

The role and importance of research intensive universities in the contemporary world

Discussion paper

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Introduction

Universities have been serving society for almost a thousand years and over that period universities and the world have both undergone significant transformation.

The world is now more complex, more connected and changing more rapidly. We live in an environment pressured by 24/7 news cycles, fleeting fashions and uncertain futures. Social structures are changing, as are values and attitudes. Competition is growing, people are increasingly mobile and the global economic centre of gravity is changing at a speed not seen before. Governments have to address problems such as climate change, potential pandemics and food security that are global in scope and require a coordinated global response. Electronic communication is becoming pervasive and it is possible to know whatever happens almost anywhere in the world as soon as it happens. Information on any subject is available readily, in quantity and almost instantaneously, although only a proportion of it is credible, expert or official. Nation states are subject to competing centrifugal and centripetal forces based on complex political, economic, religious, geographic and historical factors compounded by social networking and other new technologies. Natural and man-made disasters are becoming more common and their consequences greater. People everywhere feel under pressure. Change is inevitable and here to stay.

One of the important roles of universities has been to make some of these changes possible. They have done this by educating an ever greater proportion of the population and broadening its perspectives; by performing research that creates new understanding, new technologies and the potential for action; and by providing a store of knowledge and capabilities that society as a whole has been able to draw upon. A significant proportion of our better health, wealth and general wellbeing (whether environmental, cultural, social or spiritual) was made possible by the research performed by universities and through the actions of people who were drawing on the benefits of their university education. Moreover, universities have played what in some cases has been an even more significant role: that of helping society to understand why these changes are taking place. Academics have identified the trends, examined them, considered their implications and how to adapt to them; explored how they might play out into the future; and explained their necessary continuity with what went before.

While it is clear that universities produce many significant benefits to society as a whole, the status of universities has changed. As the number of universities and the proportion of the population receiving a university education have both increased, universities have had to work harder to justify their role and the support that they receive from the community. A better educated population has an improved ability to question the value that universities add and to express scepticism about academic judgements or the way in which universities work. Employers express concern about the willingness of universities to tailor their courses to the particular needs of individual businesses. Students are behaving more like consumers and demand increased transparency in areas such as assessment and review processes; and academic standards of debate and argument can seem less relevant to a society in which the media can confer on personal opinion the same standing as a conclusion founded on detailed and sophisticated analysis supported by experiment and data. In a world of rapid change, quick responses and never enough time, it becomes easy to favour and prefer the simplistic explanation rather than the simple and accurate one.

At the same time as the general community is seeking to make universities more accountable for the resources they consume and more transparent in their operations, research has improved our understanding of the extent to which universities help drive progress in technology, the economy and other areas. One consequence of this is that governments around the world are arguing that universities should achieve more by operating in a more focussed way. In particular, governments understand that research can help drive the innovation which results in economic growth, national

development and improved human welfare. The knowledge economy identifies knowledge as the most important form of capital and university research is one of the most important sources of new knowledge. Governments also recognise the importance of a well educated society, by which they often mean only people having the high level skills and training necessary to address the problems or grasp the opportunities that we currently face. This is creating a short-term, instrumentalist view of what universities should achieve.

In addition, many universities are operating in a funding environment that requires them to become more responsive to the immediate needs of business or society, a situation exacerbated by the growing cost of research and an increased reluctance of all funding bodies to pay the full costs of the research they commission. In seeking financial support from a broader range of sources, universities are becoming under pressure to produce short-term practical outcomes, to commercialise their intellectual property, to focus on producing IP that it will be possible to commercialise, and to chase funding, no matter what the implications of winning it. Issues of research ethics and probity have become even more important as potential conflicts of interest arise; but the position of research universities is that while it is possible to purchase their research services, you cannot buy particular results – these will arise naturally and inevitably from the research.

Unfortunately, the reasoning behind this focus on the immediate is simplistic, building on a narrative that does not recognise the complex ways in which innovation takes place or acknowledge the deeper and more profound contributions which universities are making. Taken to its extreme, this approach could prevent universities from making their really significant, fundamental contributions to economic, social and cultural development or environmental sustainability; and ultimately lead to more fragile and less resilient societies. Universities are not simple tools of social engineering or drivers of economic growth although their influence is essential for sustained social and economic development.

Research intensive universities

Not all universities are the same: indeed, each university is unique in its history, culture and intent. As the importance of higher education has increased the sector has diversified in response to government policies, the demands of the market and local, regional or national needs. Taking a global view, some universities may specialise in certain disciplines, focus on educating certain professions, emphasise the use of distance education, or seek to attract students sharing particular characteristics. Some focus on teaching, others may concentrate more on building their research capacity; some on creating domestic networks, others on developing international linkages. The extent of this differentiation varies between countries.

Despite this diversity it is possible to recognise in most countries a group of universities which share a particular set of values, have a set of similar attributes and which together perform a significant proportion of the national higher education research effort. Some countries define these as their research intensive universities because of the proportion of their total resources that they devote to research and related activities; in other countries there may be a less sharp demarcation between research intensive and other universities, but even when this is the case, a relatively small proportion of the total universities account for most of the higher education research expenditure. Interestingly, there is a trend in many countries to use funding and other policy tools to increase this differentiation within the university system to make it more effective and in particular to attract greater international recognition.¹

¹ This is the case, for example, in China. Within Europe there are important initiatives in Germany and France see go8 backgrounders 24 and 24A: http://www.go8.edu.au/university-staff/go8-policy-_and_-analysis.

While all universities are communities of scholars and in some countries most universities perform research, the breadth and depth of research activity and of doctoral education in research intensive universities provides a particular texture to their academic environment. This helps provide a distinctive and distinguishing experience for the students, including and especially the doctoral students, and the academic staff. Moreover, as well as sharing some common attributes and promoting well-established values of scholarship with all other universities, the research universities tend to connect to each other, both directly and indirectly, through cooperation and competition that both strive after even higher levels of effectiveness, excellence and performance.

Research intensive universities promote excellence in research and education by emphasising the mutual dependence of these activities at the highest levels of learning. But they do more than this: the Millennium Declaration of 2001 on the future of research universities, prepared by a group of scholars from Western Europe and America stated:

In a society of shifting goals and uncertain values, the university must stand for something more than accurate data and reliable information; more, even than useful knowledge and dependable standards. The university is the custodian, not only of knowledge, but also of the values on which that knowledge depends; not only of professional skills, but of the ethical obligations that underlie those professional skills; not only of scholarly inquiry, disciplined learning and broad understanding, but also of the means that make inquiry, learning and understanding possible. In its institutional life and its professional activities, the university must reaffirm that integrity is the requirement, excellence the standard, rationality the means, community the context, civility the attitude, openness the relationship and responsibility the obligation upon which its own existence and knowledge itself depend.²

This is why governments around the world recognise that research intensive universities are crucial national assets. It is also why governments need to understand the complex but profound and necessary contributions that all universities make to national and global wellbeing, and the often indirect pathways through which they do so.

Attributes of research intensive universities

Openness and autonomy

One of the most important characteristics of all universities is that they have no external agenda, are non-partisan and independent. Moreover, they have the autonomy and freedom needed to pursue ideas and research, no matter where they might lead and without constraints set by the need for immediate usefulness or quick results. This means that they can provide a focus for the disinterested analysis and debate of often contentious issues free from ideological, political, economic, religious or other constraints. This freedom and openness also covers the right and responsibility to publish their results and participate in national debates.

An important consequence of this open approach is that universities benefit from a broad span of research and education covering not just different disciplines but different perspectives within the same discipline; and from work that spans the theoretical to the more immediately useful. For this reason research intensive universities are always comprehensive, even if not always large in scale. Breadth facilitates multi- and inter-disciplinary work but just as important is that it enables the university to maintain multiple points of view based on open, reasonable, and civil discourse. This creates synergies, promotes the cross fertilisation of ideas and builds on a respect for alternative

2. http://www.glion.org/pub_1999_millennium.aspx

views tempered by support for rational and evidence based analysis. While this culture will reject unsubstantiated opinion, it supports the free competition of ideas, no matter where or who they came from, or where they might lead. This culture accepts ambiguity, uncertainty and that conflict between competing values is inescapable; but it also recognises that open, civil discussion and debate is the only way to make progress and advance and promote tolerance.

Openness also involves the welcoming of staff and students from many different backgrounds and countries. The more diverse the academic community (as measured by any attribute) the likelier it is to spark the creative tensions that help advance thinking and develop new ideas and approaches.

The openness of universities adds to the vibrancy of the society and cultures within which the universities exist by providing a safe environment for promoting creativity, questioning, and the freedom to try new things. It enables universities to act as independent critics of society and helps them provide an environment that allows ideas and technologies to mature.

A major concern for governments has to be that of maintaining the openness of universities and this is especially important for research intensive universities, given the breadth of their research activities and the consequent range of ideas, critiques and technologies they can produce. Maintaining openness requires a light-handed regulatory environment that permits, encourages and facilitates diversity, the development of distinctiveness and innovation. Universities have obligations to society and university accountability to government funding agencies, students and the broader community is important. However, this should not mean that these groups are able to micromanage or otherwise control all the operations of the universities.

Fortunately, the governance structures for individual universities tend to support diversity because of their foundation on collegiality and their often complex, informal structures and internal relationships. While the university exists as an institution, the scholars working in a university also have loyalty to their discipline and often accountability to one or more external funding bodies, as well as extensive and strong collaborative links to researchers in other institutions. The relative importance of these outside linkages and accountabilities can be especially significant in research intensive universities because of the proportion of their operations directed towards research. Their researchers establish these collaborative activities not only through the university but often through personal and professional contacts independent of the university for which they work. As a result, the institution of a university lacks the coherence and opportunities for clear direction found in the hierarchical management structures of business or government but this supports its strengths – frustrating as it can be for outside bodies. This loose coherence also provides the opportunity for universities (or more correctly, parts of universities) to respond rapidly to opportunities which present themselves, even though the university as a whole can demonstrate considerable inertia.

Detached engagement

One reason universities play such a central role within broader innovation systems is that while they closely engage with, monitor and analyse current events, operate in an environment that is constantly changing, and interact with all parts of society, this engagement is detached in the sense that universities look to the future, the big picture and the universal, as well as to the present and local. They value learning in its own right, not just as a tool with which to change the world. While they respond to the immediate and provide capabilities that can address the urgent, their main value comes from their ability to look and act beyond the short-term.

While all university education seeks to create people with the ability to work well in the jobs they take up after graduation, in many countries education in a research intensive university emphasises the need to produce graduates who are able to work effectively in jobs that do not yet exist – and who have the

creativity, imagination and habits of rational evaluation that will lead to the development of these new jobs and new industries. Universities need to work with business and other employers to identify the kinds of knowledge and skills that are important but then have to go beyond this to address the needs business does not yet know it has.

Universities engage with business in many ways and business will often make direct use of university capabilities, including their research expertise, facilities and outputs. Direct connections are important and this kind of engagement provides value to all the participating parties. However, university research also has to provide the foundation for developments that business and other sectors cannot yet imagine but which will provide the backbone for progress and sustainability as the world moves forward. This is the research supported by public funding and is a particular responsibility of the research intensive universities because by definition they account for a high proportion of public expenditure on higher education research.

Working outside a 24/7 pressure cycle, educators and researchers are able to develop perspective, see the big picture, follow their curiosity and develop the long-term strategies that business and governments cannot contemplate. This makes it possible for universities to seek and celebrate knowledge in its own right and to extend our humanity in profound ways that go beyond practical outcomes to address questions such as the meaning of life or the history of the universe.

Radical conservatism

If a university works only to respond to existing needs and demands, it is not fulfilling its proper function which has to go beyond the present and the superficial. A major role of the any university is to use reason to test and challenge the status quo, to search out ways of doing things better and to find ways to view the world in new and more informative ways.

Challenging the present is possible only by working to understand past and present practice and thinking, retaining what works well and promoting changes only when such changes are made necessary by the new evidence. To do this effectively, it is necessary to respect the past but build on it. For this reason universities play an important part in preserving and continuing our heritage. Many universities themselves have a very long history and well established traditions that are integral to the heritage of their local and national communities; and their governance systems, often incorporating a large element of collegiality, are themselves examples of a radical conservatism.

While universities are agents of change, they are also repositories and guardians of past knowledge and knowledge about the past. Research intensive universities should also be the custodians of unpopular or out of fashion disciplines, maintaining broad research capabilities not least because an unexpected event might suddenly create a need for them. This radical conservatism permeates the teaching, learning and research of the research intensive universities, as well as all their other activities.

Roles of research intensive universities

Education

A research intensive university is a centre of learning because research permeates all of its operations and is the basis of its reputation and the foundation for its further development. Learning requires research, discovery and critical inquiry. While some education can take place through the simple transmission of information, practice and skills, learning takes place through questioning and debate. The aim is not just to identify and transmit best practice but to question and test it. This means that students are not passive receivers of information but active contributors to learning – in their

interactions with each other as much as with the academic and other staff. Learning, like innovation, is a social activity, not an individual one.

The purpose and role of a university is not to produce students equipped to move into a particular job or type of job; it is to prepare students to live in a complex and unpredictable world in which they will need to respond to situations, challenges and opportunities which we cannot forecast, and take advantage of them; and produce graduates who are flexible, resilient and have the self confidence necessary to take responsibility for their own actions. This requires a continued willingness to learn, a valuing of certain ways of thought and a set of attitudes that is open and humane. A pervasive research culture is important because it enables universities to focus on learning rather than teaching, thinking as well as doing, debate not just assertion. One reason this is becoming ever more important is that sources of information are multiplying exponentially, as are the technological means of accessing information. There is usually no problem in finding information whenever and wherever someone needs it. However, the ease of acquiring information places even more onus on universities to help students develop the ability to evaluate information, assess its status and quality, and then convert it through independent thought to knowledge and wisdom.

A good university is one that provides an exciting environment, one that stimulates the passion and motivation of its students by exposing them to zealous and motivated educators in a setting permeated by the creation of new knowledge and the application of rigorous debate. The benefits of this learning go beyond the provision of particular disciplinary information – which is readily available elsewhere and will often quickly become out of date. University education aims to support the balanced development of the whole person. Achieving this outcome requires the application of rigorous standards of academic excellence and an emphasis on generic characteristics such as curiosity, probity, rational inquiry, and placing a higher reliance on evidence than on authority; it is also an outcome of the academic environment as a whole, requiring an academic community that transcends disciplines and builds on the interactions that take place outside any formal teaching arrangements.

As well as producing the highly educated people who move into the workforce and help drive innovation, increased productivity and the exploitation of new opportunities, universities play an essential role in awarding the credentials that bestow confidence that professionals are properly qualified and able to provide the service people are buying from them. A rigorous approach to assessment and evaluation within the university provides people outside the university with the confidence that alumni possessing particular credentials have achieved high levels of learning and standards of excellence with respect to the knowledge and skills that they possess.

Research

By definition three important characteristics of research intensive universities are the excellence, breadth and volume of their research. This will extend from the curiosity-based, investigator-led basic research to much more applied research and the developmental work usually funded by business.

Performing across the whole range of the research spectrum is important in keeping universities linked to the shorter-term needs of business, government and society as a whole. This also adds to creation of a stimulating teaching and learning environment. However, a core role of higher education research, and the one scarcely performed by any other part of the innovation system, is that of performing basic research. Academic researchers aim at the huge leap forward in understanding, rather than the incremental advance; at creating opportunities rather than exploiting them; and at exploring and understanding the human condition. Because they account for a high proportion of the higher education research effort, the research intensive universities play a particularly important role in this area.

Some university research which advances knowledge can quickly provide direct and indirect opportunities to support business innovation, create completely new commercial opportunities, inform government policy, and provide information that supports community well-being. However, the research that has the greatest impact frequently turns out to be that which was conducted without any direct intention of being useful. In many cases the advances made by fundamental research are essential to advances across a wide range of different technologies but this impact can take many years to become apparent. Any hindsight study attempting to trace back the origins of important technologies or economic developments quickly finds dependencies on research, the performers of which could never have forecast how their research might find practical application.

The research performed by universities has impact in the non-academic world through many pathways, most of which are indirect and not very visible, particularly when there are long time lags between the performance of the research and business or other sectors recognising and building on its potential. The universities are creating potentialities that others can realise. Moreover, there is a considerable level of contingency in the use of basic research, for example in the way in which a research advance in one area can suddenly create ways of using earlier discoveries in other disciplines. Time and scale work together to create opportunity in many unexpected ways. Basic research influences but does not control the research in other sectors that builds on the knowledge created through basic research.

Another important role for the research intensive universities is to help position the standards and benchmarks for research quality. Because of the volume of research they perform and their international links and reputation, the research intensive universities compete against each other in the global research environment. This prevents the development of parochialism and means researchers in these universities are matching themselves against the best in the world. In turn, this helps set the domestic standards for the country in which the universities are operating and this helps lift the performance of other researchers.

Store of knowledge and capabilities

Universities act as a storehouse of knowledge and capabilities. University academics have world-class expertise, their research facilities may be of a kind unavailable elsewhere and the domestic and international networks of universities can potentially provide access to an even broader range of expertise and facilities. University researchers, especially those performing basic research, necessarily have a broader view of the global research effort than do researchers in business, who tend to be narrowly focussed on the technological development necessary to implement their firm's business plan.

This storehouse of capabilities and breadth of knowledge provides a kind of national insurance, ensuring that when a need arises some core capabilities exist to provide or develop an appropriate response. Other universities and other sectors, including government and business, can draw on these capabilities as they need. This can take place, for example, through business commissioning research, government co-opting technical experts and having university representatives on advisory and other committees, and in many other ways.

The breadth of university activities enhances the value of this storehouse, as does the extent of the networks that universities have built up. The breadth of research also means that universities can potentially provide advance warning of developments elsewhere that might otherwise be lost. The technologies that create new opportunities usually come from a quite different sector than that which will gain most advantage from them.

Innovation

Because of their international links and breadth of research experience, research intensive universities have the potential to take a lead and demonstrate new pathways in higher education. This goes beyond the excellence of their current performance and arises from them looking ahead, adopting and adapting to change made possible or necessary through variations in their external environment, and monitoring or directly participating in overseas developments. Even more important is the way that universities can drive innovation across both their educational and research activities, responding to the opportunities created by new knowledge, technologies or even attitudes. Research can drive improvements in curriculums and pedagogy; the demands of the problems facing the world can promote integration of knowledge across disciplines and other boundaries; the speed at which research makes disciplinary knowledge out of date can lead to a greater emphasis on learning to learn.

One important example of innovation by research intensive universities is that they have played important leadership roles in the development of Massive Open Online Courses (MOOCs). This recognises the potential of these new technologies to allow course delivery in new ways and that there is potential to increase both the efficiency and effectiveness of teaching by making information available easily, widely and for free. One reason the research intensive universities are so important in this area is that their recognised excellence provides a guarantee of the status and quality of the information included in their MOOCs. Making it easier for students to acquire information from some of the best teachers in the world helps all universities focus on the processes through which students can integrate knowledge across discipline and other boundaries and use it effectively.

Reputation and international networks

Almost by definition, universities are elite organisations – not in the sense that they are bastions of inherited privilege but in the sense that they are citadels of ability and excellence. They seek excellence and ability in their students, no matter what their background, because this is the only way to retain the university's distinction and effectiveness. The ethos and practice of a university is meritocratic. In a university the students form an essential part of the academic community and interactions between students forms an essential component of the learning experience, so that only the best will do.

Any research intensive university works hard to attract the very best and most talented educators and researchers in order to maintain its position. Having a visible international presence and an international ranking is paramount in the global fight for talent. Excellence attracts excellence and a research intensive university, so long as it is financially robust, can serve not just as a centre of national excellence but as an international beacon, signalling the capabilities and contributions of its country to a global audience. A strong research university has its own global brand that flows not from sophisticated and expensive marketing but from the credibility and strength of its operations as measured by its peers, by independent ranking and other external assessments. The reputation of these universities reflects substance, not public relations.

A high international reputation enables a research intensive university to become an active participant within an invisible college of other research universities. This facilitates strong, diverse and apolitical links with other countries, as well as an awareness of overseas research developments and the potential for collaborative work. An important way in which these connections develop is through the free movement of students and staff. A globally ranked university can attract the best students from many countries. On returning home and taking up academic appointments, jobs in business or government positions, these students will retain their links with each other, with their mentors and form part of a global alumni network that maintains productive connections beyond any narrow political or other affiliations.

The international reputation of research intensive universities plays an important and even essential role in any nation's fight for talent and in its ability to play an effective role in international discussions on global and other problems; it also plays a part in the willingness of companies to consider direct investment in a country. World-class research universities help draw in investment and other funding from overseas and add to the perception of a country as being a superior place to live and one that recognises quality and distinction. Strong international networks also provide the means through which one country gains access to the research performed in other countries in ways that go beyond the codified knowledge transmitted through publications.

In setting the highest standards for performance and outcomes across all their activities, based on the performance of their international peers, research intensive universities help show what is possible. They help create an environment in which other universities and institutions set their own high standards in the context of their own particular objectives and strategies, so creating an environment in which all aspire to become the best in relation to their peers.

Economic and social mission

The most important economic and social contributions of universities arise from the movement of their graduates into the broader workplace, taking with them and applying the knowledge, skills and attitudes the university helped to instil; and from the direct and indirect application of the research the universities perform and the transfer of information and technology to other sectors, domestic and international. However, universities are part of local and national communities and linked to them in many ways. One consequence of this is that universities play a more direct and important social role that can have effects beyond the immediate location of the campus and extend far into their local community.

Universities employ large numbers of staff directly and can draw in students from a large catchment, including overseas. A university having a strong research base and international reputation can also draw in funds from far outside its own region. In some cases the multiplier effect associated with the economic activity of these staff, students and their families can account for a significant part of the local economy. In attracting fee paying overseas students, the universities can also be contributing to an important export industry within their region.

The employment opportunities the universities provide are diverse – not just academic staff and the technical staff required to support research but people having a wide range of professional and other skills. The fact that a significant proportion of these staff are themselves highly educated, well informed and articulate can have important flow-on effects for the standard of services the local community has to provide. The way in which the universities attract a diverse group of students can also have positive effects on the diversity of the local population and its broader economic structure.

In some ways as important as the direct economic effect of the university is the contribution the university, its staff, students and its varied activities make to the artistic and cultural life of the community of which they form a part. Universities, their staff and students create a concentration of cultivated and experimental taste which directly and indirectly adds to the vibrancy of the social and cultural life and reputation of a region. In part this arises from the cultural activities performed in and by the university but it also results from the demand from highly educated and creative people seeking entertainment, recreation and other activities outside the university.

As well as serving as a local cultural centre and providing and promoting cultural activity, a university will often support other community and professional groups by providing cultural assets such as concert halls, theatres that in the absence of the university the broader community could not afford.

Why research intensive universities are necessary

Research intensive universities are central elements in any national innovation system. They form part of the research and education subsystems of the innovation system and play an important role in linking the national system with those of other countries.

While in principle the effective operation of any system depends on the effective operation of all its parts, in practice there can be some overlap between the different components. The demarcation between research universities and other universities is sharper in some countries than in others; the research responsibilities of universities can overlap with those of government research agencies and even business; and any education system will include a very wide range of players. Indeed, the strength of a system reflects the degree of specialisation of its components and the ability for these to evolve as new opportunities and pressures arise.

Despite this, the research intensive universities are critical. The way in which they operate ensures the highest possible standards of performance across a broad range of disciplines and helps set national standards of excellence; their international standing provides substantial links to overseas organisations and a national credibility not otherwise achievable; and their broad perspective and ability to work towards the longer term provides the means for creating a better future.

While all the parts of an innovation system are important, universities play a particular and essential role in providing the highest quality people, ideas and information that flow to all other parts of the system – whether business, government or other universities – to ensure they work effectively. They are able to do this because of their unique culture, educational philosophy and a preparedness to go beyond the quotidian to strive for the otherwise inaccessible. Because of the extent and depth of their research and research training activities, the research intensive universities play a particular and important role within this broader system.

Research intensive universities have the comprehensiveness, facilities and international reputation necessary to meet and provide opportunities not available elsewhere in the innovation system. While maintaining this scale and breadth of capabilities is not low cost – and this is one reason why only a small proportion of the universities in any one country can achieve the status of research intensive universities – their role is essential in maintaining the health of the system as a whole and of its individual components.



The Group of Eight

Group of Eight House

Level 2, 101 Northbourne Avenue

Turner ACT 2612

www.go8.edu.au