible. This involves realising an infrastructure and services that contribute to the following objectives:

- Supporting researchers so they can continue to carry out high-quality research.
- More effective support and lowering the bar for data-intensive research to be carried out at the UvA.
- Better facilitation of (virtual) cooperation across institutional and faculty boundaries.
- Supporting and unburdening researchers when setting up and carrying out the data-related elements of their research.
- Ensuring that the UvA meets requirements with regard to data and privacy policy.
- Stimulating innovation in research methods.

Infrastructure and advanced facilities will also contribute to the unique positioning of the UvA and, as such, will contribute to the intellectual footprint of the various disciplines within the University.

A more strategic positioning

Within the UvA, researchers enjoy a significant degree of autonomy and the UvA is highly committed to academic freedom.²⁹ Researchers are free to choose their subjects and methods, but that freedom is subject to various parameters; not only parameters set by the UvA research programmes (with respect to content or policy), but also those created by the relative academic position of the UvA, societal challenges, opportunities for external funding of the research, and relevant laws and regulations. Safeguarding both academic freedom (of individual researchers and of the institution) and advancing research in all disciplines requires a strategic approach from faculties and research institutes. In the years to come, the UvA wishes to focus on its strategic positioning. Faculties will be asked to focus on those areas and themes with which the UvA

²⁹ Academic freedom also entails certain obligations and not only applies to individual researchers, but to the institution as a whole.

will be able to distinguish itself on the global stage to an even greater extent, either in the short or long term. This means that more focused decisions will have to be made and that scarce resources will have to be used in a more targeted manner. A more strategic direction also means that priorities will have to be better coordinated with the researchers concerned, in order to align with the thematic priorities of the second and third flow of funds. It also means that, where possible, researchers will assist in shaping the frameworks of new funding instruments. This will be required in order to gain sufficient access to external funding, to be able to conduct research within thematic programmes that align with the University's priorities, and to be able to proactively affect the structure of those programmes.

Better links with societal challenges and the City of Amsterdam

Research stands to benefit from close links with civic actors and societal challenges. Although a lot of the research carried out at the UvA is already inspired by societal or economic challenges, the UvA still wishes to further increase its involvement with societal and civic organisations and challenges. In doing so, the UvA will be focusing on a broad spectrum of societal challenges, with a particular focus on the relationship with the City of Amsterdam. Besides its value for research, this is also in line with the UvA's societal mission and contributes to accessing thematic research funding. Better alignment of UvA research with societal challenges requires the aforementioned strategic positioning of research.

The basic principle is that research and societal challenges reinforce one another. Research, especially groundbreaking research, can make a significant and at times even critical contribution to the challenges facing society. Societal challenges often require an interdisciplinary approach. As a comprehensive university, the UvA is able to work across the various disciplines and, for that reason, is ideally suited to making an integrated contribution. Conversely, the connection to society can strengthen research. The questions and challenges of civic parties can have an inspiring effect on researchers and allow the academic community to explore new directions. Cooperation with civic organisations can also yield access to unique data sets, more qualitative sources of data and valuable practical knowledge. At the same time, these types of partnerships can also lead to tensions with

regard to the independence and academic integrity of UvA research. The UvA must actively commit to resolving potential areas of tension in order to safeguard the independence of UvA researchers. Collaboration with third parties should be facilitated as much as possible and, at the same time, should not lead to concessions that would be to the detriment of the independent position of UvA researchers or the other principles of academic integrity.

More collaboration within the UvA

Collaboration is becoming increasingly important in research. At present, the UvA has a culture which strongly emphasises individual approaches and attracting and securing individual grants. The UvA intends to reinforce its commitment to collaboration, without compromising the importance of flexibility for individual researchers.³⁰ First and foremost, this relates to collaboration within individual programme groups or disciplines. By operating more as a team, the various tasks in the research process can be distributed more effectively across people with different types of expertise and competences. In a research community, more focus on collaboration within a team can also create the flexibility to pursue (strategic) pathways that stand to benefit the group but may not necessarily directly yield added value for individual researchers. Greater emphasis on teamwork will allow groups to respond to strategic opportunities more quickly, to develop networks for the long term and to accelerate innovation. This requires adapting existing principles and agreements, a different approach to academic leadership and a cultural shift at various levels.

The UvA can also make better use of the opportunities for collaboration outside the individual programme group or discipline. Collaboration within the University itself can be used to initiate or expand interdisciplinary research. Collaboration outside of the University is increasingly becoming more important to achieving success in thematic subsidy programmes. Participation

³⁰ There is also collaboration in relation to individual grants (between senior researchers and postdocs and/or doctoral candidates). In this case, we mean collaboration that is not framed by grants allocations to small research programmes around one person.

in those thematic programmes requires collaboration with Dutch and foreign research groups and increasingly with companies and civic organisations.³¹ On the one hand, this type of collaboration is made possible as a result of the strategic priorities, and at the same time it reinforces them.

Academic integrity and open science as boundary conditions

Researchers build on results obtained from previous research. The research results only have value if the research process was conducted with integrity. Academic integrity is of fundamental importance to scientific and scholarly progress. The new Code of Conduct of the Association of Universities in the Netherlands (VSNU) formulates five key principles for research integrity: honesty, scrupulousness, transparency, independence and responsibility.³² The UvA's policy will continue to ensure that these principles are safeguarded within the institution.

The UvA supports the transition to open science, based on the notion that the academic community benefits from rapid and complete sharing of knowledge.³³ However, further specifying and implementing the principles of open science at the UvA can only take place in a responsible manner if we are to safeguard the interests of the University and its researchers. The UvA's open science policy is based on the principle that the added value to science and scholarship must be the decisive factor. This is achieved along various lines:

- By allowing the implementation of open science to take place within the faculties and research institutes as much as possible.
- By unburdening researchers as much as possible with regard to implementation, for example by providing information, alternative publishing options, support, etc.

³¹ Many researchers collaborate with their colleagues abroad. These are not so much bilateral contacts, but rather thematic cooperation aimed at acquiring funds through indirect government funding and contract research funding.

³² Association of Universities in the Netherlands, *Wetenschappelijke integriteit* [Scientific Integrity], 2018.

³³ League of European Research Universities, *Open Science and its role in universities: A roadmap for cultural change*, May 2018.

- By influencing the decision-making process, to ensure that decisions at the level of national and European authorities are taken as much as possible based on the principle that open science should strengthen science and scholarship.

A more balanced personnel policy

The UvA's strategy will remain focused on attracting talented researchers and giving them the flexibility to develop their skills further. In addition, in order to foster sustainable research practices, the UvA is aiming for a more balanced evaluation and weighting of research performance. On the one hand, this means that promotions or appointments will involve reviewing several parameters such as contributing to innovation in science and scholarship, developing strategic alliances, contributing to societal challenges, etc. On the other hand, evaluating performance should be more focused on the team, so that roles and responsibilities that benefit the research group as a whole can also be recognised. Reviewing the evaluation framework for research is part of a broader whole which includes reviewing the evaluation of teaching and organisational development and which takes the relationship between them as the point of departure.

Connection between education and research

And finally, a strong connection between education and research remains a priority within UvA policy. Research-intensive education is one of the central tenets of the Strategic Framework for Teaching and Learning.³⁴ Policy will remain aimed at ensuring that academic staff are active both in teaching and research. Among other things, this means looking closely at the educational component (including teaching qualifications) when appointing professors, and making clear agreements within faculties regarding the distribution of employees' teaching and research tasks (with a minimum for both). Furthermore, more attention will be paid to opportunities for students to participate in research (on certain components).

³⁴ University of Amsterdam, *Onderwijsvisie* [Vision on Teaching and Learning], 2017.

3. Innovation and infrastructure

The following chapters will outline the way in which the UvA aims to implement its Strategic Framework for Research in the years to come.

Room for innovation

More attention for the intellectual footprint of UvA research is the purview of researchers. Policy is designed to support them in that. One way to do this is to ensure that there is sufficient flexibility and room for innovation in research. UvA researchers in every discipline are working on innovation, for example through setting up new (promising) research themes, methodological innovation or innovative interdisciplinary research. To facilitate this, it is vital that research groups are sufficiently agile and responsive. The UvA must be able to respond to new developments rapidly and must have the (financial) flexibility to support new initiatives.

The agility and responsiveness of the UvA can be increased, for example, by ensuring that sufficient financial resources are available to give new initiatives a temporary boost. Experience has shown that facilitating this kind of innovation can often be achieved with relatively modest funds. It involves bringing together researchers or supporting new initiatives with a PhD student or postdoc. In order to facilitate the envisaged innovation, there must be a sufficient budget for such endeavours within the faculties and research institutes.

Multidisciplinary collaboration

The UvA also wishes to support innovation by reinforcing its commitment to interdisciplinary collaboration. The UvA recognises that cooperation across disciplines is a vital source of innovation, occurring as it does so often at the intersection of various disciplines. Key drivers to conducting interdisciplinary research include the research question itself as well as the challenges of fundamental research (see text box). In addition, combining various research

disciplines is often necessary to gain insight into major societal challenges or more complex issues. At present, a lot of highly innovative, fundamental research is already multidisciplinary in nature.³⁵ But additionally, continuous deepening of disciplines is also a prerequisite to being able to carry out innovative research across disciplinary boundaries.³⁶

Interdisciplinary research

The idea that comprehensive research-intensive universities should pursue truly integrated forms of interdisciplinary research connects closely to the fact that three out of four 'drivers for interdisciplinary research', discussed by the report 'Facilitating interdisciplinary research' are associated with researcher-driven and basic research rather than with applied or agenda-driven research³⁷: (1) the **inherent complexity of nature and society**, with the human-genome mapping project as an example, (2) the drive to **explore basic research problems** at the interfaces of disciplines, with the cognitive sciences as an example of how disciplines are being brought together and biochemistry as an example of how an interdisciplinary activity can become a new, mono-disciplinary research field, (3) the **need to solve societal problems**, with global warming as one of many possible examples, and (4) the **stimulus of generative technologies**, i.e. technologies "whose novelty and power not only find applications of great value but also have the capacity to transform existing disciplines and generate new ones" (35); with high performance computing being an obvious current example.

Research at the UvA has traditionally been organised along discipline-specific pillars. In view of the above, it is also vital to organise and facilitate horizontal collaboration across the various disciplines. As a comprehensive university, the UvA is well positioned in this regard. Not only does it carry out research in a

³⁵ League of European Research Universities, *The strength of collaborative research for discovery in Horizon 2020*, August 2016.

³⁶ League of European Research Universities, *Interdisciplinarity and the 21st century research-intensive university*, November 2016.

³⁷ National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, *Facilitating Interdisciplinary Research* (Washington, DC: The National Academies Press, 2015), 30-39.

wide variety of domains, but it also has very strong research groups across the full range of the various disciplines (cf. Chapter 1).

Central research funding is available to stimulate multidisciplinary research. This type of funding is only open to interfaculty initiatives (Research Priority Areas, RPAs) and, as such, is multidisciplinary by definition. The purpose of an interfaculty RPA is to explore and encourage innovation by bringing together various disciplines from far across the faculty boundaries. A key example is the UvA's desire to connect the research of the Faculty of Medicine within the Amsterdam University Medical Centre (Amsterdam UMC) and the research conducted within other faculties more closely with one another in the years to come. The UvA sees strategic opportunities³⁸ in combining medical research with research from other disciplines, which is why it wishes to intensify collaboration. Funds have been earmarked in the new allocation model for research cooperation between the Faculty of Medicine, the Faculty of Social and Behavioural Sciences and the Faculty of Science. This will take shape partly through the creation of an initiative in the field of Urban Mental Health. An initial survey showed that there are also several other themes that offer opportunities for further cooperation, such as tackling lifestyle diseases (obesity, addiction), forensic sciences and the application of AI in medical and other domains.³⁹ It will be up to the three faculties, and any other faculties participating, to decide how to move forward.

³⁸ For example, please see the EU programme Health, Demographic Change and Wellbeing, work programme 2018 – 2020, with strategic priorities such as Innovative health and care systems – integration of care, innovative health care and industry, infectious diseases & improving global health or the NWA routes Healthcare research, Prevention and Treatment (with a focus on interaction and the individual) and NeuroLabNL (on the brain, cognition and behavioural research) and Regenerative medicine (including focus on societal embedding by way of a dialogue on societal, legal and ethical implications). Please see the website of the European Commission: <https://ec.europa.eu/research/health/index.cfm> and the website of the National Research Agenda: <https://wetenschapsagenda.nl/routes/>.

³⁹ Universiteit van Amsterdam, *Verkenning onderzoekssamenwerking UvA-AMC, in het bijzonder FMG en FNWI*, 2018.

The UvA Institute for Advanced Study (IAS) also has a role in respect of interdisciplinary research. The IAS develops new knowledge and methodology for major complex challenges that require an integrated systematic approach. Only by using an integrated systematic approach can the impact of possible interventions be understood. To this end, the IAS brings researchers together to generate ideas, broaden knowledge and develop new interdisciplinary research partnerships and methodologies. In recent years, the IAS has played an important role in the ongoing development of the complexity theme, which focuses on the exploration of collective behaviour between elements in a system, made up of networks of interactions. For the benefit of multidisciplinary cooperation, the UvA also wishes to stimulate the debate on methods, paradigms and scientific traditions across disciplines. The IAS can play central role in this regard.

The faculties have also been given the task of shaping (new) multidisciplinary research. The faculty research strategies will therefore set out what the promising multidisciplinary and interdisciplinary themes are and how they will take shape within the faculty and across faculty boundaries. Particular attention should be paid to the link with interdisciplinary education. From the perspective of research-intensive education, students must be able to familiarise themselves with the latest insights from research and acquire (interdisciplinary) research competences. For that reason, it is vital that the multidisciplinary study programmes are connected to (multidisciplinary) research.

In terms of cross-disciplinary collaboration, the UvA also stands to benefit from more uniformity between the faculties in relation to research funding and support. Currently, there are significant differences in funding, management and administration between the various faculties, for example in relation to calculating the overhead, the research matching, etc. This makes collaboration across faculty boundaries difficult. The UvA is committed to creating more uniformity in order to facilitate collaboration.

Investment in IT infrastructure and support

In the years to come, the UvA will be investing in an advanced IT infrastructure that will optimally facilitate the work of UvA researchers and lower the threshold for use (mostly with the help of cloud infrastructure). The UvA also remains committed to research data management (RDM). The current RDM programme will be continued and effort invested in further expanding data services and supporting researchers, paying attention to tailored solutions for each discipline.

The UvA wishes to invest in a cloud infrastructure that provides networks, computing capacity and data storage. With respect to networks, the principal objective is the (improved) connection of the UvA network with other networks in order to encourage collaboration (sharing and access to large amounts of data) with third parties. With respect to computing capacity, the UvA will be investing in state-of-the-art analytics platforms and infrastructures (PAAS, IAAS) and supporting cloud services. In addition, accessible and suitable solutions will be developed for the storage of data during the various phases of the research process.

The UvA will also be exploring opportunities for the creation of an eScience centre that supports researchers with data analyses, software tools, visualisation tools and other ICT applications aimed at research. The centre will also develop an AI support service designed to assist researchers in the use of artificial intelligence in their research. The eScience centre could play a role in relation to data analytics for universities (aggregating and enriching data, bibliometric analyses, etc.).

One key area of focus in relation to the further development of the IT infrastructure and supporting services is the effective shaping of the relationship between the research and organisational units such as ICT Services, the aforementioned eScience centre of the UvA and the University Library. The organisation of these relationships will be reviewed at some point, based on the principle that the relationship between research, researchers and services ought to be strengthened.

More effective use of facilities

The UvA will also continue to invest in specific research facilities at the various campuses. One specific example is that of the Digital Humanities Lab in the University Quarter, which will be developed further in consultation with various partners, such as the Royal Netherlands Academy of Arts and Sciences (KNAW), the Waag Society and the Amsterdam University of the Arts (AHK). The objective is to have an (Amsterdam-based) concentration of research facilities and infrastructure. With its Gammalab, the Roeterseiland Campus has an advanced facility that plays a crucial role in research. Amsterdam Science Park aims to play a leading role in the Netherlands when it comes to AI. The investments must ensure that the buildings are maintained in good condition, that instruments are replaced in a timely manner and that there is sufficient support available (such as laboratory staff).

The investments in state-of-the-art research facilities and IT infrastructure will also contribute to the UvA's profile. The high-quality research infrastructure and services will ensure an attractive research environment and serve as a calling card for research carried out at the UvA.

The UvA not only wishes to make investments but also wishes to ensure that these facilities and infrastructure are used more effectively. The Digital Humanities Lab, for example, could be better used by the social sciences. The Gammalab at the Roeterseiland Campus is yet another example. The UvA stands to benefit even more if the lab facilities of the Faculty of Social and Behavioural Sciences (ranging from survey research to research using an MRI scanner) were to be combined with the labs of the economists and behavioural economists. Besides the faculties of Social and Behavioural Sciences and Economics and Business, other social science institutes could also benefit from the physical facilities and expertise for this type of (laboratory) research. Furthermore, it is vital that the ICT facilities in particular (for example in the field of AI) be connected with other disciplines.

More effective use of facilities will not be limited solely to the UvA community. The UvA wishes to focus even more strongly on use by third parties, for example, by making facilities available to companies or civic organisations (for a fee and subject to certain conditions).

Key objectives

- Ensuring that there is sufficient financial flexibility within the faculties to support new initiatives and bring researchers together.
- Facilitating research collaboration across the various faculties by continuing to use central RPA funding. A strategic objective is to facilitate better connections between disciplines.
- The IAS will continue to play a role in the development of new interdisciplinary methods and in encouraging discussion about methods across the various disciplines.
- More uniformity in funding and facilitating research across the various faculties.
- Ongoing development of research facilities at the various campuses.
- Investments in an advanced IT infrastructure aimed at supporting researchers: networks, computing capacity and tools, data storage and research data management.
- Commitment to better use of facilities, including laboratories, by multiple disciplines and by external parties.

4. Strategic positioning and collaboration

Strategic positioning

In the years to come, the UvA wishes to focus more on the strategic positioning of its research. The key to achieving this lies with the faculties. All faculties will be asked to develop a faculty research strategy based on the present Strategic Framework for Research of the University. The faculty research strategy will be adopted for a five-year period and is linked to the duration of the UvA's Strategic Plan.

In their strategy, the faculties will address the faculty priorities with regard to research and will set out in which fields they are (or have potential to be) distinctive. The key point of departure, first and foremost, is the faculty's individual strengths, the competitive advantage of the units. Developments in the external environment are also important to consider. Examples include the UvA's role in the development of key technologies (AI, quantum technology, photonics, etc.); the sector plans (natural sciences and social sciences and humanities) being developed at the request of the Ministry of Education, Culture and Science; the 'routes' in the National Research Agenda (such as energy transition, living history, youth in development, smart industry, etc.); and the themes and missions in the new European Framework Programme. Only by taking into account these developments and agendas can a more strategic positioning of UvA research be achieved. The point of departure of the faculty strategy will always be the (unique) position occupied by the UvA in a broader context, based on the strengths within the unit and the UvA as a whole.

When formulating the faculty strategy, there are some key research areas that have a certain concentration of research resources (priority areas in terms of their focus and size). These act as the jewels in the crown of the faculties and should be supported with sufficient resources. This means that more focused decisions will have to be made than in previous years. These key priorities can also be expected to ensure that the UvA is well positioned in national and

international networks and consortia. However, the faculty strategy will also be aimed at developing new areas, which will mainly relate to more small-scale initiatives that bring about research innovation or address societal challenges (cf. chapters 3 and 5).

More collaboration within the UvA

In recent years, more attention has been paid to the concept of team science: a collective, concerted effort by a group of researchers to deliver scientific or scholarly progress. UvA researchers work with colleagues in many ways, often with colleagues abroad. The UvA will reinforce its commitment to team science within the University, the starting point being that a sharper definition of complementary roles within a group of researchers will be of value to the group as a whole.

The UvA would like more focus on collaboration at the level of the programme group or the research institute. More collaboration is in line with the pursuit of a more strategic positioning of research. By focusing on team performance to a greater extent, space can be created for projects or pathways that are of strategic importance to the research group or the institute and not necessarily to individual researchers. The shift towards greater emphasis on teamwork must be a component of strategic HRM policy for the coming years (which includes career development policy, recruitment and selection, leadership, diversity).

In addition, collaboration within the UvA can also be shaped across the various disciplines. The UvA will be reinforcing its commitment to multidisciplinary collaboration (please see Chapter 3).

Participation in consortia

The UvA participates in relatively few national and international networks and consortia aimed at acquiring external funds. It is the UvA's intention to increase its participation in the aforementioned networks and consortia, which is vital to gaining access to thematic funding. Research funding bodies, such as the Netherlands Organisation for Scientific Research (NWO) and the European

Commission, are increasingly focusing on thematic research. In order to qualify for funding from the thematic programmes, researchers are asked to collaborate in national and international consortia.⁴⁰

Participation in such networks and consortia, however, must entail substantive added value, meaning that collaboration (and the corresponding funding) should enrich the content of the research, provide opportunities to explore new avenues, provide access to data or facilities, lead to collaboration with new partners, etc. Participation in these types of consortia and networks may also increase the visibility of certain research groups, particularly if they take on a leading role. Participation in consortia and networks often requires a lot of time and energy (occasionally with low chances of success). With this in mind, the UvA will be selective in entering into partnerships. Collaboration of this nature will have to align with the strategic priorities (of the faculties) and yield substantive added value.

Leading (senior) researchers often play a decisive role in the creation of consortia and those researchers can then act as a figurehead for a specific theme or domain. The aim is to get more UvA researchers into such a position. Research institutes and groups should ensure that those (senior) researchers are actually given the flexibility to play a prominent role in consortium-forming networks. This can be achieved, for example, by exempting (experienced) researchers from administrative responsibilities and/or working on publications, thereby giving them enough time to develop these partnerships.

In order to support a more active role in networks and consortia, the UvA will also be investing in adequate support, for example, for the administrative side of applications and/or the management of the consortia. The capacity and knowledge and skills that are required to do this, for example at IXA or a faculty support structure, will be increased further.

⁴⁰ These are scientific networks. The importance of participating in networks alongside civic organisations and companies is increasing (cf. Chapter 4). The UvA aims to take up a more active role in various networks.

Strategic partner policy

In relation to cooperation in networks and consortia, it is also vital that the UvA's strategic partner policy should be fleshed out. Research collaboration will often take place along substantive lines – researchers will pick the best partners for their projects. This should remain the starting point for entering into partnerships. Existing and potential partnerships, such as Universitas 21 (U21)⁴¹ and LERU,⁴² provide opportunities in this regard and can be exploited more than is currently the case.

The UvA has built a strong network of prestigious partner universities worldwide. This is an excellent starting point from which to further intensify cooperation. Research groups, using their research strategy as a starting point, will be able to expand and develop existing alliances – deepening the existing (formal) collaborations by working together more substantively. The goal is to achieve long-term, intensive research collaboration, which may take shape in various ways, such as through joint research projects, joint doctorates, dual appointments for professors and/or researchers, special chairs, joint participation in international calls, etc.

Key objectives

- Elaborating the UvA's strategic positioning in faculty research strategies, in which key priorities and areas of innovation are set out. The starting point will be the relative position of the UvA and the research agendas of funding bodies, public authorities, etc.
- Paying more attention to team science: agreements on the division of responsibilities and efforts that may not necessarily benefit the individual, but rather benefit the research group as a whole and fit with a more strategic positioning of research.

⁴¹ Please see the website of Universitas 21: <https://universitas21.com/>

⁴² Please see the website of the League of European Research Universities: <https://www.leru.org/>

- Increasing the UvA's participation in research networks and consortia, by giving researchers the flexibility to do so and improving support for applying for, and managing, these types of consortia.
- Further developing and intensifying the strategic partner policy: giving substance to collaboration with partner universities in networks such as LERU and U21.

5. A more effective link with society, the City and the UvA's profile

Better links to societal challenges and questions

Part of a more strategic positioning of research relates to better linking UvA research to societal challenges. This serves different purposes, such as contributing to resolving questions and challenges facing society (evidence-informed), helping advance research (through questions, data and knowledge from practice) and (easier) access to thematic funding and consortia. This means that the UvA will pay more attention to societal themes (of research funding bodies and public authorities) when making decisions. Relevant examples include the Sustainable Development Goals (SDGs), societal missions, Grand Challenges or more local priorities (such as the theme of equal opportunity – or the lack thereof – by the City of Amsterdam). These types of themes increasingly constitute the point of departure for research programming. Another example is that the Dutch government's innovation policy has become 'mission-driven', focusing on four key societal themes.⁴³ The UvA will also focus on the R&D agenda of the business community. Collaboration with (large) companies, for example through labs with various PhD researchers, may also yield significant added value for the UvA.⁴⁴

The UvA will be seeking out sustainable partnerships in relation to the link with societal themes. Within the faculty research strategies, there should be more focus on the development or expansion of strategic relationships with

⁴³ (1) Agri-food & water; (2) life sciences & health; (3) energy transition & sustainability; (4) security. Top Sectors, *Missiegedreven innoveren* [Mission-driven innovation], n.d.

⁴⁴ After finalising the Strategic Framework for Research, the UvA will initiate another pathway to develop a Strategic Framework for Valorisation.

civic organisations and/or companies. This can be achieved through cooperation in long-term research projects and programmes, participation in cluster organisations and an active role in formulating societal research agendas. Students will also be able to contribute by participating in research projects, graduation projects, etc. Building these types of partnerships will cost a lot of time and energy. For that reason, it would make sense that the efforts should correspond to the strategic priorities of the faculties or those of the UvA as a whole.

Pioneering partnership in Artificial Intelligence

The *Innovation Center for Artificial Intelligence* (ICAI) was set up in 2018. The ICAI is a national initiative aimed at joint technology development by knowledge institutes, companies and public authorities in the field of artificial intelligence. Innovation takes place in so-called industry labs, which are multi-year partnerships aimed at the development of technology and talent. At present, ICAI partners are Ahold Delhaize, Bosch, Elsevier, Qualcomm and the National Police. So far, six labs have started operations: AIRLab Amsterdam, AIRLab Delft, Delta Lab, Elsevier AI Lab, Police Lab AI and QUVA Lab.

In order to shape the University's public and societal role, experimentation with other types of science and scholarship will also be required. One of the problems in the link between the UvA and society is that of effectively articulating questions. Organisations that do not themselves carry out research, whether fundamental or applied, are often less able to formulate questions of scientific interest or questions for a more long-term research agenda. Conversely, it is also true that researchers are not always able to translate the questions arising in practice. With this in mind, new forms of programming can be tried out, which would, for example, involve other ways of formulating research problems and questions (design thinking, roadmaps) or other ways of knowledge transfer (not just through scientific articles, but, for example, also through policy reports, lectures, blogs, trainings, guidelines, etc.).

Organisations such as IXA, Science & Business also have a role in shaping the connection with the outside world. They support researchers and research

institutes in establishing and maintaining these connections. Faculties will also be able to develop their own policies aimed at supporting employees in this task, if it will benefit the research.

In relation to collaboration with third parties, it is vital that there should be no deviation or erosion of the independent position of the UvA researchers and from the principles of research and academic integrity. The UvA will flesh out policy on these points regarding collaboration with third parties. In addition, the UvA must ensure that research results are not used for improper purposes. To this end, the UvA will develop a Dual Use Policy.

Connection with the City

The University's relationship with the City of Amsterdam is a unique and specific element of the UvA's connection to society. In this context, the City of Amsterdam refers to a broad range of organisations and companies in the Amsterdam metropolitan region. In order to shape the relationship with Amsterdam and to improve innovative capacity, short-term policy will focus on more effectively embedding the UvA in various networks in and around Amsterdam. This is initially achieved through establishing and intensifying relationships, for example, through guest lectures, public lectures, etc. and can develop into more structural contacts (such as cluster organisations). Participation in these ecosystems and networks should form a basis for research collaboration and projects that have an impact on the City/region.

The connection with the City can also take shape in the form of commitment to other types of research collaboration, such as facility sharing (opening up research facilities to other parties) or testbeds and living labs (where developments can be tested under realistic conditions). Some experience has already been gained in that regard, such as in the context of IXAnext. This programme is sponsored by the City of Amsterdam, and provides facilities such as the Amsterdam Physics Research Lab (APRiL), which is accessible to third parties. In this context, collaboration can also take place with the applied sciences universities in the Amsterdam region.

Amsterdam Educational Research Centre

Within the Amsterdam Educational Research Centre (*Werkplaats Onderwijsonderzoek Amsterdam, WOA*), primary schools, secondary schools, schools in secondary vocational education, applied sciences universities, research institutes and universities are working on an equal footing to improve the quality of education in the Amsterdam region. The UvA is a partner organisation in this. The purpose of the centre is to develop relevant practical knowledge, by way of joint research, on issues that connect education professionals, educators and researchers in the metropolitan area.

Profiling UvA research

The UvA wants to do more to raise its research profile. This will help enhance visibility both with respect to civic partners and the general public. It will also contribute to showing the societal relevance of UvA research and, as such, contribute to its public legitimacy.

The UvA wants to strengthen its societal profile by formulating a limited number of wide-ranging societal themes that make clear what contribution UvA research makes. These will be themes that several faculties contribute to, such as ‘the data society’, ‘Europe in a globalising world’ or ‘mental and global health’. Research carried out at various faculties can be grouped under these umbrella themes. The themes won’t drive the content of the research, but simply reflect the (multidisciplinary) research carried out at the UvA on broad societal topics.

In order to raise the profile of these themes, extra effort will be put into communicating the research (and research results) within a specific theme to a broader audience. The target audience may be the general public (for example, in consultation with Spui25), but could also be professionals (professional practice). Communication methods could include lectures, blogs, narratives, videos, etc. An engaging event will also be organised around each of the themes, which will capture the target audience’s imagination and demonstrate how science and scholarship contributes to questions and challenges facing society. An example of this is the participation of the technical universities in the Solar Challenge or the football robot competition (cf. box below). The themes not only serve to advertise UvA research, but can also take on a service desk

function, giving outsiders more easy access to UvA researchers if they wish to get in touch with someone.

UvA students programme football robot

The Dutch Nao team of Artificial Intelligence students at the University of Amsterdam and Maastricht University programmed robots to play football by themselves. The students compete with these robots in competitions around the whole world. The robots are programmed in advance, and are thus able to see with their cameras, hear with their microphones and communicate with their wifi capabilities, removing the need for a human controller.

Key objectives

- Strengthening the connection to the societal agenda, from the perspective of reciprocity (the value of research to society and, conversely, the value of collaboration for research), including the Sustainable Development Goals.
- Further developing policy in respect of cooperation with third parties with regard to independence and research integrity.
- Building and/or expanding strategic relationships with civic organisations and/or companies. More effective embedding in ecosystems and networks in the City of Amsterdam in particular.
- Experimenting with other forms of research practices: using new forms of defining research questions, new research methods and new forms of knowledge transfer in order to shape, or reshape, the relationship with society.
- Raising the societal profile of UvA research; adopting a limited number of broad-based societal themes to showcase UvA research.

6. Academic integrity and open science

It is the UvA's ambition to continue making significant contributions to scientific and scholarly progress. The UvA aims to ensure that *all* its research should lead to greater knowledge. However, research conducted with integrity is a prerequisite in this regard. It is also vital that the knowledge obtained through research is shared quickly and comprehensively.

Research integrity

Research integrity is a prerequisite for the quality of research and for making scientific and scholarly progress. The UvA endorses the Netherlands Code of Conduct for Research Integrity of the Association of Universities in the Netherlands (VSNU) and the principles of honesty, scrupulousness, transparency, independence and responsibility mentioned therein. The UvA also endorses the duties of care referred to in the Code of Conduct. This means that the UvA looks after a work environment in which sound research practices are encouraged and guaranteed.⁴⁵ In 2017, a UvA working group advised the Board on how honest, transparent and scrupulous research practices could be advanced at the UvA even further. UvA policy is aimed at the implementation of the recommendations in the advisory report.⁴⁶

The University trusts its employees and assumes that they wish to conduct their research practices and teaching with integrity. However, it may not be clear to everyone what good research practices may mean in all circumstances. There

⁴⁵ Association of Universities in the Netherlands, *Nederlandse gedragscode wetenschappelijke integriteit* [Netherlands Code of Conduct for Research Integrity], 2018.

⁴⁶ University of Amsterdam, Academic Integrity Working Group, Integrity policy and research culture. *Adviezen ter bevordering van integere wetenschapsbeoefening* [Recommendations to promote integrity in scientific practice], 2017.

can be no doubt about clear violations of academic integrity, such as fabrication and plagiarism. But between this and acting with integrity, there is a grey area of controversial research practices, so-called questionable research practices. UvA policy aims to reduce the grey area of controversial research practices.

The UvA aims to prevent and avoid questionable research practices. Within the framework of the University and its research programmes, researchers are given free rein in their research and teaching, their choice of topics and research methods, in how they inform themselves, communicate and publish their work.⁴⁷ These privileges, however, are accompanied by a duty to substantiate and justify the choices they have made and to ensure that their research practices are carried out with integrity.

The University wishes to assist researchers by drawing up concrete guidelines for good research practices and by ensuring that each and every researcher is familiar with them, among other things by integrating them into the educational programmes for students and PhD researchers. Developing and implementing policy on research integrity is discipline specific. For that reason, the deans and research institute directors will be asked to ensure this is carried out. In addition, they will be asked to foster an open research culture, in which researchers collaborate, share knowledge and materials and benefit from each other's expertise. The deans will establish measures to enhance research integrity in their faculty research strategy.

Open science

Open science is academic research that centres on collaboration, transparency, reproducibility and the public availability of research results. Open science aims to increase the quality of research, encourage collaboration, accelerate the research

⁴⁷ J. Vrieling, P. Lemmens, S. Parmentier and de LERU Working Group on Human Rights, "Academic Freedom as a Fundamental Right," *Procedia Social and Behavioral Sciences* 13, (2011): 117–141.

process, increase the transparency of research and the evaluation of research, as well as increase the general availability of research results.⁴⁸

The UvA shares the notion that open science is of benefit to scientific and scholarly progress and supports the objectives of open science, but only to the extent that they actually add value to the research and do not damage the interests of the UvA and its researchers. The pursuit of open science entails significant changes,⁴⁹ both for researchers and for the organisation of research. However, its implementation must not result in new obstacles or barriers for researchers. The administrative burden must remain limited, costs must be controllable, the necessary investments should be manageable and the intellectual property of data and research results may not be endangered.⁵⁰

Both in a national and international context, the UvA will take a proactive approach and communicate that the transition to open science must take place in such a way that it advances and enhances university research.

The Open Science Policy Platform (OSPP) of the European Commission sets out the various priorities in pursuit of open science. Research integrity is one of those priorities. Other priorities include research data management, data sharing and training young researchers (these have been addressed to a significant extent in the previous chapters). The UvA will also develop initiatives for new digital infrastructures and for the better use and accessibility of university repositories, both for the open access publishing of articles and for the sharing of data and other research results.

⁴⁸ European Commission, Directorate-General for Research and Innovation, *Open Science Policy Platform Recommendations*, April 2018.

⁴⁹ League of European Research Universities, *Open Science and its role in universities: A roadmap for cultural change*, May 2018.

⁵⁰ University of Amsterdam, *Open Science: Universities in Transition*, 2019.

Another component of open science is citizen science. Researchers sometimes rely on citizens in their research projects – including in the collection of data, digitisation of documents, etc.⁵¹ Research groups can set up a network of citizens to assist them in their research. The European Commission encourages citizen science⁵² and the UvA also wishes to explore the opportunities and possibilities of citizen science further. This not only is in line with the pursuit of open science, but also has the potential to contribute to the relationship of research with society.

Personnel policy

The transition to open science will require changes in the current evaluation and recognition systems, with less emphasis on publication output. The UvA aims to realise a more balanced evaluation of its employees, with less emphasis on quantitative indicators of individual successes, such as numbers of publications and citations and acquisition of research funds. The UvA wishes to take a broader view in relation to the evaluation of researchers, with additional focus placed on the contribution to the research group as a whole, to the organisation of research, innovation, the development of strategic alliances and attention for societal questions and challenges.

A balanced personnel policy also implies policy that is more focused on diversity within research groups. This means that the UvA will continue to focus on the diversity in the backgrounds of all researchers and women in more senior research positions.

The importance of team science will also be reflected in the UvA's personnel policy. In addition, there is always flexibility for and recognition of researchers that are able to acquire individual grants. In order to give young researchers the

⁵¹ Please also see the EOS Wetenschap website: <https://www.iedereenwetenschapper.be/article/de-tien-principes-van-de-burgerwetenschap> and the website of the Royal Netherlands Academy of Arts and Sciences: <https://www.knaw.nl/nl/actueel/agenda/citizen-science-overzicht>

⁵² Also see the League of European Research Universities, *Citizen Science at Universities: Trends, Guidelines and Recommendations*, October 2016.

opportunity to develop, it is vital that they be given the space to formulate their own ideas and develop their own intellectual footprint. The innovation impulse programmes of the Netherlands Organisation for Scientific Research and the ERC programmes of the European Commission are fantastic instruments for young researchers to use to build their own, new lines of research. The UvA will continue to support young researchers in this endeavour.

Doctoral programme

Open science policy requires special attention for the training and career guidance of doctoral researchers, who must be able to develop their skills in an open research culture. A survey conducted by the LERU of good practices in doctoral training has shown that there are various options available to achieving this.⁵³ All UvA-faculties operate with a training and counselling plan, in accordance with the Collective Labour Agreement. This is an effective instrument to monitor the doctoral programme and for shaping the programme itself. The UvA is also working on a doctoral tracking system that can help ensure the progress and quality of the doctoral programmes. There are still significant differences in the facilities that faculties offer in terms of career counselling. UvA policy aims to allow good practices to be shared and to guarantee an adequate range of services for all doctoral researchers. The UvA also wishes to focus more on so-called transferable skills. A significant percentage of doctoral researchers continue their careers outside academia. In view of this, it is vital that doctoral researchers also develop skills that are useful outside of academia.

⁵³ League of European Research Universities, *Good Practice Elements in Doctoral Training*, January 2014.

Key objectives

- Implementing the recommendations of the UvA report on research integrity and complying with the duties of care, as laid down in the Netherlands Code of Conduct for Research Integrity of the Association of Universities in the Netherlands (VSNU).
- Assisting researchers by drafting concrete guidelines for good research practices, communicating those guidelines and including research integrity in the education of students and doctoral researchers.
- Exploring ways in which open science, and open data, in particular, may provide added value to the various research disciplines.
- An active approach in a national and international context to contribute to shaping the transition period for open access; making more effective use of, and ensuring better accessibility of, the university repositories; and the ongoing development of RDM policy.
- Developing a more differentiated method of research evaluation: a less one-sided focus on a limited number of parameters (publications, citations and acquisition capability).
- Increasing diversity within research groups: paying attention to diversity in researchers' backgrounds and focusing on women in senior research positions.
- Continuing to support young researchers in shaping their own line of research (through individual grants).
- Guaranteeing an adequate range of programmes for all doctoral researchers and greater focus on transferable skills in the training of doctoral candidates.

Sources

Advisory committee on Funding Higher Education and Research. *Wissels om. Naar een transparante en evenwichtige bekostiging, en meer samenwerking in hoger onderwijs en onderzoek* [A change of direction. Towards transparent and balanced funding and more cooperation in higher education and research], 2019.

Netherlands Advisory Council for Science and Technology Policy. *Maatwerk in onderzoeksinfrastructuur. Strategisch investeren in grootschalige onderzoeks-faciliteiten* [Custom research infrastructure. Strategic investments in large-scale research facilities], 2013.

Center for Higher Education Policy Studies (CHEPS). *Bekostiging van het Nederlandse hoger onderwijs: kostendeterminanten en varianten* [Funding Dutch Higher Education: cost determinants and variants], August 2018.

cOAlition S. Plan S. 2019, consulted on 6 June 2019. Available on: <https://www.coalition-s.org/principles-and-implementation/>

CORDIS. CORDIS – EU research projects under Horizon 2020 (2014-2020), H2020 projects.' (2019), consulted 11 June 2019. Available on: <https://data.europa.eu/euodp/nl/data/dataset/cordisH2020projects/resource/39dcb812-7900-4e85-904d-19a4eafd926d>

CWTS Leiden Ranking. 'CWTS Leiden Ranking 2019.' (n.d.), consulted on 25 June 2019. Available on: <https://www.leidenranking.com/ranking/2019/list>

European Commission. *Directorate-General for Research and Innovation, Open Science Policy Platform Recommendations*, April 2018.

European Commission. *Open Innovation, Open Science, Open to the World. A vision for Europe*, 2016.

Koppejan, D. en Smit, J.R. *Kenniskaart Horizon 2020 University of Amsterdam* [Knowledge Map Horizon 2020 University of Amsterdam], December 2017.

League of European Research Universities. *Delivering talent: Careers of researchers inside and outside academia*, June 2018.

League of European Research Universities. *Good Practice Elements in Doctoral Training*, January 2014.

League of European Research Universities. *Interdisciplinarity and the 21st century research-intensive university*, November 2016.

League of European Research Universities. *Open Science and its role in universities: A roadmap for cultural change*, May 2018.

League of European Research Universities. *The strength of collaborative research for discovery in Horizon 2020*, August 2016.

Ministerie van Financiën. *Interdepartementaal Beleidsonderzoek (IBO) Wetenschappelijk Onderzoek* [Interdepartmental Policy Survey (IBO) Scientific Research], May 2014.

Ministry of Education, Culture and Science. *Uitwerking investering wetenschap en onderzoek* [Elaboration of science and research funding], March 2018.

National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, *Facilitating Interdisciplinary Research*. Washington, DC: The National Academies Press, 2015.

Netherlands Organisation for Scientific Research. 'Nationale Wetenschaps-agenda.' [National Research Agenda] (2019), consulted on 25 April 2019. Available on: <https://www.nwo.nl/beleid/wetenschapsagenda>

Netherlands Organisation for Scientific Research. 'Nieuwe NWO-strategie 2019-2022. Verbinden van wetenschap en samenleving.' [New NWO Strategy 2019-2022. Connection science and society] (2018), consulted on 11 January 2019. Available on: <https://www.nwo.nl/actueel/nieuws/2018/04/nieuwe-nwo-strategie-2019-2022-verbinden-van-wetenschap-en-samenleving.html>

Netherlands Organisation for Scientific Research. 'Programma Nationale Wetenschapsagenda.' [National Research Agenda Programme] (2019), consulted on 25 June 2019. Available on: <https://www.nwo.nl/onderzoek-en-resultaten/programmas/nationale+wetenschapsagenda>.

Netherlands Organisation for Scientific Research *Nationale Roadmap Groot-schalige Wetenschappelijke Infrastructuur* [National Roadmap for Large-scale Scientific Infrastructure], December 2016.

Rathenau Instituut. *Chinese borden. Financiële stromen en prioriteringsbeleid in het Nederlandse universitaire onderzoek* [Juggling plates. Financial flows and prioritisation policy in Dutch university research], 2016.

Netherlands Enterprise Agency. 'Horizon 2020: Onderzoek en Innovatie.' [Horizon 2020: Research and Innovation] (n.d.), consulted on 11 January 2019. Available on: <https://www.rvo.nl/subsidies-regelingen/horizon-2020>

Strategy & Information Department. *Analyse van de UvA in QS 2019 by subject* [Analysis of the UvA in QS 2019 by subject], 2019.

Technopolis. *Rol en meerwaarde van grote onderzoeksfaciliteiten* [Role and benefits of large research facilities], 2011.

Times Higher Education World University Rankings. 'World University Rankings 2019 by subject: social sciences.' (n.d.), consulted on 25 June 2019. Available on: https://www.timeshighereducation.com/world-university-rankings/2019/subject-ranking/social-sciences#!/page/0/length/25/name/amsterdam/sort_by/rank/sort_order/asc/cols/stats

Top Sectors. 'Missiegedreven innoveren.' [Mission-driven innovation] (n.d.), consulted on 12 April 2019. Available on: <https://www.topsectoren.nl/missiegedreven-innoveren>

Top universities. 'QS World University Rankings by Subject 2019: Social Sciences and Management.' (n.d.), consulted on 25 June 2019. Available on: <https://www.topuniversities.com/university-rankings/university-subject-rankings/2019/social-sciences-management>

University of Amsterdam, Academic Integrity Working Group, Integrity policy and research culture. *Adviezen ter bevordering van integere wetenschapsbeoefening* [Recommendations to promote integrity in scientific practice], 2017.

University of Amsterdam. 'Onderzoeksbeoordelingen.' [Research assessments] (2018), consulted on 12 April 2019. Available on: <https://www.uva.nl/onderzoek/onderzoek-aan-de-uva/visie-en-beoordelingen/onderzoeksbeoordelingen/onderzoeksbeoordelingen.html>

University of Amsterdam. *Onderwijsvisie* [Vision on Teaching and Learning], 2017.

University of Amsterdam. Open Science: Universities in Transition, 2019.

University of Amsterdam. *Verkenning onderzoekssamenwerking UvA-AMC, in het bijzonder FMG en FNWI* [Exploration of research collaboration at UvA-AMC, and FMG and FNWI in particular], 2018.

Association of Universities in the Netherlands. 'Waarderen en belonen van wetenschappers.' [Valuing and rewarding scientists] (n.d.), consulted on 15 April 2019. Available on: <https://vsnu.nl/waarderen-en-belonen-van-wetenschappers.html>

Association of Universities in the Netherlands. 'Wetenschappelijke integriteit.' (2018), consulted on 12 April 2019. Available on: https://www.vsnu.nl/wetenschappelijke_integriteit.html

Association of Universities in the Netherlands. *Nederlandse gedragscode wetenschappelijke integriteit* [Netherlands Code of Conduct for Research Integrity], 2018.

Association of Universities in the Netherlands. *Ruimte voor investeringen en talent. Inzicht in de ambities en knelpunten van de Nederlandse universiteiten en mogelijke financiële oplossingen* [Space for investment and talent. Insight into the ambitions and bottlenecks of Dutch universities and possible financial solutions], September 2018.

Vrielink, J., Lemmens, P., Parmentier, S. and the LERU Working Group on Human Rights, “Academic Freedom as a Fundamental Right.” *Procedia Social and Behavioral Sciences* 13, (2011): 117–141.

Colophon

© University of Amsterdam

Photography Rob Brunshoff

uva.nl