Contents

Choice and Responsibility: Innovation in a New Context
Michael Gibbons 9

Institutional Management and Engagement with the Knowledge Society
John Goddard 23

Constructing Advantage in the Knowledge Society – Roles of Universities Reconsidered: The Case of Japan
Fumi Kitagawa 45

Changing Research Practices and Research Infrastructure Development
John W. Houghton 63

Innovation in the Netherlands: Toward Guidelines for Knowledge Transfer
Esther I. Stiekema 83

The Shift of the University Paradigm and Reform of the Korean University System
Hyun-Chong Lee 93

Civic Mission and Social Responsibility: New Challenges for the Practice of Public Relations in Higher Education
Helena Kantanen 107
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# Table of Contents

**Choice and Responsibility: Innovation in a New Context**  
Michael Gibbons ................................................................. 9

**Institutional Management and Engagement with the Knowledge Society**  
John Goddard ........................................................................ 23

**Constructing Advantage in the Knowledge Society Roles of Universities Reconsidered: The case of Japan**  
Fumi Kitagawa .................................................................. 45

**Changing Research Practices and Research Infrastructure Development**  
John W. Houghton ............................................................... 63

**Innovation in the Netherlands: Toward Guidelines for Knowledge Transfer**  
Esther I. Stiekema ................................................................. 83

**The Shift of the University Paradigm and Reform of the Korean University Systems**  
Hyun-Chong Lee ................................................................ 93

**Civic Mission and Social Responsibility New Challenges for the Practice of Public Relations in Higher Education**  
Helena Kantanen ................................................................. 107
Choice and Responsibility: Innovation in a New Context

by

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In this keynote address to the 2004 IMHE General Conference in Paris, the author tried to lay out the profound changes that are taking place in society. These changes give rise to a new context in which institutions have to make decisions. Three principle elements characterise the new context: a rightward shift in political thinking, an intensification of competition, a more central role for knowledge in generating innovations. In terms of policy, universities are now encouraged to reduce their dependence on government funding, to regard themselves as providing a wider range of educational services, and to be global players in research. In this context, intensifying competition often operates according to static and dynamic modes simultaneously. Dynamic competition has given rise to a number of collaborative arrangements. And if universities are to prosper, they have little choice but to engage with others in developing and introducing new modes and models of teaching and research.
Prologue

I have been asked to address the topic of Choice and Responsibility in Universities. One approach would be to deal sequentially with each sub-theme of the Conference, give a list of what are regarded as important developments, and comment briefly on their implications for choice and responsibility. An alternative approach, would be to try to lay out those deeper structural changes that are taking place in societies across the world, of which the various policy initiatives on the part of government and responses on the part of universities, are a manifestation. I have chosen the latter approach, in part, because I expect that this audience will be familiar enough with the many experiments that are currently running and, in part, because I believe that we are far from having an adequate understanding of the profound changes that are taking place in society that are affecting policies and the universities' response to them.

Throughout this presentation, I will have something to say on each of the sub-themes of the conference, but the significance of particular developments in each of these areas and how they are effecting, or are going to effect, the issue of choice and responsibility cannot be judged independently of the context of which they are a product. That context, I believe is new.

The New Context

Let me begin, then, by outlining what I see as the new context in which universities have to operate. It is comprised of three principal elements:

- a rightward shift in political thinking;
- an intensification of competition brought about, in part, by globalisation; and
- a more central role for knowledge in generating the innovations that are needed to meet the risks associated with the intensification of competition.

Rightward shift in political thinking

In all jurisdictions, universities are having to learn to engage with a new context. As I have indicated, there are several elements to this but they all seem to be related to a profound shift in our political thinking. A case for this has been cogently argued recently by the eminent Cambridge political scientist, John Dunn who has observed that “across the nations the balance of beliefs and sentiments of a given population, the institutional forms through
which that population can act, and the cumulative consequences of the actions which members of those populations choose to perform, have all shifted in the direction of one particular kind of order [...]” – that is, to the values, institutions and modes of organisation of a liberal political economy. This complex of changes, I will summarily refer to as the “rightward” shift. It describes changes in the ways in which individuals want to organise their lives and the institutions in which they choose to place their trust in achieving their personal objectives.

The belief that the institutions of liberal political economy – essentially those that promote markets – are the ones most likely to provide the framework within which to make our life-choices, constitutes a revision of our expectations concerning the ability of our public institutions to provide “goods” we desire. How far this will go, and for how long this belief will be sustained, we cannot know but such a profound change is bound to touch those institutions, which, heretofore, have been responsible for delivering higher education.

**Globalisation**

Globalisation is an admittedly ambiguous term. For our purposes, it can be viewed as the outcome of the processes of imitation, adaptation of innovations as they are taken up (diffuse to) by one country, firm or institution after another. Here, innovations are “solutions” to problems of many different kinds – whether they be scientific discoveries, new technologies, organisational forms, or modes of working. As innovations, these “solutions” offer different ways of doing things and as such they can pose a threat to established routines.

Typically, the diffusion of innovations from one institution to another or from one country to another provokes a competitive response, in so far as it induces others to protect themselves from a possible threat to their position. As we are constantly reminded, under globalisation this threat can now arise from anywhere in the world. Thus, globalisation enhances competition and stimulates innovation but the particulars of any innovation – the ways in which it can be imitated or adapted – depend critically on local circumstances.

**Innovation**

The sources of innovation, it appears, increasingly lie in knowledge and this belief underpins the idea that we now live in a knowledge economy. But note that the competitiveness of a knowledge economy does not necessarily imply a simple dependence on the flow of scientific discoveries from one’s national university system. Rather it relies on the ingenuity with which individuals, groups and organisations are able to imitate and adapt solutions
using knowledge that has in all probability been generated by others. Unfortunately, access to this knowledge cannot be achieved unless potential innovators possess at least some formal training. Of course, formal training in a discipline provides a basis for the further production of knowledge but, in the new context, its most important function is to make it possible for those so trained to interpret and adapt knowledge produced by others. That is the main reason why universities are so crucial to this type of economy. Whether graduates can then do anything with this knowledge depends not only upon their individual creativity but also on the resourcefulness of national innovation systems and the institutions – the government departments, firms, industry associations, universities, banks and venture capital providers – that comprise it.

**Socially distributed knowledge:** Alongside globalisation, but not to be confused with it, is the emergence of social distribution of knowledge production. The key change to note is that knowledge production is becoming less and less a self-contained activity. It is no longer the preserve of a *special type of institution*, from which knowledge is expected to spill over, or spin-off, to the benefit of other sectors. Knowledge production, not only in its theories and models but in its methods and techniques, has spread from academia to many different types of institutions. It is in this sense that knowledge production has become a socially distributed process. At its base lies the expansion of the number of sites which form the sources for a continual combination and recombination of knowledge resources. Research communities now have open frontiers which have allowed a diverse range of “knowledge” organisations – such as think-tanks, management consultants, activist groups – to join the research game.

Both phenomena are important if one is to assess the true impact of what is summarily referred to as globalisation. For our purposes, globalisation has been linked to the geographical diffusion of innovation. Socially distributed knowledge, by contrast, connotes the social diffusion of research-based methodologies to more and more different types of organisations many of which have now become sites of recognisably competent research in their own right.

**Policy in the new context**

Turning for a moment to the sub themes of the conference, we can interpret many of the current policy initiatives in the light of the new context. In terms of government policy making, reforms in national systems of governance and funding of universities have been particularly affected by the adoption of liberal, market-oriented thinking. Universities are now encouraged to reduce their dependence on government funding, to raise third stream funding by working with industry and the institutions of civil society,
to manage their intellectual property and to commercialise their research. Since government resources are increasingly allocated on the basis of the responses of each university to government policy, the effect is to put universities in a competitive relationship with one another. In a word, each university is being encouraged to establish its own competitive position in the global market place for higher education.

The social agenda, too, has been affected by the new context. Universities are now encouraged to regard themselves as providing a wider range of educational services and to compete for students on both the quality and price of the courses offered. They are expected to enter into the market place for both national and international students, while at the same time increasing the participation rate in higher education of a broader range of socio-economic groups by developing policies of access and equity and by taking the lead in providing life long learning.

In research and knowledge creation, policies are in place that aim at advancing international competitiveness by enhancing the quality of research in the national university system. In research, universities are encouraged to be global players and to be able to compete in their research with the best in the world, albeit in a restricted number of areas. This view provides an important driver of the national research assessment exercises that operate in the United Kingdom and Australia and to a lesser extent in Canada and South Africa; of the policies of selectivity that concentrate funding in centres of excellence; and of government support for the expansion of collaborative research with industry.

To a large extent governments have accepted the new context as the frame of reference for policy formation. But, the new context has also become the dominant framework within which universities are having to respond in defining their missions and strategies. This response is evident in the novel for patterns of institutional collaboration – here, Universitas 21, Cardean University, the World Universities Network and the much debated MIT-Cambridge collaboration are perhaps the most familiar examples; in supporting the emergence of national centres of research excellence, in collaboration with industry, particularly today in nano-technology, pharmaceuticals and informational and communication technologies; in the development of distance education and e-learning to deal with broadening access and with the wishes of students and parents who now see the relationship with the university in contractual terms.

These elements, then, the rightward shift, globalisation, the intensification of competition, and the search for knowledge-based innovation are linked and together constitute a new context in which all our social institutions, public and private, are immersed and with which they are trying to come to terms.
Universities, in particular, are among the institutions affected by the new context. They, too, have been affected by the rightward shift in our political thinking, been drawn into competitive markets for research and higher education services, to which they are trying to respond by innovations of various sorts.

**Competition as a discovery process**

The main elements making up the new context that I have adumbrated are probably uncontroversial. Nonetheless, it may seem surprising, perhaps even paradoxical, that in the new context intensifying competition is associated:

1. with a virtual explosion in the numbers of collaborative ventures;
2. and the fact that these ventures often involve collaboration with competitors.

After all, isn’t competition, together with the institutions of the market, meant to weed out the inefficient, to select winners and dispatch the losers? Why then as international competitiveness intensifies do we see an increase in collaboration amongst competitors?

The paradox is removed once it is realised that in any market-type environment there are, at any given time, two modes of competition at work simultaneously. These modes are sometimes referred to as static and dynamic competition respectively.

**Discovery processes:** One way to understand the differences between static and dynamic competition is to note that competition of whatever type always launches a discovery process. When competition is viewed in this way, it can be seen to stimulate two fundamentally different types of experimental or exploratory behaviour. One mode is largely internal to an organisation. It deals with the issues of resource allocation and the efficiency of their use. With this, we are familiar. It is the everyday world of business and industry; of the *Financial Times* and the *Economist*. But it also underlines the notion of efficiency gains that has dominated the minds of the senior management of most universities for more than a decade. This is the world that increasingly fills the pages of the *Chronicle of Higher Education* and *Times Higher Education Supplement*.

The other mode of experimental behaviour involves environmental scanning. It looks outwards, beyond the walls of an institution or organisation with the aim of identifying what others are doing. With this form of experimental behaviour we are, by and large, unfamiliar. Yet, it is this externally-oriented search behaviour that moves organisational thinking beyond the imperatives of efficiency gains to the pursuit of those innovations which may be necessary to stave off a major threat from a competitor.
Again, for some, this is a well known phenomenon. Firms, for example, know very well, and fear greatly, a challenge to their existing ways of doing business arising, not from price competitiveness, but from an innovation the challenge of which they cannot meet at any price. To offset this worry, firms seek to reduce the risk that they might find their way of doing things rendered obsolete by forming networks, making strategic alliances and joining partnerships. These collaborations involve many different types of organisations and not infrequently competitors. In this context, competitors are not seen as a threat, because the collaboration is intended not to make improvements to existing products and processes but to search for “knowledge solutions”; for new ideas, technologies, organisational forms and modes of working that might help them to withstand a major competitive threat; a search process that they know is so complex that they no longer attempt it on their own.

Design configurations: Another way to approach the differences between static and dynamic competition is to make use of the notion of a design configuration. A design configuration is a set of technologies, forms of organisation, routines, modes of working around which an entity – a firm, a hospital, or a university – organises itself to operate in a market. Static and dynamic competition can be distinguished then on the basis of whether the organisation is working within an established design configuration or whether it is trying to identify an alternate one.

The link between the different types of competition and design configurations is, I hope, clear. Static competition drives the search for efficiency gains within an established design configuration (that is established routines, ways of doing things); dynamic competition drives the search for new design configurations (novel ways of doing the same things, or ways to do different things, etc.).

But there are two other aspects of this relationship which we need to consider:

1. Over time, static competition will establish a hierarchy between competing organisations. Because a new design configuration changes the basis upon which an organisation conducts its business, it can threaten the established hierarchy by establishing another, often based upon new organisations that employ different technologies, modes of organisation or patterns of work. It is the awareness that these knowledge solutions may emerge at any time and from any quarter that provides the greatest uncertainty to organisations that are heavily committed in terms of skills and knowledge to a single way of doing things. Not least, organisations so committed appreciate the difficulties involved in making major changes to core competences.
2. Perhaps the least understood aspect of dynamic competition is the fact that whereas in static competition markets select amongst products, in dynamic competition markets also operate but in this case to select those collaborative grouping which appear at a given time to be working effectively in identifying the elements of what might become a new design configuration. Markets can be said to operate here because as with any market, decisions are made to allocate resources (to groups, in this case) on the basis of changes in information on performance that is available. Inevitably, because groups differ in their creativity, some groups will perform more effectively than others. Knowledge of relative progress in a specific area is transferred instantaneously and resources are re-allocated appropriately. To join an ineffective collaboration is disastrous for any organisation and therefore choice of which groups to join, and for how long, is amongst the most important decisions that any organisation ever makes.

It is to the processes of dynamic competition, then, that we owe the explosion of strategic alliances, networks and partnerships. These experiments are intended to reduce the risk that an institution or organisation may, at any time, find its principal functions or main lines of business threatened by an innovation to which it cannot respond because it does not have the knowledge or the skills to do so. Dynamic competition generates what could be called competition-induced collaboration and this resolves the paradox that many of these collaborations may also involve competitors.

**Static vs. dynamic competition: challenges for universities**

If you have followed my argument, then it will be clear that the new context presents a number of challenges to the higher education sector.

The rightward shift and globalisation intensifies competition amongst universities. Competition for students, for staff, and for resources of all kinds is supposed to be on the increase. Who can deny that within the higher education system internationally we are all engaged in a global war for manpower and an unseemly scramble for students?

But, competition amongst universities has, so far, been primarily of the static sort. And as we have seen, static competition promotes a pre-occupation with a search for efficiency gains based around an established design configuration. In the case of universities, the dominant design configuration is the standard discipline-based model which organises both research and teaching. In teaching particularly, the disciplinary structure of science and scholarship produces broadly similar courses for students and career paths for staff. On this model, universities compete by offering essentially the same products to national and international markets, externally, and by controlling costs, internally.
Static competition around the standard discipline-based model has already established hierarchies between institutions. There are inequities in these hierarchies. Though all are working with the same framework, all universities are not the same. But preoccupation with static competition tends to fix these hierarchies and passes the advantages of economies of scale to the major providers, often those with the strongest brands.

As we have seen, dynamic competition is a mechanism that can dissolve existing hierarchies by changing the fundamental bases upon which competitive advantage rests. Since it is not clear just what alternatives to the discipline-based structure of university teaching provision might be, the rational approach is to launch experimental and exploratory searches. Perhaps this is what we are seeing in the virtual explosion of new collaborative arrangements between universities, many of which include not only competitors but also, and increasingly, private providers which have traditionally been regarded as outside the higher education system. But, I am far from certain that participants in these schemes have a clear idea about what to expect from these collaborations, or what they might need to do to adapt the insights from such collaborations to their own teaching and administrative structures.

Here, a distinction may be helpful. In a regime of dynamic competition, collaborations can be of two kinds: discovery-oriented and innovation-oriented. The former are essentially experimental frameworks and for the most part they are temporary arrangements. These collaborations are increasingly international and membership in them ebbs and flows according to the degree that they are successful in identifying those new lines of development, typically, some collaborative groupings will be more inventive than others and so, not uncommonly, there is movement between groups. For the participants, the situation is a very unstable one. Yet, collaboration is essential and to be effective requires a non-trivial allocation of resources to this type of environmental scanning.

Of course, discovery may be a necessary condition for innovation but it is hardly a sufficient one. Universities together with other participants outside the higher education sector may also join collaborations not to make further discoveries but to innovate. These are innovation-oriented collaborations and they aim to implement some new development; say by pooling resources, exploiting institutional complementarities, capitalising on economies of scale, or introducing new modes of delivery in pursuit of new courses for different social classes. Without innovation-based collaborations, static competition will surely prevail and the advantage will remain with the largest providers.
Some concluding remarks

In summary, we have introduced a new context with which all of our social institutions are trying to come to terms. We have seen that competition is a driver of change in this new context and that there are two types of competition at work simultaneously. We have further observed that, given the way universities are organised around the imperatives of the disciplinary structure of science and scholarship, static competition has tended to predominate with the usual effects of reducing diversity of the system, fixing institutional hierarchies, and the passing advantage to the largest providers.

Nonetheless, we also observe the burgeoning of collaborative arrangements in both teaching and research – the sure indicator that dynamic competition is at work. Much of this collaboration is experimental and the outcomes uncertain. To get some idea of the extent to which such collaboration is taking place you could not do better that consult the web site of the ACU-UUK Observatory on Borderless Education, headed up by Svava Bjarnason, head of ACU’s Policy Research Unit. Here, you will find the rise and demise of literally hundreds of collaborative schemes aimed at trying to meet the growing complexity of demand for higher education internationally. If universities are to develop within the imperatives of the new context, this flurry of collaborative activity needs to result in significant institutional change. Yet, it is not clear that universities have yet drawn the distinction between discovery-based and innovation-based collaborations.

This is where questions of choice and responsibility enter. If universities are to prosper, they have little choice but to engage with others in developing and introducing new modes and models of teaching and research. Oversimplifying somewhat, the choice is between the balance discovery-based and innovation-based collaborations that a particular university needs to adopt to be able to operate in its chosen niche and this balance will vary with the type of institution it is trying to become. The responsibility lies in whether universities, as institutions, have the courage of their convictions and intend to move beyond discovery-based to innovation-based collaborations and actually implement change, or whether they would prefer to indulge in what, in a previous era, were called market rigging activities; forms of protectionism that operate to keep things as they are. In the new context, the latter course of action is irresponsible for it will leave those universities who refuse to embrace dynamic competition unable to respond to innovation from without. In the extreme case, it could leave universities open to a world in which a significant fraction of traditional higher education services might be delivered by non-university organisations. “It can’t happen”, I hear you say. Where, pray tell, then, are all those firms who, at the turn of the 20th century,
were engaged in making horse drawn vehicles? Do they now make motor cars and airplanes, CD players and computers? I don’t think so!

In closing, let me return to the four main themes around which this Conference has been organised. It may be helpful to note again that while governments are adapting to the realities of the new context as is evident in the thrust of so much of current policy, universities, seem to have allowed themselves to be cast in the role of trying to respond to these initiatives. For example:

1. Changes in national systems of governance and funding of universities are, in part, due to financial limitations but also, in part, due to a recognition of changes in the attitudes of its citizens in relation to their beliefs about the ability of government to respond to an increasingly complex demand for knowledge workers and knowledge products. Increasing complexity of demand must be met by a parallel increase in the complexity of supply and here citizens seem to be investing confidence in the institutions of the market. As we have tried to show it is competition, particularly dynamic competition, that holds out the greatest prospect for providing the innovations that are required.

2. In the same way, the current drive by many governments towards broadening the base of access to higher education is, in part, a recognition of the growing complexity of demand brought about by the desire of individuals from a more diverse range of educational, social, economic and cultural backgrounds to enter higher education and, in part, an attempt by governments to put pressure on universities to broaden the range of options offered. The growing acceptance by governments, parents and prospective students of the notion of a higher education market in which the universities offer services that will be judged on both quality and price is perhaps the clearest indication that, to many, market-based institutions are the ones best placed to generate complexity of supply.

3. Likewise, in research and knowledge generation, governments have bought into the notion, despite the warning of Paul Krugman that it constitutes a fundamental category mistake, that national competitiveness can somehow be enhanced by international competitiveness of its national research system. Many of the elements of the new context have conspired here to support this view. Governments continue to accept that industrial competitiveness depends upon innovation and, together with industry, subscribe to the view that the locus of innovation is now firmly rooted in finding knowledge-based solutions. Again, with the globalisation of the world economy, governments have come to realise that picking winners is no longer, if it ever was, an efficient mechanism with which to allocate resources to science and technology. Much of current science and
technology policy recognises this and as a result these policies are often more concerned with facilitating innovation than with funding it directly. Innovations, it is now recognised, are solutions to “problems” and problems do not usually conform to the interests of the disciplinary structure, nor does one expect the national research system to be able to provide all of it. Accordingly, current research aims to promote interdisciplinary research and to support connectivity by providing funding for networking and international collaboration on an increasing scale.

4. University researchers have long known the advantages of collaboration. Policy in supporting research collaboration reflects both a frank recognition of the difficulty of organising collaborative arrangements which are often spontaneous and a determination by governments to transfer the pressure of orchestrating this away from government itself to the universities. This has confronted institutions with an unaccustomed need to draw up its own mission statement and implement strategies which they believe can generate a niche for themselves. As a consequence, universities now having to manage, more intensively than previously, their own research and teaching investments. Progress here has not been spectacular. For example, at the present time, the range of mission statements is alarmingly similar. One only hopes that this is not also true of the strategies to implement the mission statements because in the new context, as we have seen, competitiveness turns on diversity. If diversity is allowed to collapse, static competition between universities will, as a result, be further strengthened with deleterious implications for the higher education system globally.
Some examples of design configurations

A simple example of the sort of uncertainty that I am referring to can be seen in cases where an existing way of doing things is threatened by a new technology. Think of the dilemma that faces firms devoted to delivering classical music. Historically, the sequence of delivery systems has moved from records to tapes to CDs to MP3 systems, to whatever next. They all deliver Beethoven’s Ninth Symphony but each uses different and sometimes superior technologies; physical grooves in the case of vinyl records, magnetic films in tapes, lasers in CDs, and microprocessors in MP3 systems. Each of these technological solutions constitutes a distinct design configuration and requires a distinct knowledge base. That is each uses a different nest of technologies and requires a different configuration of knowledge and skills.

On a more prosaic level, perhaps the most dominant design configuration of all time has been the QWERTY keyboard. Designed originally for typewriters, it has now been extended to virtually every computer system in the world. Yet, it is far from being the most efficient distribution of key positions, even for the English language. National patent offices around the world contain thousands of better – more ergonomic – keyboard designs. Some have been introduced; none has survived very long. I am not sure why this should be the case. Perhaps it reflects the real power of one particular social group – that band of individuals that run all our organisations – our secretaries; the Maureen Dilworths’ of Poppleton University fame!

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Institutional Management and Engagement with the Knowledge Society

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The article will argue that external engagement with business and the community poses major challenges for the institutional management of Higher Education Institutions (HEIs). The world outside of academia, in business, central and local government, health, welfare and the cultural and community sectors increasingly expect an institutional as distinct from individual academic response to the challenges and opportunities for HEIs in their respective domains. Nowhere is this more apparent than at the city and regional scale where HEIs have the potential through their teaching and research to play a leading role in joining up the separate strands of development policy – such as innovation, skills, social inclusion – and providing a key link between the global and the local. But realising this external role requires strong institutional leadership and internal integration.

The article addresses these issues by reference to policy and practice particularly in relation to knowledge exploitation in Finland and the United Kingdom.
Introduction

This session [during the 2004 IMHE General Conference] has been given the title “New Knowledge, Research and Knowledge Creation” which suggest the focus should be principally on the exploitation of the science base by business. I will discuss this issue but argue that effective knowledge exploitation should embrace all of the functions of a university – teaching, research and community engagement (or so called “third strand” activities). I will adopt an economic development perspective which suggests that universities can and must play a key role in a development process which embraces business innovation, enhancing skills, culture and community cohesion. Indeed knowledge exploitation by technology transfer will only have a long run impact on economic development if the skills and community agendas are also addressed. I will argue that this holistic perspective on the needs of the wider society points to the requirement for a corporate response from the university as a key institution in civil society.

In adopting this developmental perspective, I cannot ignore the fact that in most OECD countries development is uneven. In these circumstances local and regional development agencies are increasingly looking to universities to play a leading role in achieving more balanced regional development. Whereas the traditional concern of Government was one of raising general educational levels and the output of scientific research, the emerging concern is to harness teaching and research to specific economic and social objectives. This specificity is most clear in the field of regional development. While universities are located in regions, questions are being raised about what contribution their teaching and research makes the development of the region.

I will seek to elaborate on this broad perspective by starting off with a brief review of the shortcomings of a narrow focus on knowledge exploitation using the example of science parks. I will then expand on the role of universities in the regional development process and conclude with some comments on the experience of two countries with which I am familiar, Finland and the United Kingdom.

Before doing so I should highlight a major common challenge that universities face in their external environment if they are seeking to become more actively involved as agents in the development process. This is the tension between four different domains of national policy, namely science and
technology, higher education, labour market and territorial development. While universities are ideally placed to join up these interrelated processes of development they often get contradictory messages from different parts of government which champion individual components such as knowledge exploitation and skills.

**On Science Parks**

Science Parks are one of the earliest manifestations on the part of public authorities to exploit university research to further economic development.

A useful definition of science parks has been provided by the UK Science Parks Association. It is a property based activity involving first, formal operational links with a university; second, formation of knowledge based businesses on site; and third, a managerial function actively engaged in the transfer of technology and business skills to the enterprises on the site.

In an interesting review of the literature on science parks, Vestergaard points out that science parks are hoped to be a solution to complex political and economic issues in society, notably regional industrial development, under commercialisation of publicly funded research and a shortage of new product development (Hansson et al., 2004). Science parks are seen as a means of achieving more effective exploitation of the science base by the co-location of researchers and businesses to facilitate networking between the two. This is often a key agenda in regions with a poor record of business innovation. In these circumstances the expectations laid upon science parks to tackle fundamental social, economic and cultural barriers to innovation are often very high.

However, Vestergaard and colleagues suggest that many science parks deviate from this idealistic model. First, from the perspective of large firms, they suggest that such enterprises do not see networking as a problem. They seek out the best and most relevant science wherever it is located in the globe. For them, intermediate organisations established on science parks to facilitate technology transfer from universities can act as a barrier. However, location on a science park can be an advantage in terms of recruitment of graduates as employees, who may then “transfer technology on legs”.

For small and medium sized enterprises the evidence in support of the positive effect on economic performance of the opportunities for networking with the science base provided by a science park is limited. Various studies of matched samples of firms on and off science parks have revealed little evidence of significantly enhanced performance of the science park enterprises. This may suggest that the key determinant is the characteristics of the entrepreneurs rather than the environment provided by the science park per se.
Finally, from the university perspective, if science parks are regarded principally as incubators for university based spin outs from which the university can derive economic benefits through equity holdings, then the evidence suggests that the financial contributions to universities from this source is limited.

In summary, Vestergaard and colleagues conclude that “the old role of science parks defined mainly by a linear conception of the relationship between science and innovation and as a provider of infrastructure in a broad sense (from laboratories to IT facilities) needs to be replaced by an inter-active, dynamic and network orientated understanding that emphasises learning”. To realise such an objective the customs and practices of knowledge exploitation through both teaching and research need to embedded in the heartland of the university. The science park in effect needs to move “on campus”. If that does not happen there is a danger that the science park can be one of many means of keeping the messy world of knowledge exploitation “at bay” and protecting the academic heartland.

This perspective raises fundamental challenges for the management of higher education institutions and this challenge becomes most apparent at the city and regional scale. Here there are growing expectations on the university to become an active component in the learning region. So I now want to move on from science parks to consider the wider question of the engagement of universities with regional development.

The political drivers for university engagement with their regions is paralleled by economic drivers relating to the globalisation and localisation of the economy, corporate decentralisation and the growing importance to business of the quality of the local production environment. There is a parallel regionalisation of the regulatory capacity of the nation state with bodies such as Chambers of Commerce, and training agencies assuming a more significant role. Models of economic development now emphasise such concepts as “partnership governance”, the “soft” infra-structure underpinning development and the importance of “untraded interdependencies” between businesses within a locality (Amin and Thrift, 1994).

In terms of knowledge creation and exploitation there is a shift from what has been called “mode 1 knowledge creation” which is homogeneous, disciplinary and hierarchical to “mode 2 knowledge creation” which is non hierarchical, transient, trans-disciplinary and developed in the context of applications. (Porter, 1998) This involves a much closer relationship between the producers of new knowledge in universities and their partners in industry in a non-linear form of interaction, interaction which is most readily pursued at a local scale. Alongside corporate decentralisation this results in new local and regional clients for research and for graduates and a demand for work
based learning and tacit skills. In summary universities are expected to move on from playing a key role as “nation builders” to playing an active role in region building through partnership working. This perspective is most neatly summarised in the concept of the learning region. According to Richard Florida “to be effective in this increasingly global economy, regions must be defined by the same criteria and elements which comprise a knowledge intensive firm: continuous improvement, new ideas, knowledge creation and organisational learning. Regions must adopt the principles of knowledge creation and continuous learning: they must in effect become knowledge creating or learning regions”.

Similar perspectives underpin Michael Porter’s concept of the industrial cluster (Gibbons M. et al. 1994). This recognises that innovation is seldom isolated but is systemic with the industrial cluster acting as a reduced scale innovation system. Clusters encompass strategic alliances of universities, research institutes, knowledge intensive business services, bridging institutions and customers. Clusters success requires and encourages flows of talented individuals, including students and graduates, and the creation of vibrant and exciting places. My colleague David Charles has argued that universities can play a key role in the development of the famous Porter diamond (Figure 1). This takes place through science based discovery and new business formation; direct advise to firm to enhance the management capabilities; provision of skilled labour; acting as a consumer of specialist supplies; spreading knowledge to related industries down the supply chain and last but not least advice on policy and regulation to national and regional agencies. Within the cluster the university therefore assumes an entrepreneurial role and firms an academic dimension. The emphasis is on a spiral model of interaction using a variety of channels including research links (the creation of new knowledge); information transfer (selling existing knowledge) and people based transfer (students and staff) as well as the conventional spinout. In this model specialised centres and cluster discourse can provide a focus for both universities and the business community. It involves embedding engagement in the core business processes of both universities and industry.

Drawing on the learning region and cluster model of development suggests that regional engagement by the university must have a number of dimensions. First knowledge creation through research and its exploitation via technology transfer (spin out, IPR and consultancy). Second, knowledge transfer via teaching involving work based learning; graduate recruitment; professional development and continuing education. Third, students establishing the social relations on which knowledge exchange is built. Fourth, cultural and community development creating the milieu and social cohesion on which innovation depends. In summary, the university has a key
role in local civil society, joining up separate strands of national policy relating to learning and skills, research and innovation, culture and social inclusion.

Figure 2 attempts to summarise this perspective. The left hand part of the diagram refers to the three roles of the university (teaching, research and service to the community). The right hand part of the diagram summarises three key dimensions to regional development namely innovation, skills and cultural and community cohesion. Just as successful regional development requires the drawing of these three strands together so the university’s effective engagement with the region involves bringing together teaching, research and service to the community in a coherent manner and establishing effective mechanisms for bridging the boundary between the university and the region. Indeed the university as a broadly based institution can play a leading role in drawing together the separate strands of regional development. Hence its critical role in local civil society.
This focus on the university as a key regional institution providing a corporate response to regional needs poses severe challenges for the traditional university. This is a contested terrain within academia. The strong management that regional external engagement requires can be seen as a threat to academic self-governance. There are also connotations within the academic community of insularity and parochialism that could be associated with regional engagement. Moreover, it could imply an instrumental and innovation-endangering subordination to external expectations threatening the pursuit of knowledge for its own sake and with quality being sacrificed in the name of relevance. Similarly, critically challenging external views of society could be seen as being subordinated to serving external expectations. Finally, this could be seen as an agenda for some disciplines but not relevant to the university at large.

There are equally demanding challenges in relation to the world outside of academia in terms of the engagement of universities with their regions. Universities operate within multiple territories—local, regional, national, and international. In contrast many of their external stakeholders such as municipalities and regional authorities operate in closed territories. In terms of higher education policy, regional engagement throws into sharp relief the
normative question of the appropriate role of different institutions within a given territory – that is which institutions should teach and research what and where. This challenge could be seen as a potential threat to institutional autonomy. It also highlights the tension between national higher education, science and technology and regional policy and the development needs of the region. This is because the university’s potential role in territorial and development crosses the domains of separate national administrative spheres of responsibility. In short, it raises the question as to who in central Government is concerned with the role of a university in the development of a region as distinct from its location in a region.

This question in turn raises further challenges in relation to the role of universities in tackling problems of uneven development within national territories. The polarised nature of economic development in the “high tech” knowledge economy focusing on core regions and major cities is well known. Leading universities in these regions act as global players generating and transferring new knowledge. There is therefore an emerging global and national hierarchy of universities underpinning the hierarchy of cities and regions. In this situation new and established universities are being seen as “magic bullets” in tackling regional disparities. Just as in the limited case of science parks, too much expectation is being laid on universities to tackle problems of uneven development. The key challenge is one of establishing regional engaged universities with global standing to counter polarisation in the knowledge economy.

This emerging agenda of external engagement poses challenges for the profile and management of the traditional university. These have characteristically grown incrementally with some strong parts and some moderate elements but gaps in key areas relevant to regional development opportunities. Their governance structures usually support dispersal of responsibility, initiative and heterogeneity of substance in teaching and research. The emphasis is on disciplinary and producer led research and teaching and indeed a growing separation of these two domains. Insofar as external engagement is taking place, the academic heartland is protected by specialist units dealing with technology transfer and continuing education. However, the external engagement agenda outlined above requires institutional responses, co-ordination and transversal mechanisms. If the traditional university is to play an active role in regional development it must therefore initiate a process of institutional adjustment to enable it to both respond to and shape the development of the wider society. Such an adjustment is not necessarily a downgrading of aspirations to solely react to local needs but involves the creation of mechanisms linking the locality to the global body of scientific and cultural knowledge. Indeed local and regional engagement can become a crucible which a more dynamic university can be forged.
On Finland

Finland is actively engaged in further refining its already highly successful science and technology policies to ensure that universities and regions all contribute to national competitiveness. The arguments are clearly set out in the triennial review undertaken by the Science and Technology Policy Council entitled *Knowledge, Innovation and Internationalisation*.

The report notes the success of Finland “in combining extensive production and economic utilisation of knowledge and know-how with other aims, such as the promotion of welfare and sustainable development (p. 1). It notes “employment rates must be raised and regional development balance” (p. 1). More specifically it states:

“Education, science, technology and innovation policies must be able to support and also guide regional development to ensure that measures taken at the national and regional levels reinforce each other. The challenge is to raise the knowledge and know-how and their utilisation to a level which withstands international competition in all regions while further strengthening their natural strengths. The issue in terms of national higher education policy is to merge this and regional development policy together in a national and expedient way. The aim is to achieve internationally higher quality, and structural development is required to meet this goal. The danger in a decentralised higher education system is that it is dispersed into increasingly small and numerous units. Higher education units must be sufficiently large and versatile to achieve their aims. Universities must carry on defining their profiles, and small polytechnic units must be combined into larger multi-field entities.” (Science and Technology Policy Council, 2003, p. 32)

The Science and Technology Policy Council does however highlight the challenge for the universities themselves in participating in this agenda.

“One major question is how the university as an institution will be able to manage the pressures and growing expectations directed at it with regard to social, cultural and economic development – whether the university has the internal capacity for renewal needed to lighten its work load in the face of constant new challenges. The traditional mission of the university is to promote free research and scientific education and to provide higher education based on research. The burning question in today’s debate is how to include the duty to promote the utilisation of new knowledge in the Universities Act as the university’s third mission. This question arises from both the growing expectations directed at universities by the users and from the legislative issues involved in efforts to reconcile the university’s administrative culture, business and research ethics. The need to address these questions in tangible, because
the change taking place in universities’ mission and funding structure is systemic, shaking up the institution to its core”. (Ibid. p. 19)

“A new challenge for universities and the whole research system is to be able to combine in-depth specialised knowledge with versatile expertise for the benefit of users and in contract research and in joint projects with them. A question partly relating to this is the future of higher education on the whole: how its different parts will take shape jointly and separately. Universities must have the possibility and capability for organising their economy and administration in a way which will enable their actual operations to develop flexibly. Ultimately the question is how the university itself promotes the education of good teachers and competent researchers, their career prospects in the university and their recruitment outside the university. Success can be seen in the capacity of the university to create dynamic operational environments.” (Ibid. p. 37)

The Science and Technology Policy Council report has been quoted at length for two reasons. First, because it highlights how regional engagement, the third role of universities, and institutional management are inter-related. Second, because the quotations indicate the complex interplay between science and technology policy, higher education policy and regional development. Finnish science and technology policy has indeed developed a regional dimension, chiefly through the work of the Centres of Expertise; however, it is first and foremost a national policy implemented through universities and other institutions located in particular places. Likewise higher education policy is national; for example the universities in Eastern Finland, while founded in a period of re-distributive regional policy, have of necessity been establishing their national and international position in research and teaching. But at the same time they are being challenged to be active players in the development of their regions, arguably before the national policy framework for this activity has been sorted out.

How have these challenges been met at the level of the individual institution? As part of a comparison of the promotion of university interaction with business in Finland, Sweden and the United Kingdom, Copenhagen Business School conducted a case study within the University of Helsinki (Institute of Management, Politics and Philosophy, Copenhagen Business School, 2004). The researchers conclude:

“In this case study all the elements for a successful commercialisation of research results were present. National policies were favourable, public funding for R&D, as well as for capital investment was provided. The central management of University of Helsinki was keen to promote commercialisation of its research and had started already in 1997 formulating its policies and creating entrepreneurial support structures.
Finally, an internationally renowned academic had developed a research programme with strong commercial potential, and had a dedicated group with her, determined to bring their research to market. Yet, the process of spinning out the company was everything but smooth. The difficulties and conflicts described in the case study should not be seen as exceptional; as merely an incidental conflict between two individuals with dislike for each other. On the contrary, the two persons (head of department and research group leader) embody each their rationality, and their conflict is the conflict of those two rationalities, played out in the everyday life of a university department. It is the rationality of academic entrepreneurship against the rationality of academic purity. At present, they each have their own policy patron: science and technology policy on one side, and higher education policy on the other side. Policy-makers need to resolve this opposition. Fundamentally, policy-makers need to rethink the rationality of academic purity. Why is it that an entrepreneurial researcher should not use university resources and thus indirectly taxpayers money to establish a spin-out company. What’s the moral difference between using taxpayers money to fund industrial R&D (through Tekes), and using them to fund the commercialisation of research in universities? Why is the latter inappropriate and the former not? We talk so much about the knowledge economy, about research-based innovation etc., but how are these ideals and visions to materialise, when the only actors whom we seemingly cannot permit to benefit from it – the universities and their researchers – are the ones we expect to run with the ball?”

In their review of international best practice, the Copenhagen Business School stress that “a key component of the Finnish approach has been a high degree of integration of policy making across a number of key policy areas, including science, innovation, industrial and economic policies. There is, however, in this co-ordinated policy making, a missing link: namely higher education policy”. They note that the Ministry of Education guidelines for how universities should generate research based entrepreneurship embody “fundamental ambiguities” (Box 1).

The researchers conclude:

“That university entrepreneurship is on one hand encouraged, and on the other hand illegalised: university funds should not be used for new business activities and entrepreneurship activities should not compete with teaching and research as the prime activities of universities. Universities are encouraged to promote research-based entrepreneurship, but it is also made clear that any substantial allocation of funds and/or resources in terms of working hours is illegal. This construal of a fundamental opposition and conflict of interest between the traditional
missions of universities – research and education – and the new third mission – promoting the utilisation of new knowledge and contributing to the economy – is highly problematic. Framed in this manner, university entrepreneurship seems to be alienated from the outset, rather than being taken as a truly a new mission for universities.”

On Turku

How has Turku University responded to the general and specific challenge that I have outlined? Significantly, under the aegis of the Finnish Higher Education Evaluation Council, it has undertaken two self evaluations and international peer reviews focussed on its external engagement. (Goddard et al., 2000, 2003) The response of the Rector to the follow up peer review
highlights the tensions in higher education policy that I have already outlined at the level of the individual institution. He writes:

“Here at Turku University we are experiencing every day these growing demands. It would be fine if we would receive more funds accordingly. It also would be fine if we could discontinue some not so important activities. This is not easy because of the historical burden (‘that and that discipline has always been here’). The new University Law which should become effective in 2005 favours clearly the entrepreneurial aspect or the third task of the universities – even too much from a comprehensive university’s, like Turku University, point of view. There are some good suggestions (like permitting the universities to act as shareholders and to manage funds which are not directly in the university budget, etc.).”

“Having said this, the University of Turku, has other duties than the third task alone. Internationalisation, together with the high quality of research and teaching, is crucial for our external impact also in our own region.”

“Consequently the long term basic/core funding must form the basis for creating dynamic operational environments. If there could be some improvement in the future the University itself as well as the Rector and others should have courage to channel those funds innovatively – and not automatically based on ‘historical reality’. However this requires greater autonomy for the University. The Finnish Universities’ Rectors’ Council has for some time requested more economic autonomy for the universities and there are some fairly modest steps toward that goal in the new University Law draft.”

Following the suggestion of the initial peer review, the university established a University Research Council to have oversight of its research strategy and policies relevant to the management of financial, human and physical resources to support research. It was recommended that the council should not be a top down planning body but ensures that the conditions are right to foster entrepreneurial research based activities in all the faculties and supported by all parts of the central administration. A key task of the Council was to generate “headroom” funds to invest in strategic initiatives to fill the pipeline that would generate new economic activity, including the retention of key researchers.

In practice it has not been possible to create this headroom funding. The inter-relationship between the externally funded activities with the academic heartland of the university, including issues of strategic financial and human resource management remain a challenge in relation to the maintenance of the research infra-structure, selective funding of areas of strength and addressing administrative barriers to inter-disciplinary research. As in most research intensive universities work with industry and commerce is done by individual
units each marketing their own specialist capabilities. These units are insufficiently networked to share systemically information about firm needs and maximising the scope for collaboration in meeting these needs. Support for industry through work based learning, technology transfer and continuing professional development and generally shaping the business environment within South West Finland remains to be co-ordinated across the whole institution. Indeed the peer review team were told in their first visit that the success of Bio City Turku and Turku Centre for Biotechnology are in part because they are outside the normal administrative procedures of the universities.

On the United Kingdom

There are both similarities and differences between the United Kingdom and Finland. Both are highly successful in terms of the quality of their scientific output measured in terms of citation indices and both are concerned about the return to the economy from the investment in university based research. For example, the UK Treasury commissioned a major review of Business – University Collaboration (The Lambert Review, Lambert, 2004). Both are highly centralised countries in terms of economic development but with universities expected to play a key role in the more peripheral regions. The degree of autonomy of institutions and explicit Government support for external engagement is much greater in the United Kingdom, although even here there is some ambiguity about the role of universities in contributing to more balanced development.

To be more specific the Higher Education Funding Council for England provides a funding stream to support third stand activities, currently labelled the HEIF under which funds are awarded to individual institutions on a competitive basis. The Lambert Review recommended that:

“Third stream funding should be substantial, permanent and allocated in a way that enables universities to make long term plans for these activities.”

“Third stream funding support regional shared services in technology transfer.”

“Increase in the level of proof of concept funding.”

“Give Regional Development Agencies targets that promote business – university collaboration.”

“Create a significant new stream of business relevant research funding.”

This last recommendation is particularly significant as third stream funding is dwarfed by funding provided to support research excellence determined by peer review through the national Research Assessment Exercise (RAE). This funding is heavily concentrated in London and the South East region with four institutions (Oxford, Cambridge, Imperial College London and University College
London) receiving one third of the funding from this source. Other funding, for example for research infrastructure and from the research councils, parallels these allocations. More significantly, the allocation of HEIF funding does not recognise that universities in the peripheral regions face a greater challenge in knowledge exploitation than those in the South of the country. In short, while the higher education policy environment supports autonomous institutions to become engaged in knowledge exploitation, it does not recognise that universities have a role in tackling problems of uneven development.

In contrast to the area of higher education, the United Kingdom does have a regional policy sponsored by the industry and territorial ministries. Regional Development Agencies are funded differentially to recognise regional disparities. In response to a Treasury review of these disparities the agencies responsible for the three Northern Regions have launched an initiative entitled “The Northern Way” in which the universities are playing a leading role through their regional associations. As an initial contribution to the Northern Way agenda, the three Northern higher education associations identified eighteen proposals for consideration as a potential pan regional imitative (Appendix 1).

Three main areas have now been prioritised where additional resources would have most significant impact on Northern economic development – the Northern Science Initiative: Centres of Professional excellence and Higher Level Skills Enhancement. How this collaborative initiative will pan out in the higher education policy environment which foster competition between institutions regardless of their locations, remains an open question.

**On Newcastle**

I will end with some reference to my own institution, which has many parallels with Turku. It is a research intensive university with a medical school that had its roots in the local economy but has successfully become a national and global institution. It is now seeking to re-engage with the city and the region. Restructuring designed to raise its competitive position globally has had a strong local component. A revised mission statement is to be “A world class research led educational institution playing a leading role in the economic, social and cultural development of the North East of England”. A significant restructuring of the university faculties and departments has taken place to introduce greater clarity in the academic management hierarchy and to ensure an ability to respond corporately to the needs of business and the community.

The university has a comprehensive business development strategy with the following five themes:

1. Enhancing devolved business development to embed third strand activity in three new faculties.
2. Enhancing the commercialisation of intellectual property through specialist advice.

3. Developing consultancy, commercial services and continuing professional development.

4. Building collaborative links in technology transfer with other universities in the region.

5. Creating enterprising staff and students by developments within the curriculum and work with alumni.

One of the faculties, Science, Agriculture and Engineering has undertaken a mapping of its research strength into the five Centres of Excellence in knowledge exploitation established by the Regional Development Agency as part of its Regional Economic Strategy (Figure 3). These centres aim to link actual and potential strengths in the regional economy with the research base and embrace:

- Digital technology and media.
- New and renewable energy.
- Process industries.
- Nanotechnology, photonics and micro systems.
- Life sciences.

Figure 3. University of Newcastle Faculty of Science, Agriculture and Engineering

<table>
<thead>
<tr>
<th>20 strong groups</th>
<th>Alignments</th>
<th>Really distinctive large-scale themes</th>
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<tbody>
<tr>
<td>Water</td>
<td>New and renewables</td>
<td>Engineering Biology</td>
</tr>
<tr>
<td>Responsive processing</td>
<td>Life</td>
<td>Major sequencing Centre</td>
</tr>
<tr>
<td>Neuroecology</td>
<td>Nano, photonics, microsystems</td>
<td>Proteomics 2</td>
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<tr>
<td>Nanotechnology</td>
<td>Process</td>
<td>PINS</td>
</tr>
<tr>
<td>Fossil fuels</td>
<td>Digital media</td>
<td>Protein Xog</td>
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<td>Tesco Centre</td>
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<td>Screening technology</td>
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<td>CRE</td>
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<td>Molecular photonics</td>
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<tr>
<td>Microbial ecology and technology</td>
<td></td>
<td>Pele Science Centre/Conference suite</td>
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<td>Gene-environment systems</td>
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<td>Computational biology</td>
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<td>Dependability</td>
<td>NBS</td>
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<td>Distributed systems</td>
<td>Offshore</td>
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<tr>
<td>Power electrics</td>
<td>Rural development</td>
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<td>Comms/signals</td>
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<td>VLSI/microsystems</td>
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<td>Marine technology</td>
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<td>Environmental engineering</td>
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<td>Drug design</td>
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<tr>
<td>Molecular photonics</td>
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<td>Electrochemistry and fuel cells</td>
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Source: Author.
The faculty’s research strategy is to ensure a coherent programme of long term R&D on major themes that will fill the pipeline of knowledge exploitation into the future. A further key strategy is bringing interaction with business onto the university campus. This is well exemplified by the Institute of Nanoscale Science and Technology (INSAT) and its commercial arm (INEX). The key elements in the INEX strategy are:

- Providing external users from industry, academia and government with access to a dedicated bio-hybrid and micro-nanofabrication facility (cf. “embedded teams”).
- Employing a dedicated team drawn from industry to run and manage the facility.
- Mapping INSAT capabilities with industrial needs.
- Providing continual professional development courses (from short two-day highly specialised programmes to longer courses).
- Setting up as a one-stop shop for licensing and investment opportunities.
- Acting as a focal point for academic staff to exploit their investigations and developments.

In reviewing the university’s strategy and comparing it with a more conventional science park in Copenhagen (Symbion) the Copenhagen Business School concludes:

“The danger is, in brief, that by building intermediary institutions such as Symbion, we may in fact institutionalise and cement a low interaction between higher education institutions and industry. By creating these intermediary institutions we produce the illusion of bridging the gap between science and economy, while in fact such intermediaries contribute significantly to keeping the institutions of science and economy apart. This brings us to the key strength of the Newcastle model. Here the vision is not to transfer certain research results with particular commercial potential from the university to the regional economy, rather it is to make the university itself an active player in the regional economy, in other words to place the university ‘at the heart of the regional economy’. A fundamental difference between this and the traditional model is that the latter is tailored to help commercialise research, whereas the Newcastle model seeks to build an institution that is capable of producing commercialisable research. The traditional model is tailored to help new entrepreneurs commercialise research-based technologies, while the Newcastle model seeks to make entrepreneurs of students and commercialisable technologies of research.”

However this agenda is not without its problems. For example, the Centres for Excellence is supported by the RDA have their own targets and run
INSTITUTIONAL MANAGEMENT AND ENGAGEMENT WITH THE KNOWLEDGE SOCIETY

the risk of a problem identified by the OECD in its 2002 review of the UK Science and Technology Base namely:

“A relatively large infrastructure of intermediate organisations has developed in response to successive initiatives [...] the issue at stake is whether excessive emphasis on specialist transfer agencies could monopolise knowledge flows and act as a barrier to the creation of a positive knowledge culture diffused throughout the industry – science nexus. In other words, is there a risk of consigning industry science relations to peripheral units.” (OECD, 2002)

Conclusion

In this presentation I have concentrated on knowledge exploitation from scientific research and have said little about the role of teaching and the contribution of the social sciences and humanities. One of the most successful schemes for technology transfer in the United Kingdom has been the Teaching Company Scheme under which postgraduate students work 50/50 between the university and the partner company. Many universities have workplacement schemes as part of their teaching programmes and many run modules to develop enterprise skills. Some have developed student volunteering programmes to support the community and voluntary sector. And last but not least many play an active role in the local arts and cultural arena, ensuring the universities contribute to the creation of vibrant places that attract and retain innovative people.

The very breadth of this agenda makes it a challenging one for university managers and external funders. It crosses the functional portfolios of vice rectors and interacts with the concerns of a wide range of external stakeholders. Many of the areas have no obvious performance metrics nor is the impact of external engagement on the bottom line of the university accounts obvious in the short run. But if in the long run universities are to continue to act as key institutions in civil society their managers must come to grips with the need to actively engage with the economic, social and cultural development agendas of their communities.

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References


APPENDIX 1

Northern Universities proposed contributions to the “Northern Way” agenda

1. Identifying and sharing best practice in HE interaction with their host towns and cities; for example in:
   - Estate strategies.
   - Student and staff volunteering in local communities.
   - Sharing of facilities (cultural, sports etc.) with a view to developing enhanced engagement.

2. The identification of the potential capital projects in HEIs in the North with specific urban regeneration benefits.

3. Identifying and sharing best practice in HE interaction with, and support of rural regeneration; for example in:
   - The development of satellite campuses.
   - Institutional collaboration.
   - FE/HE partnerships.
   - Virtual delivery.

4. To consider the most effective ways of promoting and developing science within the northern HEIs in support of northern economic development, including:
   - Reviewing the effectiveness of existing arrangements.
   - Analysing the merits of a single northern science and industry council.
   - Arrangements for direct interaction between HEIs and industry, for example with a view to secondments.
   - Promotion of existing HEI centres of excellence to business.

5. To consider mechanisms for optimising the knowledge transfer from northern HEIs to the business, public, community and voluntary sectors across the whole of the North in relation to culture, social and economic science, health and humanities, and for developing this knowledge base in response to the needs of the North.
6. To foster an increased number of collaborations between researchers across the northern region, building on the existing areas of collaboration and institutional research development strategies, with the objective of:
   ● Increasing a proportion of research council funding going to the northern HEIs.
   ● Increasing the value of public sector voluntary and business sector research contracts based with northern HEIs.
   ● Assisting the development of world class expertise in emerging research areas across the whole of the northern HEI community.

7. Partial integration of knowledge brokerage services in the three regions. This would be particularly effective in enhancing the brokerage support available to SMEs in “border areas” and to produce a wider range of specialist services on offer.

8. Establishing a northern strategic futures task force to map and measure strategic futures for the economic, technological, social and cultural development of the North, and which mobilises HEI expertise relevant to specific initiatives (e.g. in Transport).

9. HEIs and RDAs jointly review the role of higher education in cluster development in the North with a view to sharing good practice and identifying opportunities for more specialised cross regional knowledge transfer mechanisms in key areas (e.g. chemicals, ICTs, tourism etc.).

10. A follow on to the Cambridge MIT initiative run by a consortium of northern HEIs focusing on sharing best practice in supporting graduate enterprise. This should be linked to active programmes for retaining graduates in the North and recruiting alumni to return to the North.

11. A task force of HEIs and city and regional marketing experts is convened to explore the possibility of pooling expertise and resources in marketing higher education centres across the North.

12. The partial integration of northern HE placement schemes.

13. HEIs in the North seek support from national and regional stakeholders to undertake a baseline study of pathways through FE into HE and the labour market with a view to long term monitoring to identify key gaps in provision and barriers to progression.

14. HEIs to jointly consider HE “cold spot areas” (including subject cold spots) across the North and mechanisms to address these.
15. To increase co-operation between teacher training institutions across the three regions with the objective of:
   - Increasing the number of teachers trained and retained in the North.
   - Enhancing teacher supply in areas of social deprivation.
   - Maximising the impact on new subject development into classroom practice (building on initiatives such as the National Science Learning Centre).

16. The northern RHEAs should review the consequences of the potential loss of structural funds and measures that might be introduced in mitigation with appropriate regional stakeholders.

17. Maximise northern interaction with European non structural agendas, in particular the Regions of Knowledge Initiative, to produce a cluster of regions in the North at the leading edge of development in relation to:
   - The development of regional research capability.
   - Use of framework funds.
   - Mobility funds.

18. The Northern Higher Education Associations should come forward with a costed proposal to take forward investigations into endorsed proposals for the HE contribution to the Northern Way.
Constructing Advantage in the Knowledge Society
Roles of Universities Reconsidered:
The case of Japan

by
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Based on an analysis of policy contexts in several OECD countries, this article examines the rapidly changing policy environment in Japan exemplified by the 2004 transformation of national universities into “incorporated” entities. The role of universities in the knowledge society is examined in light of the emergence of new research and learning systems, conditioned by forces of both globalisation and regionalisation. This historic legal change affects state-university relations in a number of distinctive ways. It is generally assumed that universities will find themselves in a more competitive environment accompanied by cuts in public funding and that there will, therefore, be a growing need to find external sources of funding as well as more efficient and responsive management approaches. The Japanese Government is further opening the higher education system to society and industry, which has resulted in new forms of competition and collaboration among local and global strategic partnerships. The impact of these new relationships can be perceived in four principal dimensions: economy, human resource, governance and community. Based on the conceptual notion of “constructed advantage”, this paper highlights spatial knowledge networking capabilities between institutions/agents at local, national and global levels. Universities are formulating new strategies in networking knowledge, whilst future state policy and evaluation mechanisms warrant close investigation.
Introduction

This article examines the changing university-society relationships in Japan, set against the worldwide transformation of public and private institutional landscapes. The role of universities is re-examined in light of current reforms in national governance and funding systems, which serve to induce new innovation and learning systems. The impact of these new university-society relationships, conditioned by forces of both globalisation and regionalisation, can be considered in terms of four principal dimensions: economy, human resource, governance and community. In evaluating these impacts, however, important theoretical questions remain as to the operation of power relationships between policy institutions at the trans-national, national and local levels and how agents (central and local governments, universities and their stakeholders) interact and re-construct policy environments. Such institutional processes are embedded in historical and cultural contexts. This article sets these issues within the specific, contemporary context of Japan.

This article is organized in four principal parts. Following the introduction, the second part provides overviews of current higher education policy trends found in several OECD countries. The third part examines higher education reform currently underway in Japan with an eye to historical and comparative perspectives. New strategic partnerships and alliances at local as well as international levels are illustrated. The fourth part of the article focuses particularly on new missions and strategies for universities, namely, regional missions and university-business links. The article concludes by arguing that whilst the Japanese higher education system as a whole faces diverse challenges such as global competition and growing regional needs, future state policy directions, and in particular, its evaluation mechanisms are in need of closer investigation. For individuals and agencies concerned with policy evaluation, a formidable task lays ahead given the complexity of synthesising global forces, national jurisdiction, and diverse regional needs.

International policy contexts and issues

In recent years, there has been a growing academic and general consensus regarding the notion of a “knowledge society” (Drucker, 1994; Stehr, 1994). In his trilogy on the emergence of the network society, Castells argues that informational capitalism signals the importance of innovation,
knowledge and learning in a globalising, rapidly evolving economy (Castells, 1996). There is also a growing political consensus at international, national and increasingly at regional and local levels, as to the importance of knowledge and learning. On a global scale, the OECD claims that “knowledge and the way we use it are becoming central to our prosperity and success as societies” (OECD, 1996: p. 14 original emphasis; also see OECD, 2001). The World Bank (1998) has adopted “Knowledge is development” as its recent theme in the World Development Report. Jacques Delors’ report to UNESCO talks of “a learning society founded on the acquisition, renewal and use of knowledge” (Delors, 1996, p. 24).

Learning, that is the accumulation and application of knowledge, appears as the driving force behind the increases in efficiency leading to economic growth. Along this line of thinking, questions are raised about the role played by institutions, such as firms and universities, as well as the suitability of traditional management methods and public policies, given “the uneven distribution of risks and rewards” (Reich, 1997, cited by Benneworth and Charles, 2004) in the emerging knowledge society or knowledge economy. Recently, policy communities in many countries have come to view universities as the knowledge base at the heart of the knowledge economy. Estkowitz and Leydesdorff, (1997) termed this “a triple helix model” of university-industry-government relations.

The contribution of higher education to the economies, prestige and standing of nations is rapidly transforming the higher education system into a competitive market place, placing unprecedented emphasis on research as a key engine for driving the knowledge economy (Connell, 2004; Hazelkorn, 2004). Consequently, the purpose of universities’ research has become consolidated around a heavily instrumentalist economic discourse, with the sole rationale of raising national competitiveness through improving the science base (Henkel and Little, 1999). Combined with public ambivalence towards public expenditure and pressures for more effective management approaches, governments are asking if the existing structure and funding of higher educational systems is appropriate or sustainable, perceiving the state of higher education being arguably “on the edge” (OECD/HEFCE, 2004).

In light of this, there seems to be little rigorous methodological effort to seek consensus as to policy and institutional changes taking place. Whilst case studies and anecdotal evidence on success factors in managing these relationships, mostly at an institutional level, are accumulating (e.g. Clark, 1998, 2004; Shattock, 2003), national governments find it difficult to relate these individual institutional experiences to their own policy concerns (OECD, 2002, p. 17). Only a limited number of studies have rigorously examined the relationships between government policies and university-society linkages in relation to the strategies and policies of universities, especially considering
the geographical dimension of their institutional activities (Boucher et al., 2003). There also seems to be methodological contention concerning the evaluation of the outcome of those activities (Molas-Gallart, 2002). The following sections examine these issues in relation to the Japanese higher education reform agendas.

**Japanese higher education reforms**

This section reviews the wave of current structural changes sweeping over the higher education system in Japan and considers the consequences for university-society relationships at large. As of 2000, the current Japanese government's expenditure on higher education against GNP is the lowest compared to other OECD countries (OECD, 2000). The degree of financial burden on students and families in higher education in Japan is higher than in the United States and Europe. It is also interesting to note that the Japanese government supports a significantly smaller proportion of higher education institutions (HEIs) than the US government does for its public institutions (Asonuma, 2002).

Common themes in the OECD countries identified by the OECD/IMHE Study Group on Evaluation (Dahlöf et al., 1991) more than a decade ago, namely, deregulation, accountability, higher education as a crucial economic resource, and internationalisation, are now applied to Japan's current reforms (Kitamura, 1997; Murasawa, 2002). The paragraphs below review these themes as faced by Japanese universities in turn, showing that all four are intertwined in the current higher education reform agendas, affecting new institutional choices, strategies and responsibilities.

**Incorporatisation, de-regulation and new forms of accountability**

Since the Koizumi government took office in 2001, educational reform towards economic and industrial policy objectives has been greatly accelerated. As of April 2004, all national Japanese universities were transformed to “incorporate status”.2 Kaneko (2004) indicates that current reforms in Japan are bringing forth fundamental changes to the institutional governance structures of national universities, affecting the entire higher education system which has hitherto been characterised as a traditional “State-Facility model”. The Ministry of Education, Culture, Sports, Science and Technology (MEXT) has promoted assessment and evaluation in universities with new instruments to assure accountability in the system.3

The block grant system was introduced to the national universities by the government in 2000, and each university has been encouraged to set institutional objectives through an internal and external evaluation process (Yonezawa, 2003a). Following their incorporatisation, universities are obliged
to formulate six year plans and objectives, the implementation of which is assessed by the National Institute of Academic Degrees and University Evaluation (NIAD-UE). The overall budget allocated from MEXT will be based on the results of these assessments. Having conducted trial assessment exercises from 2001 to 2004, observers have criticised the exercises as entailing excessive time and cost (Harayama, 2003; Kaneko, 2004). Hence, opinions differ as to whether or not current reforms lead to de-regulation or create an accountability burden or even further, new forms of re-regulation.

**Globalisation and internationalisation of higher education in Japan**

The globalisation of the Japanese higher education system can be understood as inducing internationalisation through new students markets, governance structures and increased opportunities for Japanese universities to form international alliances. The Government is also responding by facilitating the global higher education market. Recently, the Japanese government recognised provisions of foreign universities operating in Japan, and has also taken steps to assure the quality of overseas programmes provided by Japanese universities (MEXT, 2004; Omori, 2004).

In terms of the student market, new private universities are finding new opportunities in the global market to attract more foreign students. Some universities and schools have actively introduced courses based on the internationalised curriculum taught in English sometimes by international staff. An eminent example is Ritsumeikan-Asia Pacific University, a newly established private university which attracts about half of its students from abroad (Yonezawa, 2003a). Nevertheless, there are universities which have been criticized as they admit too many foreign students mainly because they cannot attract enough Japanese students.

Internationalisation of higher education is creating international strategic spatial networks of institutions (Beerkens, 2002). There are different forms of international alliances of universities in which Japanese universities are now entering. For example, the University of Tokyo is making alliances with Beijing University and Seoul National University, creating a network of leading national research universities in East Asia. Kyushu University has made explicit international strategies linking up with Asian nations. Asian University Presidents’ Meeting was initiated by Kyushu University in 2000 promoting strategic research collaboration and student exchanges with institutions in Asian countries.

Other international alliances are more industry oriented, including universities, science parks and local industrial partners. For example, Kyushu University, since its incorporation, has made an alliance agreement with Development Bank of Japan. The university and the Development Bank are
working together on developing strategic international collaborations encompassing Asian nations including Kyushu region in Japan, Shanghai area in China, and Shinchu high-tech area in Chinese Taipei. A new model of university-government-industry alliances, inter-cluster networking and entrepreneurship in Asia may be constructed (Kitagawa, 2005).

**New research system and higher education as a crucial economic resource**

The Japanese research system in general has undergone rapid transformation recently. In 1995, with the passing of the Science and Technology Basic Law by the Japanese Parliament, the first Science and Technology Basic Plan (1996-2000) was formed, which emphasised the increase in Science and Technology budget and enforced links between universities and industry. Between FY 2001-2005, JPY 24 trillion are to be spent on science and technology, assuming 1% of GDP and 3.5% of nominal GDP rate.

So far, most national universities can be arguably considered as “research universities”. There are a few research-intensive prestigious private universities in Japan, whilst a large number of private institutions tend to focus on teaching. Eighty per cent of Grants-in-Aid for Scientific Research were distributed to national universities in FY 1999 (Asonuma, 2002). Since the beginning of the 1990s, the Japanese university reform has reinforced the differentiation between institutions. New types of budgetary funds and research funds established during the 1990s served to strengthen competition among national universities (Asonuma, 2002). Research budgets continued to increase, giving advantage to older research-oriented universities. Furthermore, recent provisions for funding research excellence may indicate a gradual, new polarisation between “research intensive” versus “less research intensive” universities in the Japanese higher education system.

The Government is seeking to establish “world class universities” by creating a mechanism for differentiated financial allocation which is justifiable to both universities and society. In 2001, MEXT introduced the idea of “Top 30 universities towards global top standards”, which was later to be renamed as the “Center of Excellence in the 21 century” (COE 21) scheme. The COE 21 scheme can be seen as a “trial in performance funding” (Yonezawa, 2003b, p. 19). The scheme has had an impact not only on national but also on private and public (prefectural and municipal owned) institutions because the Ministry gave both sectors the opportunity to participate in the scheme.

The development of a new research system is leading to the emergence of new systems of innovation in Japan in which universities play significant roles as economic resources. MEXT has created a budgeting scheme whereby national universities promoting university-industry co-operation and
patenting can be allocated additional funds (OECD, 2003). To further open the university system to society, a law prohibiting the exchange of personnel between universities and industry was amended, which allowed national university faculty members to conduct research or work as consultants with private companies. The development of Japanese university-industry collaboration since the late 1990s has become characterised by a growing co-operation between the two ministries, namely, METI (The Ministry of Economy, Trade and Industry, reorganised in 2001 from MITI) and MEXT, especially with regard to strengthening Intellectual Property strategies and local industrial cluster strategies. For example, a law for promoting a university-industry technology transfer (1998) was jointly prepared by MITI and MEXT in order to provide a legal basis to facilitate the technology transfer from universities to industries (see the following section for more discussion).

New missions, responsibilities, strategic partnerships for constructed advantage in the knowledge society

The aforementioned, recent transformation of the higher education system in Japan brings fundamental questions to the fore. Is the higher education system being fundamentally transformed with current policy reforms in mind, and if so, how does this affect the governance and management strategies of universities? What criteria can be used to assess the scope of universities’ activities? This section particularly concerns new missions and responsibilities for institutions, and structural issues surrounding knowledge flows and relationship building between universities and their partners in the knowledge society. Analytical cases are drawn from Japanese contexts, but many of the policy issues are shared by other OECD countries.

Two interconnected aspects concerning policy dimensions can be identified: 1) the practice of policy formulation and the primacy of agents; and 2) the capacity and the means to deliver policy (Lawton Smith et al., 2002). In terms of policy impact and responses, the operation of power relationships between policy institutions at the international, national and local levels and how other agents (e.g. universities and their stakeholders) interact warrants close attention. The notion of “constructed advantage” is proposed here which is based on the “spatial knowledge networking capabilities” between institutions/agents at local, national and global levels. The impact of these new relationships can be captured in terms of four principal dimensions: economy, human resource, new forms of governance and links with community (Cooke, 2004).

Below, based on the current Japanese policy environment in which these four dimensions of impacts are identified, attention is drawn to the strategic roles played by universities at the regional level as well as growing university-
business links and the constraints of current policy frameworks. This sheds light on wider links between research, education and knowledge transfer, which have to be enhanced in building up new relationships in society.

**Third mission and knowledge transfer**

As previously mentioned, university-industry collaboration has been promoted by recent policy initiatives in Japan. For example, the government has been supporting new spin-off company creation from universities by deregulation and by providing subsidies to R&D activities. In 2001, the Hiranuma Plan, aimed at increasing “venture businesses born in universities”, was launched, targeting to “create 1 000 [businesses] within three years”. In terms of possible evaluation criteria of the industrial competitiveness of university activities, discussions have only just begun (METI, 2003). As has been discussed in other national contexts (University of Cambridge Business Information Services, 2002), there is a danger in simplifying the third stream activities, and associating these activities and funding with “easy-to-measure” features such as spin-off firms or technology transfer at the expense of the many other forms of interaction between universities and society. A longer-term perspective should be taken, following the stages of development of these firms in order to make sense of the statistics.

Growing “triple helix” university-industry-government links are reflected in the current composition of governance bodies of “incorporated” national universities. Each university has a management council responsible for deciding administrative policy, and an education and research council in charge of overseeing academic activities. Management councils have jurisdiction over personnel and accounting policies, comprising the key pillar of the universities’ management organs. More than half the members of management councils are legally required to come from outside the university sector, and most universities have placed between five and twelve non-academic personnel on their councils, many of whom are from the business sector, former officials from private universities and former government ministers (The Yomiuri Shinbun, 27 March 2004).

As a corporate body, universities can now own and manage their intellectual property rights (IPRs). Twenty-seven Technology Licensing Organisations (TLOs) were established as of April 2002. The number of filed patent applications, patent grants, and licensing and option contracts all grew as a result of these government efforts. Furthermore, since 2003, 43 universities have received financial support from the government to set up “Headquarters for Strategic IP Management” so that each institution can deliver its own policy for income generation based on their IPRs. In practice, many institutions have difficulties in setting appropriate mechanisms linking university departments, TLOs and such new IP offices, and also in attracting
human resources (e.g. academics with industrial experiences, IP managers, industrial liaison officers).

The notion of university-industry links need to be considered with a broader vision than at present. For universities, new institutional mechanisms such as TLOs and IP strategy offices will have to be strategically positioned within the overall structure, strategies and budgeting of each university. The responsibility of the TLO so far is exclusively concerned with the management of IPs, and the need for the extension of service coverage to such activities as a liaison function and supporting incubator facilities is seen as essential. The existing informal links that university researchers have nurtured with industry, community, and society at large, warrant more attention. Another key for success is to recognise and support career paths of academic staff who engage in entrepreneurial activities.

It is important to recognise that institutional differences between countries require different generic models (Cooke et al., 2000), and that spin-offs and science parks are only one aspect of academic entrepreneurial activities. Intellectual property commercialisation is only one aspect of the wider institutional picture. Furthermore, only a small fraction of the flow of knowledge from universities to industry is mediated by formal licensing agreements involving university-generated patents. University-business links are only partly responsible for spurring an acceleration of innovation; benefits that can be expected from university-business cooperation are rather small and of varying effects, depending on the sector in question.

The widely observed, recent enthusiasm for promotion of these links by setting up TLOs and other formal mechanisms in Japan may need to be tempered with more realistic expectations (Branstetter, 2004). Japan has taken the “US model” with emphasis on licensing and start-ups from universities for economic growth while, especially in local contexts, it has tended to underestimate the role of existing informal links between universities and business. Pechter (2001) argues that “the particular direction of reform is perhaps unjustifiably towards the American university-industry policy framework” (p. 4). He suggests that for Japanese policy makers, rather than making mostly bilateral comparisons with the United States, multilateral national comparisons may be equally important and perhaps even more relevant to Japan’s policy formulation.

**Setting wider agendas**

One of the most important functions played by universities in the innovation and learning system in the knowledge society is to provide graduates. Universities have traditionally produced graduates for a national labour market dominated by large employers with little concern for small and
medium enterprises (SMEs) or graduate retention in local labour markets. This model has begun to break down in many OECD countries in response to changing patterns of employer demands, such as the decentralisation of large corporations into clusters of smaller business units and the greater role of smaller businesses as sub-contractors, suppliers, franchisees (Charles, 2003). Such a trend has only started in Japan. A shift in the university system with more emphasis on “quality and research at the graduate level” (Kodama and Branscomb, 1999, p. 13) has been observed (see also Clark, 1995; Ushiogi, 1997). Morgan (2003) observed high rates of returns for Japanese R&D investment in graduate students.

In relation to the concept of governance of knowledge production in the knowledge society, close attention needs to be drawn to the uneven economic, human resources and institutional infrastructures within the national innovation and learning systems. Japan has been known as a highly centralised country with a high concentration of R&D in the Tokyo metropolitan area, and the higher education system has been hitherto centralised. The range of science and technology policies at local level varies, depending on each local authority. Policy instruments may be needed with consideration of an appropriate spatial level of partnerships and alliances of government, universities and private sector, for constructing advantage in the knowledge economy.

**Regional links**

A range of states such as Norway, Australia, Finland, the United States, the United Kingdom, and, to some extent, Japan, have long used universities as a means of delivering regional policies (OECD/IMHE, 1999). More recently, globally, regions are seen as vital resources for universities and a growing number of public agencies concerned with local and regional development are looking to universities to play a key role, and more importantly, have financial resources at their disposal to encourage the “localisation of universities” (Goddard, 1997, p. 24). Goddard and Chatterton (1999, p. 686) see the recent globalisation of economic activities as one of the push factors for the “emergence of new territorial development dynamics” in which universities can play a crucial role.

A recent legal change in Japan may affect the geographical dimension of the university-society relationships: Incorporate status universities can now receive financial support from local authorities, which was prohibited in the past when they were national institutions. This may trigger new relationships between universities and their localities, as there will be more financial incentives for universities to work closely with their surrounding regions. However, it has been pointed out that under the current financial constraints of the local public sector, most of the local funds will still flow into the public
universities as before, rather than resources being diverted to former national universities. In other words, there may be growing competition between former national, public and even private universities for the scarce resources in their respective localities.

As mentioned above, both MEXT and METI have initiated local cluster development strategies, and universities are seen to be the critical actors in the local development processes. Since FY 2002, MEXT has provided incentive funding to encourage national universities to work closely with their localities, and the scheme has now been extended to cover private universities. The pump funding has helped build initial infrastructure in each locality forging partnerships between universities, local authorities and support organisations. Since 2004, another MEXT excellence funding scheme, called the Support Programme for Good Practice in Teaching at HEIs (GP) includes “collaboration with regions and society” as a priority area for competition. This is noteworthy, combining excellence in teaching and relevance in society as incentives for institutions to take new responsibilities in society. These incentives only work when there are robust bottom-up initiatives and practices based on shared visions and institutional and local identities.

From a strategic point of view, universities will have to find the complementarity of the range of activities at different institutions (e.g. vocational/training institutions; private and public research providers) given the limited institutional capability and public support. Some authors have urged cautions not to blur the boundaries between university, private and public sector institutions driven by market oriented competition (Georghiou, 2004; Nelson, 2004). For universities, having clear institutional purposes in relation to their regional stakeholders is the way to start (Kitagawa, 2003). New institutional structures of governance and management may be needed in order to respond to new societal demands and take on new responsibilities (Shattock, 2003, p. 116-117). Policy makers, both at national and local levels, need to consider how to initiate learning processes at both the individual and collective level. Interests and resources of various actors have to be drawn into the localised system of innovation and learning, forging links between national and local delivery mechanisms.

Concluding remarks

The broad discussions about the policy initiatives and current institutional transformation in Japan so far, lead us to consider fundamental issues as to the choices and responsibilities of universities in the knowledge society. Whilst higher education has become an integral and significant part of national/regional industrial and science strategy, it is increasingly operating
on global market (profit-making) principles. Japan is a late “globaliser” as far as higher education is concerned. However, as the globalisation of economy continues, as the Japanese innovation system with its technology and science has been leaking, changes are happening in higher education systems.

In terms of university-business links, structural and cultural issues are brought to bear in relation to current university reforms. The reforms may give more autonomy to universities with possible concentration of power to the presidents, opening up opportunities for some universities to engage in entrepreneurial activities. Having relied upon national research budgets for so many years, however, most of the former national universities have nurtured neither entrepreneurial culture nor organisational mechanisms to achieve this end. Some universities have created new incentive mechanisms for university researchers to conduct business oriented research. However, an emphasis on commercial orientation with a short timescale, may only serve to hinder the overall research capability of a university if it is not integrated as part of the long-term strategic mechanisms of the whole institution. Strategic institutional support for entrepreneurial activities is imperative, rather than seen as short-term, income generating activities.

For the Japanese central government, local government, firms, universities and other university-business support organisations, varieties of knowledge flows and international links pose new challenges as well as opportunities. National borders mean much less than they used to regarding the flow of knowledge. Nation-centric policies are unlikely to succeed in a globalised world. Currently, the Japanese higher education system is facing a lot of pressure, including globalisation and regionalisation forces. Some universities are responding by internationalising their strategies, and others regionalising some of their missions and diversifying their funding base. However, the biggest challenge for the system as a whole seems to come from the uncertain future direction of the state policies, assessment schemes and resource allocation.

Universities are seen as potentially useful actors in building the knowledge society and economy, and they can play a role in constructing new relationships in networking knowledge. However, their institutional mechanisms and human resources to achieve this goal on their own are very much limited. In particular, in the area of “third stream activities”, national policies have to allow dynamic institutional interactions to occur, by forging innovative alliances and partnerships which lead to constructed advantage of institutions. Such interactions need to be spatially multi-level and multiple-shaped, namely: encompassing local, regional, national and global levels; forming both bilateral and multilateral relationships; and involving both public and private partners.
A policy incentive combining “excellence” and “relevance” seems to be important for encouraging institutions to take new responsibilities as actors in the knowledge society encompassing the universities’ wide range of activities, namely, teaching, research and the third mission. In this respect, in evaluating these activities, assessment criteria need to be “part of a wider performance management framework” whereby “collaboration between key participants” is the key (OECD, 1999, p. 6). Rather than only imposing a rigid dichotomous classification such as research intensive and less-research intensive institutions, the policy environment needs to be more flexible and diversified for universities to manage and delineate their own “extended portfolio” (Shattock, 2003, p. 117).

For policy makers and those agencies concerned with policy evaluation, there is a huge task lying ahead given the complexity of the whole process of synthesising national research, innovation and learning systems, which are in turn linked through over-arching industrial, science and technology, social and territorial policies within the globalising economy. Various innovative schemes such as international or institutional benchmarking, knowledge sharing and experimental policy transfer initiatives might work, however these endeavours must be viewed as an integral part of the societal needs based on institutional and cultural contexts of those at stake. The impact of new university-society relationships considered in terms of economy, human resource, new forms of governance and links with community, are all inter-linked locally, nationally and internationally.

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Notes
1. Some clarification as to the terminology is needed. Some authors and policy communities employ terms such as “knowledge economy” and “knowledge-based economy” (e.g. CEC, 2000; OECD, 1996; for the UK, see DTI, 1998; for Japan, STA, 2002) whilst “knowledge society”, “knowledge-based society” have been employed in other contexts (CEC, 2003). See, http://europa.eu.int/comm/employment_social/knowledge_society/shc_en.pdf access date 11/06/04.
2. Now there are 89 “incorporated” (former national) universities, 77 public (prefectural and municipal governments’ owned) and about 480 private universities. In 2004, as part of the de-regulation policy, MEXT approved the establishment of universities owned by stock companies.

3. The National Institute of Academic Degrees and University Evaluation (NIAD-UE) was reorganised in 1999, and in addition to accrediting academic degree programmes of higher education institutions (HEIs), NIAD is now also responsible for evaluating the education, research and other activities of Japanese incorporate universities.

4. R&D in Japan has long been dominantly private-led with 80% of Japanese R&D performed in industry. Of the 20% of R&D performed by the public sector, universities play the primary role but government sponsored R&D in academic sector has been relatively impoverished (Nakayama and Low, 1997).

5. Despite the equal legal status being given to all universities since 1949, the hierarchical financial differences have always existed among institutions of different origins (see Yonezawa, 2003b). In other national contexts, for example, in the United Kingdom, classification and terminology such as “research intensive universities” and “less research intensive universities” are expressed, strengthening the recognition that there is a hierarchy, both explicit and implicit in the higher education system (see DfES, 2003).

6. During the 1980s, universities faced severe financial tightening with no increases in budgets. In terms of finance structure, “outside funds” such as donations from private businesses and research contract revenues began to increase in the early 1980s induced by the national universities’ need to counteract the government’s lagging contributions, and due to government policies promoting industry-university collaboration (Asonuma, 2002).

7. MEXT is responsible for 64% of government R&D expenditure for 2002. The Ministry of Economy, Trade and Industry (METI) (reorganised in 2001 from MITI) is responsible for the second largest research budget (16.9%). MEXT provides the institutional funding for universities, supports varied research funding programmes open to researchers in universities, government institutes and industry, supports a range of its own research institutes which are at different stages of transition to becoming Independent Administrative Institutions (IAIs) (Asonuma, 2002).

8. During the 1980s, under Technopolis Programme, linkages were developed between university and industry, and public research institute combined with improved social infrastructure but the development of triple helix relationships were somewhat limited.

9. In relation to this, organisations such as the Japan Science and Technology Corporation (JST) have started sponsoring programmes aimed at national universities and national laboratories to encourage the development of research into marketable products, with university administrators acting as liaison between the faculty members and JST.

10. MEXT and METI are creating networks at regional/local level involving different stakeholders by creating financial incentives. But it is also interesting to note that both ministries are implementing cluster policies of their own, both emphasising stronger university-industry links at local level.

11. The concept is developed in comparison to other well-known forms of economic advantage, namely: “comparative advantage” and “competitive advantage” (Krugman, 1995; Porter, 1990). Drawing on the ideas originating from economic
literature such as Adam Smith, innovation studies by Foray and Freeman, (1993) and more recently, de la Mothe and Mallory (2004) and Cooke (2004).

12. In the data provided by MEXT, as of 2000, there were 127 new enterprises spun-off from universities, which compares to 368 in the United States in 2000 and approximately 200 in United Kingdom. In 2001, 251 and in 2002 424 small business companies were created from universities in Japan.

13. Some TLOs form private companies limited and some form incorporated foundations. The TLOs are separate organisations from the national universities in legal term. Although there has been public funding for TLO activities, the public money is in decline. University staff have voluntarily made financial investment in TLOs, but since April 2004, universities are allowed to invest in TLOs directly as organisations.

14. In general, the broader significance of labour-market processes for the technological and organisational dynamism including that of higher education has yet to be examined (Angel, 2000, p. 127-128).

15. A study (1996-1999) revealed perceptions of residents in seven Japanese prefectures regarding the roles of the national university located within their vicinity. The expectations were wide and multiple, but the actual roles played by universities in their regions were considered to be rather limited constrained by various factors. www.zam.go.jp/g0000000/table/t0000003.htm access date 17/06/04.

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Changing Research Practices and Research Infrastructure Development

by

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This paper examines changing research practices in the digital environment and draws out implications for the development of research infrastructure. Reviews of the literature, quantitative indicators of research activities and our own field research in Australia suggest that there is a new mode of knowledge production emerging, changing research practices and bringing new information access and dissemination needs. Adjustments will be required to accommodate these changes, but new opportunities are emerging for more cost-effective and sustainable information access and dissemination. To realise these opportunities, however, it will be necessary to take an holistic approach and treat the creation, production and distribution of scholarly information, the management of information rights and access, systems of review and evaluation and the underlying infrastructure as parts of a single research infrastructure and scholarly communication system.
Introduction

This paper reports on a study that examined research practices in the digital environment and drew out implications for scholarly communication and the development of research support infrastructure (Houghton, Steele and Henty, 2003). The study took a two-pronged approach. First, wide-ranging statistical and literature reviews provided the framework and grounding for analysis. Second, in-depth interviews with a small, structured sample of senior Australian researchers in a range of fields and institutional settings, with findings tested and extended in a series of workshops. Both interviews and workshops targeted the leading edge of research and focused on the drivers of change in research practice.

The production of knowledge

There are various models that seek to shed light on the changing nature of research. Perhaps most prominent among recent approaches are:

- the Systems of Innovation approach (Edquist, 1997, 2001), which encompasses a wide range of work focusing on the systems within which knowledge is produced, communicated and applied;
- the New Production of Knowledge approach (Gibbons, et al., 1994; Gibbons, 2000; 2001; Nowotny, et al., 2001, 2003), which compares and contrasts traditional disciplinary research (Mode 1) with an emerging transdisciplinary, problem oriented mode of knowledge production (Mode 2); and

There are many facets to these models, other models that probably deserve mention and numerous critiques of these approaches. Nevertheless, they have common elements that point to key dimensions of change in research practice. The Systems of Innovation approach places knowledge production in a wider context, highlighting linkages between various actors and activities and the inter-relationship between knowledge production and its application; the New Production of Knowledge approach highlights differences between traditional and new modes of knowledge production; and the Triple Helix approach highlights the convergence and cross-over of institutional spheres – where, for example, firms become research centres and
found universities, while universities become more like firms. Importantly, they are all suggestive of a trajectory of change.

The direction of change identified by these approaches involves:

- Increasing diversity in the location of research activities – with a greater range of organisations involved in research (e.g. universities, research institutes, hospitals, firms, industry associations, etc.).

- Increasing focus on interdisciplinary and transdisciplinary research – with teams of researchers coming together to work on common problems that cannot be tackled adequately within a single disciplinary framework (e.g. environmental or health problems).

- Increasing focus on problems, rather than techniques, with solutions being sought from a range of disciplinary “toolboxes”, but findings valued for their contribution to the solution, rather than to the toolbox.

- Increasing blurring of organisational borders and greater emphasis on collaborative work and communication, with a more flexible team based approach in which teams form around problems, and then break up and move on to form different teams around different problems.

- Changes in the modes of communication, including some increase in commercial guarding of intellectual property, somewhat less emphasis on publication in refereed journals and more emphasis on informal communication through networks of researchers and practitioners; and

- More diverse forms of accountability, with economic and social, as well as disciplinary outcomes taken into account, and quality judged on a broader range of criteria (McWilliam, et al., 2002, p 41).

**Research practices**

A review of quantitative indicators of change in research activities in Australia reveals that research is being conducted in an increasingly diverse range of settings, with significant changes in the sources of funding and locations of expenditure. There has been a marked increase in R&D activity in the business sector in Australia and a relative decline in the government sector. There has been a shift away from pure/basic research towards more applied and developmental activities, and a decline in the share of expenditure on “non-oriented” research combined with increases in the more interdisciplinary, problem oriented fields.

In 1992-93, for example, experimental development accounted for 38% of R&D expenditure in Australia, applied research for 33%, strategic basic research for 16% and pure basic research for 12%. By 2000-01, applied research had increased its share of total R&D expenditure to 36%, while experimental development accounted for a steady 38%. Both pure basic research and strategic
basic shares declined. Over the period 1986-87 to 2000-01, expenditure on R&D by socio-economic objective in Australia increased by 6% per annum. Society and health (10% per annum) and economic development (6% per annum) were the fastest growing areas, while expenditure on non-oriented research (broadly speaking, pure/basic research) increased by just 1.3% per annum.

While it is still overwhelmingly the case that higher education R&D activity is focused on pure/basic research and business sector R&D activity is focused on experimental development, growth trends reflect a restructuring of activities and some diversification of the location of research. Both the business and government sectors appear to be increasing their involvement in basic research, while there is an increasing emphasis within higher education institutions on applied research and experimental development. While still small, these shifts could have a significant impact on researcher perceptions and on their research practices (National Science Board, 2002, pp. 5-36).

Australian publication and citation data reveal increasing output, increasing collaboration (co-authorship), both domestic and international, and an increasing internationalisation of research. Between 1981 and 1999, the number of Australian publications in the Science Citation Index increased 3.3% per annum. Over that period, the number of publications with a single author decreased by 1.5% per annum, papers with institutional collaboration increased 3.0% per annum, papers with national collaboration increased 7.6% per annum, and papers with international collaboration increased 9.9% per annum (Butler, 2001).
Figure 2. **Levels of collaboration (joint authorship) in Australian publications in the Science Citation Index, 1981 to 1999**


Figure 3. **Patent applications received by IP Australia, 1990-1991 to 1999-2000 (indexed)**

Australian patenting data show that patenting too has increased rapidly, with international patent applications increasing even more rapidly than domestic applications. During 1990-91, IP Australia received a total of 27,529 patent applications. By 1999-2000, the annual number of applications had increased to 69,645, or by almost 11% per annum. Over the same period, international applications received by the patent office increased from 612 to 1,718, or by more than 12% per annum.

There is, in short, evidence of the emergence of a new mode of knowledge production and of a Triple Helix style inter-relationship between universities and research organisations, industry and the state.

**Changing research practices**

One of the features of the literature on research information and communication practices is its uneven emphasis, with some areas (e.g. the use of journals) covered extensively and others (e.g. informal dissemination of material) rarely examined in detail. A review of the literature (OECD, 1998; OECD, 1999; Swan and Brown, 1999; Brockman, et al., 2001; Institute For The Future, 2001, 2002; Education For Change, 2002; Friedlander, 2002; Key Perspectives, 2002; Atkins, et al., 2003) reveals a number of common themes:

- Collaboration and wider collegial networks are increasingly important, including in the humanities.
- There are rapid increases in the use of electronic tools and content in all research fields, although some are further advanced than others.
- The internet is seen as an important research tool, with widespread use of generic search engines and somewhat less use of specialist portals and subject gateways.
- Inter-disciplinary researchers appear to make more use of the internet, and other electronic media.
- There is a widespread expectation among researchers that print and peer review will persist, despite perceived problems (Odlyzko, 2002; Jefferson, et al., 2003; Peek, 2003) and the increasing availability, and use, of possible alternatives.
- Performance evaluation and funding demands influence researcher behaviour; and
- There has been a rapid increase in the use of data, databases and datasets, both as an input to research and an output from it, and a corresponding shift away from other sources (Houghton, et al., 2003).
One issue that has been widely covered is the impact of information and communication technologies (ICTs) on research. The US National Science Foundation, recently noted that:

“Advances in computational technology continue to transform scientific and engineering research, practice, and allied education. Recently, multiple accelerating trends are converging and crossing thresholds in ways that show extraordinary promise for an even more profound and rapid transformation, indeed a further revolution, in how we create, disseminate, and preserve scientific and engineering knowledge”. (Atkins, et al., 2003, p. 4)

Similar observations have been made elsewhere (OECD, 1998; National Research Council, 2001; National Research Board, 2002). The growing use of ICTs is having a fundamental impact on the way research is conducted in many fields.

To further understand these developments we conducted in-depth interviews and workshops, involving around 75 Australian-based researchers from a range of fields and institutional settings (40 interviewees and 35 workshop participants) (Houghton, et al., 2003). The approach was more ethnographic than statistical. Both interviews and workshops were wide-ranging and explorative, focusing on the drivers of change in research practice. They explored the impacts of funding and institutional change on research, and then examined changes in communication and collaboration, information search and access, and dissemination and publication practices. We found that researchers in Australia, as elsewhere, are operating in an increasingly institutionally diverse and interdisciplinary environment, in which collaboration is encouraged, competition is intense, performance is closely monitored and both scholarly and commercial outcomes are expected.

**Communication and collaboration**

Collaboration on projects is widespread. Almost 75% of the Australian researchers interviewed, reported working primarily in project teams, and a further 13% reported a mixture of team and individual work (N = 40). Very few worked entirely alone. There is increasing collaboration across a wider range of organisational settings. Almost 60% reported an increase in the locational diversity of collaborators, more than 50% reported an increase in inter-institutional collaboration, around 45% reported an increase in the average size of research teams and 25% reported an increase in their own collaboration. Collaboration also seems to be spreading to the humanities, with 50% of respondents in social sciences, humanities and arts reporting an increase in their team participation. Fully 90% saw themselves as part of a wider collegial network, 100% in science and medical fields, and 80% in social sciences, humanities and arts. More than 70% said that these networks were...
“very important” to their work, and a further 15-20% said that they were “important”.

A number of researchers see encouragement by funding agencies as a key driver of collaboration, with agencies seeking scale, quality and value for money. For some researchers, collaboration is driven by a need to access intellectual property, data, specialist instruments, large scale facilities and sample populations for surveys and trials. Others see an increasing need to collaborate as projects demand a wider range of specialist skills, with collaboration a response to complexity, increasing interdisciplinarity and an increasingly problem oriented approach to research.

Asked whether the new networked information environment had changed the way they collaborate, around 60% said that it had, with a higher proportion of social sciences, humanities and arts researchers reporting change than did those in science and medical fields. The time involved in handling the volume of e-mail and related information, and some potential loss of the human touch in interactions, were quite widely cited concerns. Others reflected more specifically on the impacts of electronic communication on their field of research, noting some danger in the Western and/or English language dominance of the internet to date, both in terms of participation and perspective. Nevertheless, most took a positive view, with connectedness and the increased pace and immediacy of communication adding to the sense of excitement and involvement and facilitating participation in global research networks.

**Information search and access**

Peer reviewed journals, books and conference papers were the most important physical/print sources for the researchers we interviewed. Some 60% regarded peer reviewed journals as “essential”. Books were regarded as an “essential” source by almost 50%, with a further 45% using them. Conference papers were regarded as “essential” by around 30%, with all respondents using them. There were notable differences between research fields. In social science, humanities and arts, books ranked higher than refereed journals (print), with 70% regarding books as “essential” and the remaining 30% using them. Less than 30% of science and medical researchers regarded books as “essential” and 10% seemed not to use them at all.

Perhaps indicating a fundamental shift towards electronic sources, a number of researchers indicated that they used print sources to catch up with things outside their immediate field of interest and for teaching. For an increasing number, it seems, print sources are more of an historical record than the current dialogue.
Online, generic search engines (e.g. Google) were regarded as “essential” by two-thirds of the researchers interviewed, with web browser bookmarks or favourites regarded as “essential” by around 40%. Peer reviewed journal papers in electronic form were regarded as “essential” by around 60%, and conference papers were regarded as “essential” by almost 50%. Online alerting services and e-mail based newsletter subscriptions were regarded as “essential” by around 30%, and discussion groups (e.g. listserv) were considered “essential” by around 20%. All appeared to be widely used.

Researchers in science and medical fields appear to value peer review more highly than do their counterparts in the social sciences, humanities and arts. Two-thirds suggested that peer review was “very important” and the remaining third suggested that it was “important”, compared with 47% and 42% of researchers in social sciences, humanities and arts, respectively. Among humanities researchers credibility (defined more broadly than peer review) was seen as the most important factor. Researchers in science and medical fields also appear to rate the availability of an electronic version,

Figure 4. Rating of print and physical sources

CHANGING RESEARCH PRACTICES AND RESEARCH INFRASTRUCTURE DEVELOPMENT

Figure 5. **Rating of electronic and online sources**

![Diagram showing ratings of electronic and online sources](chart)

Note: N = 40.

desktop access and the availability of full text somewhat more highly than do researchers in social sciences, humanities and arts.

Almost one-third of all respondents saw research databases as “essential”, and a further 35% reported using them. Their use was higher in the sciences, with 75% of science and medical researchers using databases, and more than 40% saying they were “essential”. Nevertheless, almost 60% of
social science, humanities and arts researchers reported using databases, and 15% regarded them as "essential". Just over 40% of the researchers interviewed reported that they had perceived a change in the relative importance of primary source datasets and secondary sources, 37% in social sciences, humanities and arts, and 47% in science and medical fields. Asked about the nature of that change, as many as 80% reported noticing an increase in the use of primary data, 100% of those in science and medical fields, and around 60% of those in social sciences, humanities and arts. A number of researchers suggested that access to primary data, related software and computer facilities was changing their field of research in quite fundamental ways.

**Dissemination and publication**

A high level of collaboration is reflected in joint authorship, with more than 75% of respondents indicating that they were typically joint authors,
100% in science and medical fields, and around 50% in social sciences, humanities and arts. Some 40% of respondents suggested that their patterns of authorship had changed over the last five years, with all citing either an increase in the number of authors or in the proportion of their published output that is joint authored.

Researchers revealed a strong preference for publication in peer reviewed journals, with more than 90% suggesting that refereed journals were their preferred medium for publication. Book chapters, books (authored or edited) and conference papers were each nominated as preferred media by around 20%. Among researchers in science and medical fields there was a stronger preference for publishing in peer reviewed journals. All expressed such a preference, while just 15% nominated conference papers. Perhaps surprisingly, more than 80% of researchers in social sciences, humanities and arts expressed a preference for publication in refereed journals, with just 30-35% expressing a preference for publication in books.

**Figure 7. Preferred medium for publication: by field of research**

Format preferences varied from medium to medium. Around 80% said they would prefer their journal papers to be available in print and 100% wanted their books and reports to be in print. Conversely, around 40% expressed a preference for their conference papers to be available electronically. When discussing media preferences it seemed that researchers publish in the medium and format recognised by their peers, funding agencies and employing institutions. Other factors in determining preferences related to establishing a “portfolio” of publication to demonstrate a range of talents,
focusing on the prestige of the journal title and impact factors, and aiming for a specific audience.

Exploring the reasons behind publication revealed that communication of work and measuring research performance were both considered “very important” – by around 60% of respondents. Accreditation and recognition (within the research community) was considered “very important” by around half. There were some differences between fields of research, with communication of work rated “very important” by less than 60% of researchers in science and medical fields, and ranking third behind indicator of performance (rated “very important” by 60%) and accreditation and recognition (rated “very important” by more than 70%). By comparison, communication of work was rated “very important” by almost 70% of researchers in social sciences, humanities and arts, ahead of indicator of performance (rated “very important” by more than 60%) and accreditation and recognition (rated “very important” by just 30%).

Figure 8. **Main reasons for publishing**

![Diagram showing reasons for publishing]

Note: N = 40.


Comments on the motivations for publishing focused on performance evaluation and communication with specific audiences. A number were critical of Australia’s research evaluation system, because it is based primarily on quantity rather than quality and because of what does and does not count as an output. Knowledge production has become more diverse and is often more closely linked to the context of its application, but performance indicators do not yet reflect these changes.

Formal peer review and the perceived prestige of the outlet where the most important factors when choosing between publishing outlets, with
breath of exposure and speed of publication also seen to be important. Interestingly, the availability of an electronic version and the ability to retain copyright did not seem to be important considerations for most researchers. Peer review and the prestige of the outlet appear to be somewhat more important for researchers in science and medical fields. Other considerations appeared to rate much lower, with speed of publication and breadth of circulation each seen as “very important” by around 20%. By contrast, only just over 50% of researchers in social sciences, humanities and arts indicated that the perceived prestige of the outlet and formal peer review were “very important”. Breadth of exposure and speed of publication were correspondingly higher in their consideration set.

Most of the researchers we spoke to felt that electronic publishing alternatives were supplementing print, rather than replacing it. Nevertheless, some 40% said that the networked information environment had changed the

Figure 9. Factors in choosing between publishing outlets

Note: N = 40.
way that they and others in their field publish and disseminate findings. Others said that it had not really changed what they were doing, things were much easier and quicker and they were now publishing online, but it was the electronic version of the same thing (i.e. similar papers in the same journals).

Conclusions

A new mode of knowledge production has emerged. There is increasing diversity in the location of research activities; an increasing focus on interdisciplinary, multidisciplinary and transdisciplinary research; an increasing focus on problems, rather than techniques; greater emphasis on collaborative work and communication; and greater emphasis on more diverse and informal modes of communication.

Research infrastructure and evaluation systems have evolved over many years, during which traditional disciplinary research was the dominant mode. Consequently, the existing research infrastructure and current research evaluation practices tend to be better suited to the traditional than they are to new modes of research. Research evaluation should be designed in such a way as to take account of both traditional and emerging modes of research. As the OECD (2002) recently noted:

“Public research institutions are being asked to contribute to economic development but also to be more responsive to evolving societal concerns such as food safety, environmental degradation, and health issues [...] What is put into question is both the sole focus on scientific excellence and the criteria for judging this excellence when evaluating public researchers and research institutions. Evaluation of research must evolve for at least [two] reasons. First, its scope must be broadened in response to the considerable expansion of the commercialisation activities of universities and public research institutes (e.g. licensing offices, venture funds, spin-offs). Second, evaluation criteria must take into account that excellence in research and training of graduates has become, at least in some disciplines, more tied to applications in industry”. (OECD, 2002, p. 55)

Research evaluation should evolve to recognise a wider range of activities and outputs, team-based work and collaborative activities at both the individual and institutional levels, scientific, social, economic and environmental outcomes, and more diverse communication, dissemination and application activities.

The emergence of a new mode of research is bringing new information access and dissemination needs. There is increasing demand for access to a wider range of more diverse sources, for access mechanisms that cut across
disciplinary silos, and for access to, and management of non-traditional, non-text digital objects. The US National Research Council, 2001, noted:

“The rapidly expanding availability of primary sources of data in digital form may be shifting the balance of research away from working with secondary sources such as scholarly publications. Researchers today struggle to extract meaning from these masses of data, because our techniques of searching, analysing, interpreting, and certifying information remain primitive. New automated systems, and perhaps new intermediary institutions for searching and authenticating information, will develop to provide these services, much as libraries and scholarly publications served these roles in the past”. (National Research Council, 2001, p. 5)

Research databases, related software and other analytical objects are now core tools, as the very nature of discourse shifts from hypothesis testing towards collecting, processing and analysing primary data. New digital object access management systems will be required, and there will be increasing demand for collaborative research support applications.

Research practices are shaped by evaluation, changing funding patterns and priorities. Existing evaluation and reward structures tend to lead to conflicting incentives. Establishing a coherent structure of incentives that operates system-wide will be an essential first step. It will also be essential to adopt a more holistic approach to “re-engineering” the system, which treats the creation, production and distribution of scientific and scholarly information, the management of information rights and access, intellectual property and the incentive system, research evaluation and the underlying infrastructure as parts of a single system.

Scientific and scholarly publishing is now evolving along two distinct paths, one in which large multinational commercial publishers are increasing their dominance in such areas as branded journal titles and access to scientific publication, and the other in which there is a variety of open access initiatives emerging. Open access digital repositories, operating in parallel with existing commercial publishing mechanisms (e.g. subscription or open access journals), now provide an opportunity to develop a more flexible and sustainable information infrastructure for both traditional and emerging modes of research. They also provide opportunities to develop new metrics for research evaluation.

To meet emerging needs and realise these opportunities we recommend pursuing an agenda which focuses on:

- creating a coherent structure of incentives through reforms to research evaluation and intellectual property management based on an holistic approach to the system for the creation, production and distribution of research information;
providing the infrastructure and tools to support collaborative research activities in both traditional and new modes of research;

- enabling access to the necessary information resources and equipping users with appropriate skills to enable their use; and

- encouraging the development of a system of scholarly communication and research dissemination built on the principle of open access.

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Innovation in the Netherlands: 
Toward Guidelines for Knowledge Transfer

by

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When the objectives of the Lisbon Convention were formulated in 2000, the Dutch Government decided that the Netherlands should give priority to achieving these objectives. In 2010 the Netherlands should be one of the most successful economies in Europe, which should itself be the most competitive knowledge-based economic region in the world.

With these objectives in mind, a consortium consisting of the Dutch industry and universities (VNO-NCW and VSNU), the Royal Academy of Science, the Netherlands Organisation for Scientific Research (NWO) and the Organisation for Applied Research (TNO) encouraged the Government to install an Innovation Platform under the presidency of the Prime Minister. Although the Innovation Platform has had an impressive start, the approach aims mainly at long-term policy issues. In order to promote knowledge transfer between science and industry in the short term, more specific measures must be taken.

The Confederation of Netherlands Industry and Employers (VNO-NCW) and the Association of Universities in the Netherlands (VSNU) are working together to formulate guidelines for collaborative projects. The aim of these guidelines is to promote understanding of the differences and similarities in the objectives of science and industry. Similarity in objectives is the starting point for clear principles on such issues as publication, scholarly integrity and financing. These guidelines are not meant as model contracts, but rather to point out important topics and considerations that should be taken into account in individual contracts.
Introduction

When the European Commission articulated the ambition to transform Europe into a knowledge society, Lisbon 2000, and subsequently the aim of investing 3% of GDP in research and innovation, in Barcelona, the Dutch Government decided that the Netherlands should give priority to realising this ambition. In 2010 the Netherlands would be one of the most successful economies in Europe, which would itself be the most competitive knowledge-based economic region in the world.

The Lisbon summit took place more than four years ago. Despite the interest that the knowledge society and the Lisbon Convention have generated, we are far from realising these goals, both in the Netherlands and in Europe. In Europe, and in the Netherlands in particular, investments in research and innovation are increasing very slowly, especially when compared with investment levels in the United States or Japan.

This article presents the view of the Dutch universities on improving this situation. Position is taken at three levels: Europe, and the commitment of the Netherlands within Europe, national policy in the Netherlands, and policy at the level of the universities.

Europe

Globalisation and the development of the knowledge economy have caused enormous changes for the European Union. These changes call for a radical transition of the European economy. In Lisbon in 2000 the European Council determined a new strategic goal for Europe: becoming the most competitive and dynamic knowledge economy in the world, aiming for sustainable economic growth, better employment opportunities and stronger social coherence. These aims were to be realised by 2010.

Part of the strategy for realising these aims was the development of a European area for research and innovation. Research activities at national and European level were to be coordinated and integrated to make them as efficient and innovative as possible.

To further the Lisbon agenda, the European Council in Barcelona in 2002 concluded that Europe should invest more funds in research and innovation, aiming for an average of 3% GDP. The Third European Report on Science and Technology Indicators (2004) shows that at the moment, European Union
countries invest on average 2% GDP on research and innovation, although this figure is slowly rising. An interesting development is that the European Union will be tripling its own budget for research and innovation, but this budget will take effect from 2007 only. The budget is still negligible compared to the amounts that are invested in agriculture in Europe.

What steps should the European Union take towards realising the Lisbon ambition?

**Europe should change from a Milk Union to a Knowledge Union**

The European Budget states that the current level of research financing from the European Union itself (0.04% of European GDP) should be raised. However, there is little room for raising the national contributions to the European Union. This means that priorities within the budget will have to be revised. A shift within the budget, from agriculture to research, would be advisable.

Furthermore, it is important that the structural funds can be used for higher education and research, since these funds aim at reducing the differences in social and economic welfare among the member states. The Commission has already allowed the new member states to use the structure funds for investments in higher education and research. Given the aims of the Lisbon Council it would be wise to extend this possibility to all member states.

**Europe should support the entire innovation chain**

The European Framework Programme consists of a whole range of instruments, aimed at improving the coherence of European research, mobility of researchers, public-private collaboration etc. In this context it is important that the complete innovation chain be supported, from basic research to product development. Establishing the European Research Council to support basic research at a European level is part of this objective. Basic research is an important part of the innovation chain which has been neglected at the European level up to now. However, the budget foreseen for the European Research Council is very small. Researchers may not be eager to apply for funds at the European level if their chances of success are small. In order to stimulate research at this level, substantial funds, which provide an added value to national funds, are necessary.

**Europe should develop a climate that encourages private investments in research and development**

Two thirds of the funds foreseen in the Barcelona Council are expected to come from private investments in R&D. However, it is clear that the European industry does not invest in R&D to the same extent as, for example, American industry. Part of the reason for this comes from the industry sectors in which
European companies are active. For the main part these are sectors where research is less intensive or has been moved abroad, such as the petrochemical industry, the car industry and aviation industry. European industry invests very little in the biotechnology sector, which is an important sector in the United States and one which is very research oriented.

Another reason that private expenditure on research and innovation may seem very low is that the services sector is not taken into account; for example, in the Netherlands research indicators are aimed at the technological and biomedical sectors. Research in the services sector is a relatively new phenomenon and is generally not taken into account in indicators on research and innovation.

Within Europe several countries have developed specific policies aimed at achieving the Lisbon and Barcelona goals. What has happened in the Netherlands?

**The Netherlands**

Not only have the Netherlands committed themselves to the Lisbon and Barcelona goals, the Dutch Government has announced that it wants to take a leading position. At the moment, however, the statistics for the Netherlands are at the level of the European Union average, and for the most part they seem to be sliding back rather than improving. The Netherlands spend approximately 1.8% of GDP on research and innovation. The Commission has pointed out that the Netherlands, once pacesetter within Europe, are now losing momentum.

Turning the Netherlands into a knowledge society is now one of the most important concerns of the present Government. There are two good reasons for this. In the first place, economic growth is dependant on the growth of productivity. In the Netherlands, growth of productivity is dependant on innovation, on new products and processes. This is due to the fact that a large percentage of the population already works, so that further growth of productivity cannot easily be achieved by increasing the working population. Therefore, the importance of knowledge and innovation has increased enormously. A good knowledge infrastructure allows industry to innovate in processes and products and good education guarantees the availability of employees who can take an active part in the innovation process. Besides economic value, the focus on knowledge also has a clear social value. The social benefits of investing in education are well documented: people who have received higher education are healthier, less likely to engage in criminal activities, participate actively in public affairs and make less use of social welfare.

In February 2003, an alliance consisting of the Royal Academy of Sciences (KNAW), the Netherlands Organisation of Scientific Research (NWO), the
Netherlands Confederation of Industry and Employers (VNO-NCW), the Organisation for Applied Research (TNO) and the Association of Universities in the Netherlands (VSNU), advised the new government on ten points necessary to realise the transition to a knowledge society.

In order to strengthen the innovative potential of the Dutch economy the Netherlands need a robust innovation chain, a climate favourable to private investments, excellent research and a highly educated labour force. These elements are part of the action plan proposed by the alliance, consisting of the following ten points.

1. **Establish a coordinating structure responsible for the transition of the Netherlands to a knowledge society.**
   It is clear that the Netherlands still have a long way to go before being transformed into a successful knowledge society. This transformation involves many different policy areas, ministries and public organisations. Coordination can therefore best take place at a national level, with the Prime Minister taking the lead.

2. **Additional public investments in scientific research.**
   The funds for scientific research that are distributed in open competition, by the Netherlands Organisation of Scientific Research (NWO), should be increased by EUR 100 million. These additional funds will be used for areas of research which are both scientifically challenging, offer perspective of utilisation and which will establish the position of Dutch research within Europe. It is of the utmost importance that these funds be distributed in such a way that focus and concentration of research are achieved and the innovation chain is reinforced.

3. **Increase the number of students in science subjects.**
   The number of students in science subjects (including the engineering sciences) has been declining steadily in the past years. This is a matter of some concern, since these students are the future researchers and employees of innovative industries. A lack of highly educated employees with a background in the sciences can be a serious threat to the development of a knowledge society in the Netherlands. This has often been acknowledged, but initiatives taken in the past seem to have had little effect. Increasing the number of students in the sciences requires that action be taken not only at the level of higher education, but also at the level of secondary education, since it is during this period that students decide on their future field of study. Commitment from the industries that are the future employers of these students is also essential. Initiatives such as Jet-Net, where large companies support initiatives to promote the science subjects in secondary schools, are a good example of such commitment. Another point for consideration is the content of the science subjects at
secondary level. This should be attractive to students but at a sufficiently advanced level to guarantee that students can move from secondary education to university education without problems.

4. **Reinforce the position of the Netherlands within Europe.**
The European integration is becoming more important to universities and scientists working there. A unified European Research Area offers great opportunities for the Netherlands. However, we can only grasp these opportunities if we have a good starting position. This calls for excellent scientific research on a sufficiently large scale and strategic choices that will make us attractive to international partners. We need to inform our researchers of recent European developments and the Government needs to take a clear stand in Brussels.

5. **Stimulate focus and collaboration.**
Collaboration between universities, and between industry and universities, is of great importance for the transition to a knowledge society. These types of collaboration allow for research projects of a sufficiently large scale to compete at a European and global level, and they contribute to a robust innovation chain. Collaboration allows small disciplines that are nonetheless essential to the Dutch economy to survive. Several initiatives for collaboration between universities in the area of education have already been taken. The Government should aim at stimulating these forms of collaboration. It is especially important to stimulate dynamic networks of researchers from both universities and industry.

6. **Stimulate research and development in industry.**
The transition to a knowledge society presupposes that industry itself will invest in innovation. This is acknowledged in the Barcelona objective, since, of the 3% GDP invested in science and innovation, two thirds are expected to come from private investments. The Government can stimulate these investments by increasing the attractiveness of the Netherlands to innovative companies.

7. **Increase the number of high tech start-ups.**
The number of high tech start-ups in the Netherlands is low compared to many other countries in Europe. Many initiatives have already been taken to increase this number. This has lead to a substantial improvement, but it is clear that there is still a long way to go. Creating a single information point for start-ups would be an important step forward and would also allow the administration to collect data on which policy measures are effective.

8. **Attract excellent foreign researchers.**
Immigration seems to have very negative connotations these days. In many cases, however, foreign employees are vital to both public and private research and provide new impulses in many fields. This is particularly the
case in scientific research and research in innovative industries. The government should aim at simple immigration procedures for highly educated foreigners.

9. **Concentrate public research funds.**

Public bodies deal with many issues that call for background research. In these cases, the administration acts as a customer of public research organisations. The funds spent on research through these channels are quite substantial, but there is little attempt to coordinate these funds. As a consequence the expertise in areas such as public safety, health care and sustainability is not as well developed as it could be, given the available funds.

10. **Include a section on the knowledge society in the coalition agreement.**

The new Government should include a section in the coalition agreement on the measures that will be taken to stimulate the transition to a knowledge society.

In the months after the alliance published their advice, the Government installed an Innovation Platform under the leadership of the Prime Minister. Further, a great many policy papers were issued from various ministries involved with research and innovation. Many urgent problems have now been solved, but a general national policy has still to be developed.

The Dutch Advisory Council for Science and Technology Policy (AWT) has reacted with some scepticism towards the Lisbon and Barcelona goals. It argues that the aim of investing 3% GDP should not be seen as a goal in itself, but as an instrument to endorsing innovation by stimulating research and innovation. Secondly, the 3% aim seems to be directed at national research policy, whereas both public and private investments in research and innovation take place in an international context to an increasing degree. Government policy should take increasing internationalisation into account. Thirdly, realising the 3% aim is very much dependant on investments from the private sector, since these are expected to make up two thirds of the 3% expenditure. However, in the Netherlands, the service industry makes up a large part of our national economy. Expenditure on research and innovation in the service industry is traditionally quite low compared to that in high tech industries, which raises the question to what extent the 3% aim is realistic in the Dutch context.

The AWT raises the questions, what do the European aims mean for the Netherlands, and which measures are most appropriate to realise these aims? The knowledge society remains an important item on the agenda, but how can we proceed from policy aims to specific measures?

The Netherlands should give priority to the points described below.
**A generous and committed attitude towards Europe**

The Netherlands take a reserved attitude towards Europe at the moment. The Dutch Government has indicated that, given the current relatively high contribution of the Netherlands, there is no question of raising the contribution for the time being. In light of the claims on the European budget (keeping the funds for agriculture at the current level until 2013, strengthening the position of the new member states and other policy resolutions), the position of the Dutch Government is cause for concern. If Europe wishes to make the transition from a Milk Union to a Knowledge Union investments will have to be made. A small country such as the Netherlands should consider how its interests are best served. Most Dutch companies consider the Dutch market too small, and are dependent on the European and global markets. Therefore the Netherlands should be a staunch defender of the European integration. The Netherlands should act as an estuary of knowledge and strengthen the ties with its European neighbours.

**Hotspots: geographical focus**

The Netherlands should decide to support excellence and strengthen the ties with innovative companies by investing in knowledge infrastructure. The Netherlands should concentrate research not only thematically, but also geographically: it is important to offer innovative companies attractive locations where they can settle in the vicinity of other innovative companies, universities and other relevant organisations.

**Disseminating their experiences on the collaboration between science and industry**

Where the collaboration between science and industry is concerned, Europe lags behind its competitors, the United States and Japan. The Netherlands have been very active in this area in the past years and several initiatives have been taken to stimulate this collaboration. The Government finances new innovative companies and supports the professionalisation of technology transfer at universities. Together, the Government, industry and universities are taking action to improve the mobility of researchers. Universities are working on a code of conduct for scientists to ensure scholarly integrity in all contexts, including that of collaboration between science and industry. Universities and industry are working on a memorandum of understanding to improve science – industry collaboration.

Universities are important players in a knowledge society such as what the Netherlands aim for. As institutions that spread knowledge to future generations and generate new knowledge through scientific research,
universities bear a large responsibility for making the transition to a knowledge society possible.

**The Dutch Universities**

The Dutch law on higher education states that universities have three main tasks: education, research and knowledge transfer.

This article discusses only the developments in the area of knowledge transfer, since innovation is its main theme. Nevertheless, an important contribution to the knowledge society consists in the education of students and in scientific research.

The Dutch universities have taken a number of initiatives to improve knowledge transfer. A national network of experts in the area of knowledge transfer is in the process of being formed. This network will promote the professionalisation of knowledge transfer officers at the Dutch universities. A code of conduct for researchers is being developed, which will address ethical issues in scientific research, including the problems that may be encountered in close collaboration with industry. Another initiative is the development of a memorandum of understanding between academia and industry that addresses important topics in relations between science and industry. The focus is on intellectual property rights, since these may be a source of conflict in collaboration between industry and academia.

In the memorandum of understanding, which is an initiative of the Netherlands Confederation of Industry and Employers (VNO-NCW) and the Association of Universities in the Netherlands (VSNU), the following topics are raised:

- The success of the innovation chain depends on the awareness of both academia and industry, of the importance of intellectual property rights and also of the potentials problems. Not every finding is suitable for patenting, and not every patent is a financial success. Universities and industry should have a clear policy, which takes into account differences between sectors and markets.
- Universities and industry should aim at long-term collaboration and invest in networks of researchers.
- Universities have an important task in the area of research. Publication of research results has a high priority. Patenting should not lead to long delays in publication.
- Universities are publicly funded institutions, which have the task of generating knowledge and making it useful to society. Patents that are transferred from a university to industry should be returned to the
university when the company in question decides not to exploit the patent, so that other potential users may be found.

- Universities and industry should invest in knowledge transfer, both in contacts with the industry but also in scouting for findings with commercial potential.
- Compensation for intellectual property rights can take many different forms and is dependent on many factors.
- In the case of a start-up company, compensation will generally have the form of stock shares or some other form of participation in the new company.
- All parties concerned benefit from transparency with respect to the inventors of the patents. Besides the inventors, the patent application should mention the organisation where the inventors are employed. This also allows an accurate administration of patents generated by the universities.

In order to facilitate the process of contract negotiation a toolbox will be developed with good practices in all the areas discussed above.

The Netherlands Confederation of Industry and Employers (VNO-NCW) and the Association of Universities in the Netherlands (VSNU) are convinced that this memorandum, is an important step towards advancing university–industry collaboration. The accompanying toolbox will facilitate contract negotiations.

**Conclusion**

Policy measures aimed at transforming Europe into a knowledge society are necessary at different levels: the European level, the national level, but also at the level of the stakeholders in the innovation chain. The Dutch universities are prepared to take an active role as participants in this process.

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The Shift of the University Paradigm and Reform of the Korean University Systems

by

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The 21st century society is characterised as a knowledge-based society, education mobility society, and cyber schooling society. This new paradigm of university enables us to restructure the university system in Korea. To establish an efficient and competitive education system, it is essential to change the current university system. Restructuring of universities should concentrate on reform of academic administration and of management system. The strategy for management innovation can be summarised as finding the balance between 1) tradition and renovation 2) specialisation and diversification 3) quantity and quality development 4) domestic and international dimensions.
Introduction

The 21st century is witnessing the development of a knowledge-based society characterised by globalisation, advances in information technology, and expansion of a knowledge network. Virtually all aspects of our lives and activities are impacted by knowledge. The economy is driven by knowledge, the labour market demands knowledge-oriented manpower and educational institutions are called upon to put into place an effective system of generating knowledge. Since a knowledge-based society dictates the importance of knowledge-utilizing management practices, educational systems and functions should also require arrangements aligned with the advances in the knowledge-based society. Therefore, our core tasks in educational reform in the 21st century lie in improving the knowledge infrastructure, and creating and applying knowledge to various sectors of our society. Society in the current century is often referred to as the “3K Society”, with the “3K’s” standing for “knowledge media”, “knowledge network”, and “knowledge incubator”. The functions and roles of today’s education are summed up in the “3R’s” that stand for “right time”, “right contents”, and “right placement”.

Such changes in our time press many countries to set forth a new paradigm in education and to funnel resources to create an efficient “knowledge web”. Korea is no exception in this respect, and requires an effective system that could build a “creative educational paradigm” and hoist the country into becoming a “high-powered brain” and “knowledge power”. Korea is not alone in this quest, many countries worldwide are pursuing education reform to meet the needs of, and further fortify, knowledge-based societies.

A nation’s development strategy aiming to build a knowledge-based society, would obviously have to incorporate the country as a whole, but priority should certainly be given to strengthening the competitiveness of the educational system, above all other social institutions, which is in charge of generating, applying, and reproducing knowledge.

This is done in countries all over the world. They are highly committed to building an educational system that could function efficiently in a knowledge-based society. The United States, for example, has implemented educational reforms on four occasions since the late 1970s. Come the current century, countries such as China, Japan, United Kingdom, Germany and France have focused heavily on reforms of higher education by means of quality
management of university education, among others. Many countries, including Korea, are seeking effective ways to promote a knowledge-based society and are searching for answers. They believe that one of the answers lies in establishing an efficient and competitive education system. They seem to concur that the crucial task in fostering a knowledge-based society is to efficiently construct a knowledge-producing structure which contributes to the creation, application, and restructuring of knowledge. Details of this task would include designing a new paradigm for the requirements to become a knowledge power and for the maximum use of relevant tools to this end, as well as an integrated system allowing for the efficient communication of knowledge.

Against this backdrop, reform of higher education must be pursued in a way that places top priority on efficiently building a structure for the generation and reproduction of knowledge.

**Changes of the higher education environment and new paradigms**

*The changes in the environment of higher education and five areas of vulnerability*

The changes in the environment of higher education have occurred in two forms, educational and structural. They can be expressed in terms of the five areas of vulnerability that universities face. Many institutions of higher learning throughout the world today are struggling to survive, a challenge not unrelated to changes in the university environment. Basically, the struggling institutions lack competitiveness and the ability to stand on their own. On the structural side, they are weakened by various inefficiencies, while on the educational front, they are stagnant due to the stifled creativity of their constituents, combined with the absence of an interdisciplinary approach to research.

An in-depth view of some of the vulnerabilities of universities leads to the conclusion that the overall situation of higher education today is not entirely rosy.

**Vulnerability in academic management**

Universities are of the common opinion that academic management is in need of change. In particular, the calls upon universities to specialise in certain disciplines and to pursue academic excellence are pressuring the institutions to search for ways to decentralise and make academic management more efficient. Although efforts to this end are underway, an observation of the current realities of the world’s universities reveals that there is still much room for improvement in academic management, as deficiencies in this area are considered to be the main culprit behind the overall weakness of universities. To be more specific, the weakness is a consequence of offering a vast array of
fields of major at both the departmental and college levels, analogous to hectic lines of shops in a mega-mall, coupled with the lack of an interdisciplinary approach among different fields of study and an “educational service-minded” style of academic management catering to the needs of student users.

Thus, creative variations in the administration of elective courses and courses in the field of major, as well as a shift towards an open system of administration of the curricula among colleges and programs are urgently needed. The lack of interdisciplinary approaches among colleges and departments, together with the excessive focus on applied sciences for the purpose of good job placement has created an imbalance in the humanities and social sciences of less practical demand. Given these problems, an open system of academic management and an integrated development and management of curricula could be the answer. While maintaining the distinguishing features of a discipline, similar courses should be combined or eliminated, and, when necessary, curricular programs should be offered at the discipline or college level. Another problem area relates to teaching methods and faculty development. Lecture-type or instructor-centered teaching should give way to student-centered learning outcomes. Establishing faculty development centers and learning resource centers would be some starting points towards innovation in education.

Restructuring of universities, as part of the efforts to accommodate the changes in the environment of higher education, should concentrate on reform of academic administration. Only when effective adjustments are made can reorganisation of courses offered and an interdisciplinary approach become possible. Then, more elective courses dealing with the rapid technological advances will be offered and provide students with greater freedom to choose. Only when the excessive multitude of undergraduate fields of major are reorganised and a wider selection of elective courses are designed can efforts toward structuring of academic management bear fruit.

**Vulnerability in financial structure**

Despite their short history, Korea’s universities have already joined the ranks of the top schools in the world in terms of quantitative growth. Taking into account the different population sizes, they stand second only to Canada. With regard to the quality of education, however, Korea’s institutions of higher learning are still lagging behind. The deterioration in the universities educational environment is clearly evident in various indicators. The indicators show that the environment is not only poor but is increasingly worsening. Laboratories for practical training and a host of other facilities do not meet global standards.
The root cause behind such adversity is the insufficient funding, which leads to low educational costs per student. These two aspects result from the excessive dependence on student tuition and the passive attitude of the Government in financially supporting universities. The private universities that have been subject to government influence and at the same time have been neglected by the same government are especially hard hit financially. Despite the nation-wide emphasis on science and technology and the need to produce quality research manpower, many universities are increasingly suffering from financial difficulties although educational budgets appear to have grown. The government’s role in providing funds for these universities and their research activities does not seem to have had much impact.

The financial problems of the Korean universities are in part due to the high share of student tuition in the institutions’ funding sources. Major universities in the advanced economies depend more heavily on government support or contributions from the public than on tuition. Government support represents only about 14% of the financing sources of the total educational budget of Korea. Private Korean universities, about 60% of all the universities in Korea, depend on student tuition for around 75% of their total expenses. The nationwide average, including both private and public institutions, stood at 68.7% in 2002. Only about 4.4% of the current expenses of private universities came from the government coffers in the same year.3

**The higher education decreasing population**

Higher education today must cater to student consumerism. In other words, students must be viewed as consumers. It is true, in Korea, that the number of people receiving higher education relative to the total national population is rather high and that an impressive 86.7 % of high school graduates enter higher education, one of the highest rates in the world.4

Since 2000, however, the number of college applicants and seats available at universities remain at about the same level, leaving some seats empty at a growing number of institutions. Given this trend, more universities will not be able to fill their classrooms. Such a decrease in the number of students is likely to compound the risk factors of Korea’s universities. This decline is noticeable not only in Korea but also in many other countries, perhaps with the exception of China, and is serving as a catalyst for restructuring universities. In the end some institutions may suffer from severe structural vulnerabilities.

As the student population decreases, the hardest hit universities will be those highly dependent on student tuition, as their financing sources will also decrease. The financial difficulties will inevitably lead to bankruptcies or mergers between institutions.
Changes in the perception of higher education

Universities are often referred to as the ivory tower. The metaphor of an ivory tower represents the traditional view of universities since the Middle Ages, embodying romanticism and idealism amidst the solitude and freedom associated with higher learning. Perceptions of universities today, however, are undergoing changes that go against the connotation of ivory tower. Thus, traditional pedagogy and contents of education are forced to change. From design of departments and fields of major to university constituents, there is little, if any, that could withstand the pressure for change. It is perhaps no surprise that universities that have failed to live up to such new perceptions are facing vulnerable situations in this time of transition. The new perceptions are characterised by the concept of an “educational industry”. Under the ivory tower metaphor, such ideas as an educational market or the student client were not part of the picture. But today’s universities need to formulate a survival strategy to improve the quality of education for enhanced institutional competitiveness. Those that lag behind in this struggle to survive are the ones that will face the threat of vulnerability. Departments, faculty, and colleges that do not cater to students are at a higher risk of being doomed.

Lack of efficiency-oriented educational management

The change in perception of universities is characterised by a shift from the supplier-centered to the consumer-centered view. The university as supplier of education can achieve stable growth only if it offers quality education to students, the consumer. Korean universities, however, are not all equipped to provide such quality education, since financial predicaments, inefficiencies in curricular administration, poor research results, and limitations in current teaching methods stand in the way of progress.

Therefore, not all universities in Korea are on the path to continued prosperity. The institutions that are unable to satisfy the education consumers are forced to restructure. An important requirement in becoming an effective college is an attitude that values efficiency in the management of the institution. Unfortunately, constituents of Korean universities are not very familiar with this, and even those who are have excessively focused on corporate-style business management philosophies or techniques, while failing to fuse them into educational missions. This has caused them to damage the very nature of higher education. Tough times call for tough management. Further, an effective integration of education and business management is a prerequisite for growth of universities and their success in meeting their societal responsibilities. Korean universities are undoubtedly unprepared in this regard. In short, the lack of an efficiency-oriented attitude in educational management is a serious cause of the vulnerability they experience today.
The paradigm shift of university in the 21st century

The institutions of higher learning throughout the world are faced with one difficulty or another depending on the circumstances of the country in which they are located. Korean universities are no exception in this respect and are witnessing threats that were experienced by some developed countries during the 1980s. The western universities in the 1980s had set forth a survival strategy incorporating the 3Rs of “reduction”, “reallocation”, and “retrenchment”. These 3Rs also represent the tasks that Korean universities need to undertake as part of their restructuring efforts. At the start of the 21st century, our universities have to transform and adopt new paradigms. The strategies they design should reflect this very need for change.

The systems of higher education in the 21st century are expected to simultaneously take on two major forms. One form would converge and reflect in its structure and management, the various social, economic, cultural, and political changes that take place, and the other would pursue forward-looking strategies for self-development and survival. Given these projections, the prevailing university educational system would be an open one conducive to executing its functions and roles in an efficient manner.

These changes in system could be expressed in terms of the five paradigm shifts delineated below.

● First, the idea of a multitude of separate departments and fields of major will give way to an interdisciplinary approach to research.

● Second, mobility among disciplines, programs, and schools will increase and become more common place.

● Third, teaching methods will accommodate one-on-one learning and allow for arrangements for “credit banking” or a “license” system. Moreover, off-campus education programs such as the “home schooling” or “study-at-work” offerings will become popular alternatives. Other characteristics such as “time-sensitive learning” and “transnational learning” will also permeate the educational scene.

● Fourth, one dominant factor in the future system of higher education will be the dynamics of supply and demand. The flows of human and physical resources of universities should be a factor into the paradigm shift. The inward-looking practices of higher education are likely to taper off and give room to such borderless concepts as “no major”, “no school year”, “no nationality”, and “no required courses”. In addition, the student admission process is expected to become more creative and diverse. Specialised admission policies should be able to address the issue of diminishing applicant pools (since 1999), and partnerships with foreign universities and joint degree programs should
alleviate some of the tendency for applicants to aggressively compete for top-ranked schools.

● Fifth, an interdisciplinary and inter-major approach in curricular administration should dilute distinctions made at the departmental level. Further, “community university programs” are foreseen to grow to strengthen cooperation among universities, businesses, research organisations, and the local communities. At the same time, the promotion of lifelong learning programs should see changes in the student body in terms of age and part-time commitment, and also bring about varied enrolment and credit policies, credit banking systems, and license programs. In short, the system of higher education in the 21st century will shift to one centered on the consumer and user. Lifelong learning and liberalised programs will gain greater popularity. Specialisation, diversification, customer-oriented approach, networks, cooperation, competition, and quality management, are what is important in such a transformed system.

Reform plan for university education system

In today’s information-based society, competitive education is contingent on a bold reform of the present system of higher education. Thus, any discussion of such a reform is predicated on a shift toward new paradigms, which in turn are conditioned on changes that meet the requirements of the knowledge-based society.

With this in mind, we must set forth a general direction for reform of systems of higher education.

In order to realise growth by capitalizing on quality manpower, what is called for is a fundamental reform of higher education. More specifically, universities, under the mission of fuelling a new growth engine, should play central roles in producing human resources in research, meeting the industries’ needs for technological manpower, and engaging in community innovation activities.

General directions for the reform of higher education

Higher education in a knowledge-based society should capture the dominant trends in globalisation, information technology, specialisation, and diversification to enhance competitiveness. Therefore, it makes sense to indicate the general directions in which the reform of higher education should be oriented.

Universities may be strengthened and made more competitive by pursuing reforms toward the three goals delineated below.6
**Consumer-oriented system**

The basic system of university education must be changed from a supply-oriented system to a consumer-oriented one. This implies changes in the running of school affairs in university. The consumer-oriented system requires consumerism on the part of new students, the curriculum, and the university system itself. The transformation of a supply-oriented system into a consumer-oriented system is the fundamental aspect of the reform plan, and thus the consumer-oriented system must be a presupposition for the university reform.

**Accountability**

The university system that the knowledge-based society requires stresses consumers' (students') knowledge. To this trend, the main direction of the university system is focused on the increase of autonomy and accountability. Because the accountability of the university implies the satisfaction of social demands, the pursuit of accountability in the university is also another direction for the university reform.

**Globalisation**

University education in the 21st century should be considered in terms of globalisation. As the university education in the 21st century is characterised as transnational education, in the end the trend of globalisation influences all aspects of university systems including school administration and curriculum. As the 21st century can be regarded as the century of “learning mobility and borderless education”, the influence of globalisation on university education will not be underestimated in Korea.

Universities also focus on the task of localisation, because most universities must satisfy the regional demands. Thus, the university not only pursues the goal of globalisation but includes the task of localisation.

**Information technologies**

The 21st century university education cannot fulfil its mission without understanding the importance of information technologies. It is said that one of the current crisis in university is caused by the traditional campus-oriented college. The successful reform plan in the 21st century depends on whether the university can utilise the characteristics of an information intensive society or not. The computerised campus can help both students and professors. The adaptation of an alternative schooling system including home schooling will be a key part in reforming the university education.
Specialisation and multifunctional strategy

The 21st century universities cannot survive without developing special strategies. A strategic plan for developing university education can be followed by the specialisation and multifunction of the university system. The change of curriculum is the prerequisite to specialisation of university education. According to the specialisation strategy, the university system can be transformed into various types of colleges. As the specialisation and multifunctional strategy of university is in line with the reform plan of university, the strategy is a main element in restructuring the university system.

Quality-control system/autonomy

The quality-control system should be a main criterion for the reform plan. So far, universities in Korea have been dependent on external evaluation institutions instead of relying on the universities' own evaluation systems. But the environment in the 21st century strongly requires each university to implement self-evaluation systems. Thus, the quality-control system which examines and evaluates the administration and management of the university must be included in the reform plan. Therefore, one of the main tasks of the university reform is the establishment of a quality control system on which the autonomy of the university is based.

Cooperation and competitiveness

One of the main goals for university reform is to build a competitive system, which combines cooperation and competition. A useful and competitive university can be created combining cooperation and competition at inter-university, inter-region, and inter-country levels. What we call the “two C strategy” (cooperation and competitiveness) is a fundamental direction of the university reform. The sharing of facilities and staff between universities is a way to improve the competitive characteristics in universities.

The construction of a cooperating system between universities is an essential way to promote the competitiveness of each university and all universities in Korea. If university leaders accept the cooperating relationships with other universities and satisfy the consumer's demands, then the university reform plan will have gained justification.

University tasks for the knowledge-based society

The reform plan should focus on the basic directions that are outlined above. But the reform plan is not fully suitable to all universities, as each university has many different aspects, such as founding ethos, its educational
goals, and local and social characteristics. Thus, not a specific plan but a general plan is efficient for the university reform.

**Restructuring of general education**

One of the characteristics of the 21st century university is to strengthen general education. General education based on co-operation with society can transform the current education system into an open education system. The main changes of the system will be:

1. concentration on teaching and learning service;
2. focus on social-centered curriculum;
3. extension of professors' services to society;
4. widening of consumer-oriented teaching and learning;
5. generalisation of project-oriented curriculum.

**Restructuring of universities: from campus-based college to campus less college**

The forthcoming change of universities in the 21st century is expected to restructure the traditional college. This change is caused by the development of society and technology. The results of restructuring universities will be:

1. mobile college;
2. cyber college;
3. multi mission college;
4. experience-centered college;
5. multi national college;
6. mission extended college.

The restructuring of university could finally lead to the openness and to campus less colleges.

**Change of staff’s role: administration to strategic management**

All staff are required to meet a new role and function. In particular, a new role on teaching-support group is imposed on staff. The following changes are foreseen.

1. administrative staff → education supporting staff;
2. traditional administrative staff → strategy managing staff;
3. staff classified by job → staff classified by team;
4. tenure staff → contract staff;
5. monthly salary → yearly salary;
6. promotion by rank → promotion by evaluation;  
7. administrative manager → innovative CEO.

**Change of professorship: contract professor**

After the introduction of tenured professorship in advanced countries including the United States, professors’ roles were focused on the field of research instead of schooling. Accordingly, reconsiderations on the tenured professorship are now prevailing in university.

Along with the various types and roles of professors including contract professors, the post-tenure review system is replaced by tenured professorship. The new post-tenure system will evaluate the tenured professors, and this trend will be expected to strengthen in the 21st century.

**Change of university management: quantity centered development → quality and strategy centered development**

So far, all universities in Korea maintained an expansion strategy which aims at improving facilities and size of campus. The universities in the 21st century have to direct their development strategy towards quality based management instead of quantity based management. The following are the characteristics of the change.

1. adaptive strategy;  
2. TQM;  
3. CQI (Continuous Quality Improvement);  
4. learning customer oriented management;  
5. profits making college.

**Internationalisation/globalisation**

1. strategy for recruiting foreign students;  
2. expansion of multi-language, multi-cultural education;  
3. construction of a strategic cooperating system;  
4. establishment of international education organisation;  
5. global learning net construction.

**Restructure of university system**

1. strategy system  
   (coexistence system → competitiveness system → discrimination system);  
2. responsive university;  
3. fusion system → network system;  
4. block-type recruiting system.
Conclusion

The 21st century society is characterised as a knowledge-based society, education mobility society, and cyber schooling society. This new paradigm of university enables us to restructure the university system in Korea.

Although the restructuring task of university education is not a simple problem, there is no other way but to change the current university system. In order to keep up with the international trend, higher education institutions in Korea should change their management system. The strategy for management innovation can be summarised as: 1) harmony with tradition and renovation 2) harmony with specialisation and diversification 3) harmony with quantity and quality development 4) harmony with the domestic and international aspects.

In short, a positive method to restructure all educational systems including schooling and curriculum is inevitable. In addition, the transformation of the education structure is also recommended.

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Notes


4. This statistical figure includes air and correspondence university student population and college equivalence degree granting school population.


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Civic Mission and Social Responsibility
New Challenges for the Practice of Public Relations in Higher Education

by

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What is the civic mission of the research university in a modern society? How does it challenge the Public Relations professionals of universities?

The Finnish Higher Education Evaluation Council, a specialist organ of the Ministry of Education, has conducted several university evaluations with special emphasis on the regional role of Finnish universities. In February 2004, the Finnish university legislation was changed to include the civic mission as the third basic function of the universities, parallel to research and teaching. This change can be seen as both a challenge and a recognition of the PR professionals of Finnish universities.

This article intends to clarify the concept of the civic mission, and to find eventual connections to and similarities with the concept of corporate social responsibility.
Introduction

“It isn’t just a technology transfer thing. It’s figuring out how we can use this relationship to learn together how to benefit a broad community.”

Don Wyse (cited in Peters, 2002, p. 6)

Who would deny the fact that a nation’s well-being and development are related to its level of education and research? The most developed countries tend to be the best educated, which spend relatively more on education and R&D. The role of education is crucial in social development and economic growth. It forms and preserves cultural identity, maintains social cohesion, fights poverty and for a culture of peace (de Gaudemar, 1997; Sánchez-Sosa and Lerner-Febres, 2002).

Universities are complex organisations with multiple objectives and standards in teaching, research and community service. Cultural shifts are forcing teachers, scientists and policy makers to reflect on their purpose and function in society. Diverse interest groups with specific expectations require recognition. The question is: what is the civic mission, the third role, of a research university today? And, how does it challenge educational public relations?

Recent trends that have had an impact on the development of higher education all over Europe have been diversification of student groups, breakdown of university monopoly over research and teaching, competition between universities and polytechnics, massification and globalisation of higher education, multiple sources of funding, IT based distance learning, and financial constraints (Davies, 1997a; Dill, 2003; Goddard, 1997).

Defining the third role

In 2004 the Finnish Universities Act was amended to include the civic mission as the third basic responsibility of universities, as an almost parallel concept to research and teaching. The concept is not unambiguous, even though frequently used in academic discussions. The academic work usually centres on discovery, teaching, application and integration. It has been argued that application and integration have become more relevant recently. This is also due to the new stakeholder expectations universities need to meet. For example the Center for Higher Education Policy Studies (CHEPS) of the University of Twente is involved in a five-year research programme entitled
“Higher Education and the Stakeholder Society”, and in 1998 the International Association of Universities (IAU) drew up a “Statement on Academic Freedom and Social Responsibility”.

**University/regional interface**

Regional development is not a new issue for higher education (HE) but dates back to the 1960s when, in Finland as elsewhere in Europe, new higher education institutions (HEIs) were created along with the expectation that they assist regional development. Universities support local economic development through technology transfer, development of skills and by attracting new investment. According to Goddard (1997) there are three agendas that help us to understand the university/region interface. The first is the agenda of those concerned with regional development, the second consists of the concerns of industry and commerce, and the third is the agenda of the universities that consider the region as a source for new students, research contacts and sponsors.

Kanter suggests that, to become world class, organisations should pay attention to the three C’s – concepts, competence and connection (cited in Goddard, 1997, p. 11). Concepts include the incorporation of the latest knowledge and ideas into goods and services. Competence means the ability to produce goods and services to the highest standard. From the point of view of public relations, the third C – connection – is relevant, referring to maintaining relationships which provide access to the resources of other people and organisations around the world.

According to Lundvall (1996, pp. 2-3), a learning economy indicates an economy where the success of individuals, firms, regions and national economies reflect their capability to learn (and to forget, which is often a prerequisite especially for learning new skills), where change is rapid and where the rate at which old skills become obsolete and new ones are in demand is high. Knowledge includes skills and fundamentally learning is a process of building competencies. Learning is an activity in all parts of society.

In a learning economy, four types of knowledge can be identified: know what (facts), know why (principles and laws), know how (skills and capabilities), know who (social capability to link to others to draw on their expertise). The networks that depend on the transfer of knowledge can be considered as a quintessential characteristic of a learning economy or region. The public relations professionals are experts on the know who aspect, the form of knowledge that is derived through social interaction and professional networks.

Davies (1997a) refers to the importance of understanding and management of university culture. A healthy culture can promote identification (who we
are), legitimation (why we need to do), communication (with whom we talk), coordination (with whom we work) and development (what are the dominant perspectives and tasks). Davies categorises university cultures as the Collegium, the Bureaucracy, the Enterprise, and the Corporation. The Collegium means decentralized power and operational control and it is dominated by professors and the academic community with professional autonomy. The Bureaucracy is characterised by weak policy direction and strong administrative control. Strong policy directions but weak operational controls are typical of the Enterprise. The proposition is that individuals and groups need freedom to be creative. The Corporation has a high degree of centralisation, strong policy direction and control of operational details. The universities of the past were mostly collegiums and bureaucracies, but the rapid changes of the past decade have moved them more towards enterprises and corporations. A clear preference can be seen for the Enterprise model with strong, externally focused culture, common patterns of shared belief and ability to respond quickly to external change. Regional collaboration can foster more understanding and convergence between the traditional HE culture (closed, knowledge oriented, discipline based, elitist) and the continuing/technical/business/polytechnic education culture (open, client oriented, equal) (Davies, 1997b).

Atkins, Dersley and Tomlin (1999) point out that even technology transfer is not a narrow, linear matter of patents, licences and new equipment, but a complex, holistic process involving multiple partners, and crucially dependent on the quality and nature of the interactions between the human beings involved.

**The rise of the third role**

The Finnish Higher Education Evaluation Council (FINHEEC), a specialised organ of the Ministry of Education, has conducted several university evaluations with special emphasis on the regional role of universities. The regional role of Eastern Finland universities was evaluated in 1998 and re-evaluated in 2003, the external engagement of the University of Turku was assessed in 2000, and the follow-up evaluation of the University of Vaasa was conducted in 2000.

In 2001 the Finnish Government completed a report called *The Regional Development of Higher Education* which includes the evaluation of the regional coverage of HE and recommendations for further development. The recommendations included, for example, strengthening the role of HE in the regional innovation system. This could be done by including the third role in the Universities Act, by creating a regional strategy for HE, through active dialogue between different ministries in the questions of regional development and by shaping regional targets and incentives for universities.
and polytechnics. Regional co-operation between universities and polytechnics was particularly emphasized.

As recommended, the Ministry of Education produced the Regional Development Strategy in 2003, the same year the Science and Technology Policy Council of Finland undertook a review entitled Knowledge, Innovation and Internationalisation with special reference to the role of universities in regional development:

“The burning question in today’s debate is how to include the duty to promote the utilisation of new knowledge in the Universities Act as the university’s third mission. This question arises from both the growing expectations directed at universities by the users and from the legislative issues involved in efforts to reconcile the university’s administrative culture, business and research ethics.” (p. 32)

The Ministry of Education advised the universities and polytechnics to produce common regional development strategies by the end of 2002. The strategies are now in the first phase of implementation.

**Universities Act**

The duty of universities is to promote free research, scientific and artistic culture, to provide teaching based upon research, and to raise the youth to serve the nation and humanity. The Finnish Universities Act is being amended according to the Government’s proposal and it is expected to come into force on 1 August, 2005. One of the changes of the proposal is that in order to strengthen their social role, universities are obliged more than before to engage in interaction with the rest of society and to promote the social impact of their research findings. Scientific research and teaching based upon this research will remain the prime responsibilities of universities. The mission will thus not become tripartite as in many other European countries where research, teaching and service are considered equal. In Sweden for example, the service element, interaction with society, was written in the Universities Act in 1998 and at the same time a new model of regional development contracts was introduced. HEIs play a central role in implementing these new instruments of development. (Virtanen, 2002)

**The third role in recent academic discussion**

Since professors are key influences in HEIs, a pilot study was conducted to analyse the contents of the third role and civic mission by searching for articles on the third role in two labour union magazines published in Finland and in the United States. However, we should not forget, when comparing results from the two countries, that there are 21 universities and 29 polytechnics in Finland and some 1 700 research universities in the United States.
The Finnish magazine Acatiimi is published 10 times a year by the Finnish Union of University Professors (FUUP) in association with the Finnish Union of University Researchers and Teachers (FURT) and the Finnish Union of University Lecturers. The issue 8/2003 was devoted to the theme of the third role. This was also the topic of the 2004 annual Communication Academic meeting organized by FUUP and FURT. The meeting was reported in the Acatiimi issue 2/2004. Academe is the bimonthly magazine of the American Association of University Professors (AAUP). The issue 4/2000 was entitled “Are We Good Citizens? Civic Engagement and Higher Education”.

On the basis of these sources, the following constituents of the third role, or civic mission, were identified. In the Finnish context the third role usually means that the knowledge produced in, and by, the international scientific community is transmitted and applied to respond to social and regional needs. The discussion is clearly centred around the welfare-producing regional impact factor, while, in this area, the American focus was more in the civic purpose of HE, community engagement and dialogue. In Finland the third role has traditionally been given to applied sciences, career services, or to continuing education. Finnish universities seem to lack overall strategies for regional involvement, which would include curriculum development and community service as well as technology transfer.

Defining social responsibility

**Ethical background**

The Western ethical thinking is largely based on Aristotelian and Christian ethics. The major ethical approaches usually presented in connection with corporate social responsibility (CSR) are the deontological and teleological approaches. Deontology, also called Immanuel Kant’s *categorical imperative*, refers to a sense of duty, motivation and understanding of right and wrong and emphasises rational reasoning. Kant advises us to act according to a rule that can be considered as a general law. Humanity should never be treated simply as a means but as a valuable end. The idea can be compared to the Christian recommendation: Do unto others what you would have them do unto you. The Kantian ideology is also called the non-consequentialist perspective (Somerville, 2001).

Teleology does not evaluate acts on the basis of conviction or the rationality behind them but on the basis of consequences (the consequentialist perspective): how much human life is improved, or how much good or bad will follow for mankind. The ethical utilitarian approach by John Stuart Mill aims at the greatest pleasure and happiness for the greatest possible number.
Mill represents classical liberalism and is the forerunner of the Enlightenment philosophers, like Thomas Hobbes and John Locke. Enlightenment has been the major line of Western thinking during the past centuries. Jean-Jacques Rousseau already represented more community-centred thinking, for which Friedrich Hegel and Karl Marx are known. After the fall of communism, this ideology became popular particularly in the United States and is called communitarianism. Emphasis is laid upon the community and social responsibility as a counterbalance to individualism and commercialism. Many of the ideas presented in the Academe magazine clearly represent communitarianism, which is also concerned with character development and individual virtue. In the United States almost 700 HEIs have become members of Campus Compact, a coalition of universities committed to helping students develop the values and skills of citizenship through participation in public and community service. Campus Compact focuses on fostering citizenship and democratic renewal (Colby, et al., 2000).

According to Leeper (2001) communitarianism can provide a metatheoretical basis for the field of public relations. He combines public relations models, the concept of public, CSR, and ethics under the communitarian thinking. The philosophy of communitarianism asserts that the provision of individual rights requires responsibility on the part of all members of the community (Wilson, 2001). In the pilot study (Figure 1), we see that responsibility is also considered as a prerequisite to academic freedom.

Academic honesty and honour codes

The Finnish National Advisory Board on Research Ethics is an expert body nominated by the Ministry of Education. It was founded in 1991 to address ethical questions related to scientific research and to advance research ethics. In 2002 the Board published a document entitled Good scientific practice and procedures for handling misconduct and fraud in science. Universities and other research organisations have been able to register commitment to the document since April 2002. All 21 Finnish universities and the majority of polytechnics have expressed their commitment. According to the guidelines, the responsibility for abiding by good scientific practice rests with the research community as a whole. If the academic community is truly committed to high ethical standards in all its basic functions, those values are most likely to influence individual decision making. For example, McGabe and Treviño (2002) report significant increase in serious cheating in tests and exams among American university students. The numbers were much lower in the universities that followed honour codes that were effectively introduced to new students.
Corporate social responsibility (CSR)

CSR is closely related to the stakeholder model, according to which a corporation needs to pay attention to the interests of different stakeholders and to its social duties, not just to maximizing profits. The stakeholder model is a prerequisite to responding to social needs through community involvement. Kantian thinking that people are not just means, but an end in themselves, can be seen in this model.
CSR is not a new concept, even though it is sometimes considered to be a fad of our millennium. The modern concept originates from Howard Bowen’s 1953 text, Social Responsibilities of the Businessman. Bowd, Harris and Cornelissen (2003) point out that there is a lack of definition of CSR and of its position within organisations. They derive a definition of CSR from the views of Pages (Griswold, 1967; Carroll, 1999; Wood, 1991; Freeman, 1984 and Friedman, 1982):

“CSR is corporations’ being held accountable by explicit or inferred social contract with internal and external stakeholders, obeying the laws and regulations of government and operating in an ethical manner which exceeds statutory requirements.” (p. 19)

The authors place the ethical approach with the organisation’s strategy; this is exemplified by commitment to community involvement, quality assurance, sustainable development, and personnel policy. Accountability is audited and results are communicated to the stakeholders. The aim of CSR is to generate growth, revenue and profit directly or through intangible assets.

The Confederation of Finnish Industry and Employers (2001) describes the elements of CSR as listed in Table 1. Because social responsibility is particularly interesting for this research, the components of community involvement are classified in detail. It is important to note that while the university is trying to meet the needs of its region, this is also the aim of private enterprises seeking to do the same, to act in a responsible manner.

Table 1. **Components of CSR**

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<th>Economic responsibility</th>
<th>Environmental responsibility</th>
<th>Social responsibility</th>
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<td>Productivity, competitiveness, efficiency</td>
<td>Sound management of natural resources and the environment</td>
<td>Implementation of good working practices</td>
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<tr>
<td>Shareholder value</td>
<td>Protection of water, air and soil</td>
<td>Well-being and competence of personnel</td>
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<td>Contribution towards the well-being of society</td>
<td>Combating climate change</td>
<td>Product safety and consumer protection</td>
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<td>Basis for environmental and social responsibility</td>
<td>Using natural resources in a sustainability way</td>
<td>Fluid teamwork within the corporate networks</td>
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<td>• written codes of conduct for partnership</td>
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<td>• product information</td>
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<td>• adequate information flow</td>
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<td>Collaboration with local community, philanthropy</td>
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<td>• information about the enterprise</td>
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<td>• contacts to officials and politicians</td>
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Goodpaster and Matthews (1984/2003) argue that an analogy holds between the individual and the corporation and thus claim that a corporation, as well as an individual, can have a conscience. Joni (2004) analyses whom senior executives should trust. She describes three categories of trust. The first is personal integrity: We trust someone’s ethics. The second is expertise trust: We rely on surgeons and mechanics. The third category is what Joni calls structural trust. She means that the forms of trust depend on where one’s position is in the firm. Advisers in positions of high structural trust usually reside outside organisations. Joni suggests that third-opinion advisers can remind leaders of weaknesses and blind spots and help them correct them. If, according to the Goodpaster and Matthews’ analogy, the previous is applied to HEIs, the trustworthiness of the university could be built on the following aspects: 1) The public should be able to rely on the university to exalt and follow high ethical values (integrity and dependability), 2) The public should be able to rely on the sovereign expertise of faculty members (competence), and 3) The university should rely on external advisers to bring different expertise, fresh perspectives and insight to the university (dialogue).

The generally approved elements of trust are integrity, dependability and competence. Dialogue could be added as the means of communicating the other elements of trust to the university’s public, and as the means of advancing a more overt, reciprocal, enterprise-type organisation culture.

**Dialogue, community relations and the implementation of the third role**

**Dialogue**

In the material studied for this paper, the concept of dialogue appears repeatedly. Dialogue requires a two-way flow of ideas. HEIs are traditionally involved in a variety of dialogues. There are dialogues within the national and international HE community and with the external stakeholder community. It is necessary for HEIs to promote mutual understanding, acceptance and tolerance in a diverse world; and the role of public relations is to serve the public interest, increase mutual understanding, and encourage debate and dialogue (Grunig and White, 1992).

The Brazilian education specialist Paulo Freire brought the concept of dialogue to education. Democratic education should adopt a model based on dialogue whereby students, teachers, and community members participate in an educational process where knowledge is collectively created. Everyone involved has something valuable to contribute.

The first attempt to consider dialogue as a public relations theory was made by Pearson (1989) in his doctoral dissertation where he considered it
essential for ethical public relations to have a dialogic system rather than monologic policies. Hammond, Anderson and Cisnna (2003, pp. 145-146) identify two types of dialogue that imply the power involved: convergence and emergence. Convergent dialogue is designed to solve a particular problem or create a desired consensus, while emergent dialogue generates the unexpected. Convergent dialogue “serves to maintain and defend a paradigm, a body of literature, a set of values, profitability, hierarchy, and other factors.” The power of the authorities in question is not challenged, neither are the social networks or institutions disrupted. In emergent dialogue “ideas conflict, clash, and combine until something new appears”. Emergent dialogue challenges the parties involved through equal participation and empowerment. Knowledge produced in the mutual dialogic process is considered as a basis of decision making rather than institutional structures.

Day, Dong and Robins (2001) believe that ethical practice in the field of public relations will require practitioners to be facilitators of dialogue and listeners as much as speakers. Strong leadership will be needed from high-profile organisations that exemplify best practices, in opening their own practices and decision-making to public criticism.

**Community relations**

The element of CSR that is particularly relevant for further research is community involvement. During the past five years, public relations scholars have reported the shift of public relations from managing publics and public opinion towards building, nurturing and maintaining relationships and interpersonal channels of communication (Clark, 2000; Bruning, 2002; Kent and Taylor, 2002; Ledingham and Bruning, 2000). “Corporate community involvement is the face of corporate social responsibility in practice”, says Theaker (2001, p. 147). Community relations can be described as “an institution's planned, active, and continuing participation with and within a community to maintain and enhance its environment to the benefit of both the institution and the community” (Peak, 1998, p. 117).

Ledingham and Bruning (2000, 2001) suggest that community relations should be built through a process that identifies the needs of the community, develops initiatives that respond to those needs, and communicates organisational support of those initiatives to community members. Accordingly, organisation-public relationships can and should be managed for mutual benefit. The community benefits from the organisation's community involvement, investment and commitment. The organisation, in turn, benefits from increased loyalty towards the organisation. Relationship variables of openness, trust, involvement, investment and commitment, influence evaluations of satisfaction with the organisation.
Teune and Plantan (2001) discovered that significant differences were found in terms of effectiveness and in the scope and penetration of universities’ community outreach initiatives, depending on whether they were integrated into the institutional mission or came from the activities of university staff acting on their own initiative. The list of the university’s contributions to community life could be impressive but institutionalisation and coordination were lacking. According to Thomas (2001) new structures could be created for this purpose by combining the functions of public relations, learning centres and career services into a centralised administrative-academic unit with outreach mission.

Conclusion

HEIs in Finland are public organisations, even though some 50% of the universities’ revenue may come from other sources than public funds. In this sense they are very different from private enterprises; actually, the demand for social responsibility, motivated by high ethical principles is even more obvious. As Goddard (1997) suggests, the challenge is to move the university agenda from an exploitative relationship with the region to a stakeholder model which highlights the mutual interdependency of the community and the university.

In her research into CSR in the Finnish business context, Juholin (2003) revealed that the managers’ views about communication, its role and contribution, were narrow and mechanistic. She concluded that corporate communication does not play a very strong role in the CSR activities or is not consciously implemented in CSR processes, and has failed to demonstrate its contribution to CSR. Communication was considered an informing, supportive one-way function, not a strategic or tactical core competence.

Similarly, it was hard to locate the role of public relations practitioners in the context of university/regional interface, or the third role. When Goddard (1997) studied how British vice-chancellors were supported by other officers in meeting the responsibility for community linkage he realized that if any officer had a lead role, it was most likely to be the public relations officer. In Finland the public relations professionals do not seem to be involved in the relationship management of their universities. For example, one of the questions the evaluation team of Eastern Finland universities specifically posed to these universities was on relationship management and leadership. None of the universities (Joensuu, Kuopio and Lappeenranta) mentioned that public relations officers would have any role in it (Goddard, et al., 2003). However, Virtanen (2002) suggests that the interaction between the university and its stakeholders should be managed, marketed, encouraged and developed, preferably by creating new managerial posts.
If PR is a professional management function that initiates or maintains relationships between an organisation and its public, where is its role in university/regional interface and CSR processes? If the dialogic model of building, nurturing, and maintaining relationships is the ideal way of contributing to the implementation of the third role, what is demanded and expected of educational PR in Finland? These are the major questions for further research.

It is obvious that some organisations have a lower tolerance for multiple opinions and incoherence than others and, accordingly, are more likely to prefer a convergent dialogue to emergent, if any. Even public relations scholars suggest communicating with one voice, as a solution to the plethora of messages that now characterize public relations practice in HEIs. No doubt there is a great need for joint efforts, cohesion and coordination in educational public relations but, if dialogue and negotiation are seen as prerequisites to successful community relations, HEIs must learn to accept diversity and the many voices that characterize their own academic work when they appear in the context of community relations.

The Universities Act amendment will legitimate the service function of universities and implies more structured regional engagement and more efficient transfer of research findings to common good. On the basis of the literature studied, and the limited material used, some major lines can be drawn as prerequisites for a successful implementation of the third role. First, more precise definitions are needed on what is meant by the third role. However, some variation is acceptable because HEIs as well as their regions are different. Secondly, the third role challenges university management to develop new managerial visions and both internal and external strategies for efficient community engagement, preferably in collaboration with the other HEIs of the region. Thirdly, the Ministry of Education is expected to include the third role in the governing mechanisms of HEIs and to promote the evaluation of its implementation. And last but not least, the role of educational public relations should be redefined as a managerial function which contributes to successful engagement in dialogue and two-way communication with the region and thus to the implementation of the third role.

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**Articles used for the pilot study**


Information for authors

Contributions to the Higher Education Management and Policy Journal should be submitted in either English or French and all articles are received on the understanding that they have not appeared in print elsewhere.

Selection criteria

The Journal is primarily devoted to the needs of those involved with the administration and study of institutional management in higher education. Articles should be concerned, therefore, with issues bearing on the practical working and policy direction of higher education. Contributions should, however, go beyond mere description of what is, or prescription of what ought to be, although both descriptive and prescriptive accounts are acceptable if they offer generalisations of use in contexts beyond those being described. Whilst articles devoted to the development of theory for its own sake will normally find a place in other and more academically based journals, theoretical treatments of direct use to practitioners will be considered.

Other criteria include clarity of expression and thought. Titles of articles should be as brief as possible.

Presentation

** Electronic submission is preferred. Three copies of each article should be sent if the article is submitted on paper only.

Length: should not exceed 15 pages (single spaced) including figures and references (about 5 000 words).

The first page: before the text itself should appear centred on the page in this order the title of the article and the name(s), affiliation(s) and country/countries of the author(s).

Abstract: the main text should be preceded by an abstract of 100 to 200 words summarising the article.

Quotations: long quotations should be single-spaced and each line should be indented 7 spaces.

Footnotes: authors should avoid using footnotes and incorporate any explanatory material in the text itself. If notes cannot be avoided, they should be endnotes, at the end of the article.

Tables and illustrations: tabular material should bear a centred heading "Table". Presentations of non-tabular material should bear a centred heading "Figure". The source should always be cited.

Addresses of author(s), including email, should be typed at the end of the article.

References in the text: Vidal and Mora (2003) or Bleiklie et al. (2000) in the case of three or more authors. However, the names of all authors should appear in the bibliography at the end of the article.

Bibliography at the end of the article: references should be listed in alphabetical order under the heading “References”. Examples of the reference style used in the Journal are:


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