

The university in the 21st century

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ABSTRACT

In some of the other talks I have given on my present visit to New Zealand, I began with a disclaimer, designed to insulate me from all criticisms and reproach: my all purpose disclaimer is that I am an outsider. In this case too, I have no particular knowledge of Victoria University or indeed of any other university in New Zealand. On the other hand, there is sometimes a real advantage in labouring under a certain degree of ignorance about local affairs because it forces one to address the kinds of issues that face universities, here or in the United States, as a matter of first principle. I hope that a discussion at this level will resonate with people associated with universities as they think about their own present situation.

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Old traditions and new challenges

Universities are among the oldest institutions in the civilised world. Great businesses come and go. If we were to look at the hundred most long-lived continuous institutions, leaving aside a few religious ones, virtually all of them would, I think, be universities. While the interests and priorities of universities will change from year to year, their long-term concern with the transmission of knowledge for the benefit of individuals, scholars and students and for society at large is an inescapable, permanent and necessary component of what they do. To the extent that we academics stray from that mission, by trying to be all things to all people, we dissipate our resources and lower our standards.

The key aims of universities are, to some degree, permanent. We try to run universities so as to bring out the best in our students and our faculties. We try to advance knowledge by our collective research. We try to enable students to go out into the world, able to discharge the many tasks that society expects of them. We hope that among their ranks there will be some who can return as

members of university faculties and continue the generation and transmission of knowledge into the next generation.

Universities do not all have the same culture. An institution that is independent will have a somewhat different internal culture from institutions that have close state affiliations. The fact that funding comes from state sources, as opposed to private sources, guarantees some differences. But for present purposes, I think it would be wrong to stress the differences between a public institution and a private institution, and I will explain why I think that is the case.

The first structural point to make about public institutions in the United States is that they are operated by the states and not by the national government. This small detail is of no minor significance. What it means is that the United States does not have one national university system; nor is there any coordination between the states to create a monolith, as is the case in Germany. By virtue of our fragmented system there is strong competition, not only between public and private universities but also between public and public universities. This market structure in turn means that, at least within our environment, public universities face real threats of competition from a wide range of other institutions and thus have to work constantly to maintain and improve their performance.

It seems to me that the public institutions in New Zealand face similar pressures. At least to some extent they are in competition with one another. However, in a small country the single greatest source of competition comes from overseas. You have to worry about the loss of your best professors abroad. Your best graduate students can enrol in universities in other countries. That ought to be a sufficient spur for universities to use the resources at their command in a way that is most likely to ensure their success.

Universities are always faced with the problem of resource constraints. This issue becomes ever more serious because education does not get cheaper, only more expensive. This is especially true in the case of teaching and research in the physical and biological sciences. Simply providing a laboratory for a professor of science at the University of Chicago, say on initial appointment, can cost US\$250-500,000. Some portion of that money may be met by external grants, but usually much of it has to come from the university's own funds. Indeed one reason why universities need to build up endowments is to create an internal banking system whereby, on the strength of local knowledge, they fund risky projects that outsiders steer clear of.

Financial considerations force universities to make critical policy choices. First, key decisions have to be made about the areas in which to specialise. The worst thing a university can do is engage in a pattern of what might be called pro-rata resource allocation. This happens when it cannot decide on its priorities. In an effort to please all factions and to avoid internal dissension in the short run, it spreads its resources thinly. Therein lies the road to mediocrity. To remain successful, and to be able to compete at national and international levels, a university must be prepared to make hard choices and decide the areas in which it has genuine expertise. It must support them and cut back on others that, while equally worthy in the abstract, must be given a lower priority for highly idiosyncratic reasons: perhaps a strong pool of talent in one area, a close connection with local research laboratories in another.

The role of joint ventures

Universities also have to reject the notion that they are autarkies, self-contained and self-sufficient institutions which simply look at the rest of world with disinterested detachment. They should actively engage with all sorts of outside entities in ways that preserve their own intellectual mission and advance their programmes.

When considering deals with outside interests, universities should think in terms of gains from trade. If it is sufficiently adept, a university can enter into joint ventures with other kinds of

institutions in ways that make its resources go further. This requires a particular frame of mind on the part of university administrators and faculty. They have to be able to engage in teamwork as well as individual research. They may need to devise sophisticated contractual arrangements and set up independent boards to supervise projects. The returns from such endeavours can be enormous.

We have attempted such initiatives at the University of Chicago. For example, we have extensive collaboration with several outside laboratories, and have charge of running the Argonne National Laboratory, one of our great national research facilities. The relevant contracts are complex, and the members of our physics department have become very good lawyers in recent years. Necessity breeds a great deal of invention. The University of Chicago has also been involved with the creation and funding of an advanced proton source, which is a very complicated piece of machinery that enables sophisticated biological and physical experiments to be undertaken. It has 32 pods, and we have organised a number of very advantageous joint ventures by selling off pods to other universities. Those who own a pod can sell half a pod, or lease a quarter of a pod; and if you lease a pod, you can sub-lease a pod, and so forth. Each of these transactions generates gains from trade. I recommend it as a model to consider. Members of faculty who think that research is done solely by looking at books and thinking hard about ideas may feel uneasy about such arrangements. They have a point, for some fine research is done that way. But it is risky to over-generalise from these individual success stories. Modern research requires a resource base that is beyond the capability of any single institution. The synergies from cooperation have to be actively sought, not rigorously shunned.

Alliances with businesses and governments

Joint ventures between universities can be easier to establish because they are between like institutions. Universities tend to understand each other and have similar cultures. Faculty members understand one another's idiosyncrasies. But universities are not going to maximise their potential for joint venturing by dealing only with other universities. There are two other kinds of engagement with outside interests, which can be rewarding but also risky.

The business world is clearly an area for potential alliances, and universities have to look seriously at joint ventures in basic research. This carries risks because for business, the goal of maximising profits overshadows everything they do. A university, by contrast, is concerned with creating public goods. Universities wish to publish research findings for the benefit of the world at large. On the other hand, the research and development activities of a business are often closely guarded as commercial secrets. Indeed, if a business publishes a trade secret, it loses its proprietary interest in it. However, alliances with businesses can be successful where sensitive proprietary information is not involved. Alternatively, these alliances might proceed to the point where they yield basic research results, which are then turned over to industry for further development. Universities also gain by inviting industry people to sit on advisory boards to guide academic research. Academics sometimes think that they are smarter than other people but professionals beat amateurs in every walk of life, and people engaged in industrial research can have insights and awareness that academics lack about what topics will repay investigation. Nor should we expect business leaders to have a narrow perspective which inclines them to focus exclusively on their own direct benefit. Some of the most important advances in research, including those with the greatest practical applications, come when they are least expected. The invention of the laser is the most dramatic of these incidents. Business entrepreneurs know that a broad base of public knowledge will help them in their own ventures. Accordingly, they work to create the complementarity, not a rivalry, between open public research and private commercial applications.

The situation that I have described here is not only one of abstract policy, but is today one of national policy. The United States government has a large stake in the funding of pure research. The

current budget of the National Institutes for Health is in the order of US\$15 billion. In order to receive that money, universities must take steps to help their researchers bring their ideas to market by providing them with advice on how to perfect patents and enter into licensing and joint venture agreements when necessary (which it always is). Arranging marriages between promising academic technologies and the venture capital firms in biotechnology is a standard activity of the modern American research university.

Similar considerations apply to law, business studies and the humanities. Mention has been made of the support that Victoria University of Wellington has received from Telecom New Zealand and other corporations for its law and economics programmes, which is an extremely welcome development. I would also urge you to call up business people who have technical expertise in some of your project areas and seek their advice. Our experience at the University of Chicago suggests that often they will be surprised to be approached but all too pleased to help. With long-term planning exercises, for example, we have found time and time again that busy and successful executives have come up with insights about our own work that would never have occurred to us. Caricatures notwithstanding, they are prepared to devote time for the public good.

The second area of engagement that is equally delicate but equally necessary is with governments. Research in virtually every major university in the United States, including the most private of private universities, depends very heavily on support from government funding agencies. But the moment anyone mentions government funding, university people ought to sense a tremor down their spines. The fear, of course, is that he who pays the piper will end up calling the tune. While universities are, understandably, keen to receive government money for research, they are a rightly apprehensive about the conditions that government agencies might attach to the grants.

Universities must work to make sure that government funding approaches are sensible. The conditions attached to research grants should be designed to improve the calibre of research, to make sure projects are carefully selected, and to provide accountability for the grants. At the same time, the research agencies of the government should not become bureaucracies that stifle creative endeavour. Universities want people to produce papers of fundamental importance, but there is a tendency for government officials monitoring what takes place in universities to focus only on trivial matters, including minor violations of research contracts, because on occasion these agencies lose sight of what is important.

Difficulties have arisen in the United States over government funding. At Stanford University, government officials found some irregularities in the administration of grant monies which led to a major review and new inspection procedures. Now, if you give a talk at that university and want your expenses reimbursed, the paperwork can easily become absurd. Inspectors will even go through a stack of books in the library and count the ones that have been taken out by researchers on grants. They will then ask them whether they borrowed the book for the purposes of their grant research or for some other purpose. With this kind of micro-management, the cost of compliance can exceed the value of the grant. A far better system is one that ignores the precise measurement of overhead costs that invite such close and pointless reviews. One alternative funding mechanism that achieves a better balance awards all universities a matching grant for general overheads whenever one of its individual investigators wins a particular research grant. We all know in general that these overhead costs can be expensive, but it seems wise all around to use some global estimate of these costs in order to take the savings in administrative overhead and use it for increasing the size of the grant pool. Universities have strong incentives to use the money wisely, and so long as the grants go to able investigators they will performe go to pre-eminent universities as well.

Unfortunately, the question of compliance costs is not a small issue, at least in the United States, and not only with respect to the overhead for research grants. It has been estimated that the cost of compliance with the conditions imposed by federal funding agencies approximates what American universities receive from voluntary, charitable contributions. Some of the costs associated with grants, such as access for people with disabilities or complying with rules on animal rights, can be

very large. Universities in New Zealand should make sure that the government understands the importance of establishing sensible conditions for research grants that avoid the pettiness that is unfortunately too common in the United States. In addition, the conditions should not be decided by bureaucrats but by independent boards of professionals drawn from universities, local or overseas. That tradition, which I am happy to say has been largely honoured in the United States, avoids the political preferences that can dominate funding decisions and helps to bring about genuine intellectual competition, which depends for its survival on the disinterested judgment that eminent scholars give their colleagues and potential rivals from other institutions. Maintaining and supporting that culture is critical to the success of the entire peer review system.

Another illustration of the tensions between universities and the government relates to academic fraud. Back in 1986, I was engaged, as chairman of a committee, in drafting the procedures that the University of Chicago would use to deal with this problem. Naturally, universities hope that academic fraud will never occur, but if it does it has to be dealt with promptly and decisively. However, if somebody is first charged and then convicted of academic fraud, it amounts to virtual excommunication from university affairs. With so severe a sanction, something akin to a code of criminal justice is needed to ensure due process is followed. One thing that has made dealing with academic fraud very difficult is that the government has come forward and decided that our internal procedures are inadequate. It is seeking broader definitions of academic fraud so as to cover various kinds of scientific misconduct, and it wants direct control over the investigation of certain cases. In so doing, it runs the unfortunate risk of confusing negligence with fraud and applying the heavy sanctions of the latter to the former. The process of review also tends to concentrate the power of investigation in the hands of a single office of the federal government, which removes one of the essential protections for fair play in individual cases: the use of diversified systems that allow fresh perspectives to be brought to individual cases.

In short, the tensions between a university's own integrity and its relationships with governments are a constant source of difficulty. Universities have to work hard to maintain and improve these relationships, because there is no possibility of getting government grants without accepting some conditions. And government officials have to be aware of the dangers of excessive concentration of power in their own hands. It is a constant tightrope act.

Tenure of faculty

Thus far I have concentrated on the external relationships of universities. There are also internal questions of faculty and administration that will be very important in the twenty-first century.

One distinctive feature about a university is that it has, as it were, a split brain. One part of the brain deals with everything that has to be undertaken to keep the institution functioning. This involves such things as the ordering of equipment, the construction of new buildings, methods of paying staff, organising accident insurance, and so forth. It is imperative that universities recognise that they cannot be a distant second to business when it comes to the hiring and promotion of people who fill these administrative positions. They must pay salaries that will allow them to attract first-class professionals for all support functions. The kinds of contracts they will need to devise are very similar to those used in business, with performance incentives, while retaining the ability to hire and fire in the event that things do not work out as planned.

The other part of the brain deals with tenured faculty. Members of faculty will often have contracts that will last for life. Why do we have this system and can we afford it? Should modifications to tenure be made if universities are to respond successfully to the challenges of the twenty-first century? These are critical questions for any university. Those which have able faculty will prosper; those with people who are not responsive to intellectual and other demands will struggle to survive.

How should we understand the institution of tenure? Clearly, the typical corporation operates in a very different way from the typical university. People in business often show a certain degree of impatience with the fact that universities have relatively few systems of control over academic staff and are resistant to what they regard as self-evident arguments for change. I can still recall the time when I was berated by a powerful Chicago business executive for defending the tenure system. His view was that if he could fire the bottom ten percent of his sales force each year, we could do the same with our tenured faculty. He did not pause to ask whether it is as easy to measure intellectual output as it is sales.

Yet there is a larger point at work here. The typical business executive works in a strictly hierarchical system. Commands from the top are transmitted through the ranks, and people who disobey are told to go elsewhere. However, the business system of command and control does not remotely describe anything that has ever happened on the academic side of the split-brained university. Many of the differences have to do with the peculiar nature of the output of universities, which necessarily affects their internal organisation.

I mentioned earlier that a university and a business differ fundamentally in the way in which they treat information. The business regards information as a trade secret that is closely held and perhaps protected by patents, copyrights and the like. The university regards information as a public good, and considers the prompt and effective dissemination of information as one of its primary missions. One of the things that happens when you disseminate information is that you can no longer charge for it. So university successes in research may not yield returns on investment to the institution which are commensurate with their importance to society at large.

Since universities provide public goods for which they will not receive revenues, they have to find other ways to fund their activities. One of the most important is grants from independent individuals - from donors who value the mission of the university and wish to help it. That, of course, is one of the fundamental reasons for Victoria University's current campaign and for the fund-raising campaign of every public and private university.

Some of you may wonder why a public university ought to seek private donations. The answer, I think, is clear. Universities should never let themselves be dependent upon governments as their only source of funding. They must have resources of their own in order to be able to assert their independence. Once they decide to seek private donations, it becomes obvious a conventional profit-making organisational form will not work for a university. Quite simply, they will never get a contribution from a donor if they pay dividends to private shareholders. If universities adopt a non-profit form, such as a trust, they cannot pay dividends to shareholders in the usual commercial sense. And without shareholders, they do not have a group of individuals to whom a chief executive is responsible, at least not in the way a corporate chief executive reports to a board of directors.

So the public goods nature of the university's output changes at every critical juncture its internal structure and logic, compared to a business. How then do universities satisfy their donors and students that faculty members are engaged in individual work at the highest level? To do that they have to provide a degree of independence for their faculties and adopt structures of governance for academic matters that do not depend on the whim of a single dean or vice-chancellor. They must creditably guarantee that faculty who speak out and think independently will remain in a position to do so without penalty, notwithstanding any differences in opinion between them and more senior members of the university. How do they do that? They do it through tenure.

What the tenure system does is to protect individuals through institutions such as academic boards or senates. These, rather than non-academic managers, make decisions about the academic direction of the university. This is a wonderful practice, but it carries a familiar price. The moment universities give faculty members like myself such protection, they run the risk of having to retain people who are vigorous when they are young even though they have become less productive as they get older. How can universities motivate faculty and keep their institutions in fighting trim while providing this sort of protection?

The impact of age discrimination laws

One of the key devices that universities were able to use was a very simple system of staff retirement which got people out of governance positions inside faculty at a certain age. A typical retirement age was 65. I have to say that this particular retirement rule, generally and neutrally applied, is the only sound way to run a university. What it does is put a time limit on the commitment to tenure.

With a retirement age of 65, the liability that a university takes on when it gives somebody tenure at age 35 is a contractual obligation to pay that person for 30 years in the hope, of course, that there will be commensurate benefits to the institution. But in New Zealand and the United States, mandatory retirement has been eliminated and now the obligations associated with tenure can run much longer, even until death. Given this imposed change in the employment contract, what responses should universities make in order to maintain some degree of internal coherence in faculty structures? Here I believe the changes will be quite profound, and they will be both welcome and unwelcome.

We are likely to discover that the university of the twenty-first century will have been marked by a lower percentage of tenured faculty and tenure-track faculty. Some cold financial analysis will quickly lead universities to the conclusion that a decision on tenure will involve a very heavy obligation to retain academic staff for many years. Where they can identify parts of their academic work that do not require tenured faculty, they will be wise to enter into term contracts with the individuals discharging those services.

At the University of Chicago, for example, we find it very important to teach foreign languages, but we do not find it necessary to give tenure to foreign-language teachers. Instead, we enter into a series of term contracts for that kind of specialised work. We do not expect our language teachers to undertake research, at least at the level of the tenured faculty, and it is understood that the renewal of a contract is dependent upon performance in the classroom. Through that kind of change, replicated time after time in different departments, the proportion of tenured faculty is reduced and a degree of flexibility over appointments is retained.

Universities will also be likely to set stricter criteria for the award of tenure to academics specialising in research. Because the obligations associated with tenure on average will turn out to last longer, universities will want to be sure that tenured research staff meet the appropriate standards. So the standards required for tenure are likely to be slowly ratcheted up.

Another response by the University of Chicago, now that it cannot enforce mandatory age-related retirements, has been a series of what are called, quite crudely, buy-back contracts. I do not know whether these would be allowable under New Zealand law, and we are not entirely sure whether they are permitted under American law either. Under this system, the university tells any faculty member that if they retire at age 65, it will pay them a certain sum, typically a multiple of salary. The choice of scales is a business decision, and it has been well understood that when the lump sum payment equals four times salary, everyone departs. So some moderation is called for. At the University of Chicago, the scale runs as follows: for those who announce in advance their decision to leave at 65, the lump sum will equal twice the annual salary in any way, shape or form they desire. If a faculty member waits to age 66, the figure drops to 1.8 times salary, at 67 to 1.4, at 68 to 0.8, at 69 to 0.4 and at 70 to zero. Clearly, this scale may not be ideal for all institutions, as some fine-tuning for local conditions is often in order.

The reason for this structural change is not that we think that all faculty members at age 65 no longer have anything to contribute. That would be idle defamation. But there are other reasons to engage in buy-outs if the mandatory retirement rule cannot be enforced. It is very important that the key governance decisions inside the university are not made by people at the end of their careers. Younger people will have a greater sense of responsibility for the future of the university because they will be part of it for much longer. Also, they will have greater knowledge of the recent

developments in their research fields that will motivate younger people entering the academic profession.

These are changes that may be greeted with suspicion and dismay within universities. However, they can help to improve the intellectual climate. Naturally we hope that after they retire, some staff will continue to use their offices, do research and teach from time to time at the university. Retirement is not as exile or banishment, but it must be accepted that there is an ordinary life cycle for academics just like other people: business people are routinely subjected to mandatory retirement rules, especially when they operate at higher levels of the corporation. The difficulty is that decisions as to which individual faculty members should be allowed to stay and which should retire can be enormously painful. Universities were much better off with a categorical and simple rule that everyone understood. The system of setting a standard retirement age, and then negotiating further arrangements for service if both parties wished, worked well. And the practice opened up opportunities to get short-term contracts, often renewed on an annual basis, often at other institutions. The age discrimination legislation makes employment arrangements in universities both less efficient and less humane.

Retirement is, of course, just one issue that universities have to deal with in managing a faculty. More generally, the success of an institution always depends on the quality of faculty appointments. Every single appointment matters. No matter how big or how strong a department may be, it will slowly become weak if it fails to hire people who will take it forward into the next generation. So universities must constantly work to attract faculty members of the right quality in the right fields, and who are thoroughly committed to the institution. That means, of course, that they must pay them well. They have to find ways to supplement the basic payment structure so that then best academic staff are not dependent upon a rigid set of non-merit raises. In particular, they must reward individuals who have done work of great distinction, so as to make sure that they remain within the university and to encourage others to imitate them.

The ability to recognize merit inside universities takes a certain level of courage on the part of administrators. Consider the issue of faculty salaries. The easy way out is to offer faculty members a lock-step progression in salary, based on the number of years since the last graduate degree or the number of years in the business. The system has certain advantages. It eliminates arbitrary behaviour by deans and administrators, and it reduces the level of administrative costs in making for review.

But it also carries with it far greater disadvantages. One implicit presupposition of the system is that academics will not respond to incentives when in fact, like everyone else, they surely do. The effect therefore of lock-step progression is to deny any reward for additional labour. One possible consequence is that faculty members will slack on productivity and innovation. The effect is contagious, for it is very hard for one person to labour energetically while others sit back and relax. That sorry state of affairs may not last, moreover, because outside institutions can pick off the productive faculty members by offering them a salary commensurate with their output. The lock-step progression therefore will encourage able faculty members to leave and idle ones to remain, which is hardly the recipe for building a great university. In the end someone has to take a hard look at individual cases to see that merit raises are properly awarded. Indeed, one telltale sign of a thriving institution comes from the rank order of its faculty. If faculty members today receive the same relative compensation as they did five years ago, it means that someone in academic administration has not attended to the review process. Only when faculty rank-order is altered do we have some confidence that new information on academic imagination and productivity has been factored back into the compensation system. It is a delicate and daunting task, but one strictly necessary for the operation of a first-class university.

Students

Finally, a word about students. Because students are a central part of the university community, universities should take many of the same attitudes towards students as they do towards faculty.

I cannot stress too much that the transmission of information to the next generation depends upon the ability of universities to acculturate students into the values that they hold dear. This means that universities have to work very hard, not only at the selection of students, but at relating to students on an individual basis once they enter the institution. Individual faculty members must single out promising students, hire them as laboratory or research assistants, give them detailed guidance on how to go about their work, collaborate with them on papers, and do whatever else is necessary to bring them into the life of the university and its governance. Students, for their part, must try to imagine what they want to do and where they want to be once their student days are over.

With all this said, my own view is that, in general, it does not make sense for students to be represented formally on the board or council of a university. For one thing, their involvement would necessarily be too brief. It takes some time to learn enough about a university to participate in its governance. By the time students have learned the local ropes, they are rightly concerned about moving on with their own careers. However, the success of a university depends upon its ability to involve students in its overall operation in informal ways and through various activities. This requires intelligence and enterprise, and constant communication with individual students to get some sense of their accomplishments, abilities and worries. If universities can also meet that particular challenge, they can probably achieve their goal of making a university not just a collection of faculty, not just a collection of students, but a community in which each person thinks that his or her success is dependent upon cooperation with others.

That, I think, will in many ways be the greatest challenge. to universities in the twenty-first century. It is a challenge that we face in the United States. It is a challenge that you face here in New Zealand. It is a challenge to which I hope you will respond with the necessary courage and imagination.