In: H.A. Glaser (footn. 8), p. 358-367.

15. Current plans are to earmark DM 2.6 billion (shared by the Federal and State governments) per year for extending existing institutions of higher education. Comparable to the Australian situation, particular emphasis is given to "Fachhochschulen" (TAFE).
16. See a.o. Werner Kaltefleiter, Eliteausbildung — Verantwortung der Universitäten. In: H.A. Glaser (footn. 9), p. 345-357.
17. J.F. Lyotard (footn. 2); Jacques Derrida, Mochlos ou le Conflit des Faculté. *Philosophie* 2, 1984. For a discussion see the contributions by Kevin Hart, Simon During and myself in *Arena* 81, 82, 83, 1988.
18. B. Huppauf, The Universities in the Grip of the Electronic Age, *Meanjin* 1, 1988; and Universities and Postmodernism, *Arena* 83, 1988.
19. See Simon Marginson, The Culture of the White Paper: Academic Labour for and as Commodity Production. Paper presented at the Institute for Cultural Policy Studies, Griffith University, December 1988.
20. The Government's plan to create a "science city" Ulm prompted wide media coverage and was received rather critically. See: "Geheimhaltung der Forschung steht schon im Vertrag", *Frankfurter Rundschau* 12.9.1987 and Welf Schröter, Wer befreit die Wissenschaft? Aussengesteuerte Hochschulen. In: *Evangelische Kommentare* December 1987, No. 12, p. 704-706.
21. At one stage even the minister concerned seemed to have doubts about the degree of external pressures put on universities and warned industry not to go too far in trying to influence decisions regarding basic research which is predominantly financed through public funds, Welf Schröter, p. 705.
22. Associated institutes are also a prominent aspect of the new University of Ulm, and plans seem to be under consideration suggesting a relocation of research in the area of risk assessment into privately financed institutions.
23. Hochschule: Prinzessin oder Hure? *Der Spiegel* 44, October 1988, p. 86-99.
24. At the last national Vice-Chancellors' conference (WRK), the quest for a "relaxed" relationship between the universities and industry was particularly prominent. Walter Zimmerli repeated his view that the interests of the economy and the universities coincided in their aim to further 'the common good'. See: *Bildung und Wissenschaft* (footn. 11), p. 5/6.
25. This view has been disputed: Wilfried M. McClay, Weimar in America. In *The American Scholar* 55, 1986, p. 119-128 and in particular by Alan Bloom's bestseller *The Closing of the American Mind*. New York 1987.
26. Lyotard (footn. 2) p. 35/6.
27. Wilhelm von Humboldt, Über die innere and äussere Organisation der höheren wissenschaftlichen Anstalten in Berlin. In: W.v.H., *Werke in 5 Bänden*, ed. A. Flitner and K. Giel, Bd. 4: Schriften zur Politik und zum Bildungswesen. Darmstadt 1982, p. 255-266.
28. See in particular Wilhelm Hennis's analysis of the implications and consequences of structural reforms: W.H., Studentenbewegung und Hochschulreform. In: H.A. Glaser (footn. 9), p. 37-60.
29. The State's Premier, Lothar Späth, published two books, in which he maps out his vision of a technological society of the future: L.S., *Das Kabel — Anschluß an die Zukunft*. Stuttgart 1981; and L.S., *Wende in die Zukunft. Die Bundesrepublik auf dem Weg in die Informationsgesellschaft*. Reinbek 1985; there he charges the humanities with the task of contributing to resolving the social and emotional implications and consequences associated with the rapid growth of new technologies. (p. 64f).
30. See for instance: Reinhard Rürup, Die Technische Universität Berlin 1879-1979. In: R. Rürup (ed), *Wissenschaft and Gesellschaft. Beiträge zur Geschichte der Technischen Universität Berlin 1879-1979*. Berlin, Heidelberg, New York, 1979, p. 3-47.
31. Klaus Scherpe's essay on the future of research and teaching in the field of German language and literature is a thoughtful and sensitive response to these general tendencies: K.S., Ist eine Modernisierung der Germanistik möglich? Gedanken und Vorschläge zur gesellschaftlichen Selbstbeteiligung unter hochtechnischen Bedingungen. Akten zur Tagung des Germanistenverbandes 1987. Tübingen 1989, p. 1-18.
32. Examples of the current intensive debate are: *Kursbuch 91: Wozu Geisteswissenschaften?* Berlin March 1988; and various issues of *Universitas*, in particular No. 1, January 1987.
33. Odo Marquard, Über die Unvermeidlichkeit der Geisteswissenschaften. In: O.M., *Apologie des Zufälligen*. Stuttgart 1986.
34. Marquard, ibd. p. 38.
35. See Scherpe's critique of Marquard in K. Scherpe (footn. 31), p. 8/9.
36. Ulrich Beck, Risikogesellschaft. *Auf dem Weg in eine andere Moderne*. Frankfurt 1986. U.B., Gegengifte, *Die organisierte Unverantwortlichkeit*. Frankfurt 1988.
37. Friedrich H. Tenbruck, Was sind und was sollen die Geisteswissenschaften heute? In *Universitas* 2, February 1987, p. 125-136. See in particular his thesis no. 11, p. 134f.
38. J. Mittelstrass, Wissenschaft als Kultur (footn. 4), p. 13-42; here p. 36ff.
39. Klaus Haefner (footn. 3).
40. K. Scherpe (footn. 31), p. 13ff.
41. America runs out of time. *Time Magazine*, 24 April 1989, p. 64/5. Im Reisswolf der Geschwindigkeit. *Der Spiegel* No. 20, 1989, p. 200-220.
42. Ibd., *Time Magazine*, 24 April 1989, p. 64.
43. David Lodge, *Small World*. Penguin 1984, p. 83-92.
44. *Time* (footn. 41), p. 65.
45. Max Weber, Science as a Vocation. In: M.W., *Essays in Sociology*. Translated and edited by H.H. Geerth and C. Wright Mills. London 1948, p. 129-156.
46. Ibd. p. 136.
47. Hannah Arendt, *The Human Condition*. Chicago 1958.

The American university

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Whatever the inadequacies of American universities it would not be possible for them to be so dominated by the conceptions and agendae of a government as has recently happened in Australia. In this article I shall try to explain why this is so and then go on to describe the main features of the US system, particularly those relevant to Australian concerns.

Perhaps the most characteristic quality of the United States, which survives all vicissitudes and excesses, is its puritanism. It is a society which sees itself as having a strong moral base and a strong adherence to traditional values and its leaders are given as everybody knows, to high-flown rhetoric. This is often cause for amusement or disdain to the rest of the world, where it is seen as hypocrisy and self-delusion. Even accepting the partial validity of this view, there may still be some advantages in requiring public policy to be presented as high-minded and rational. At least there is then a publicly confirmed standard for evaluating that policy.

The cynical attitude towards politicians in Australia is almost self-fulfilling, in that government is barely expected to have any basis for policy other than political expediency. The present government has certainly provided very little justification for its radical innovations in tertiary education. The political goals are easier to discern.

The entire package appeals to the philistine tendencies of the Australian population, and takes advantage of its lack of confidence in its own traditional way of doing things. Even more astonishing from an American perspective, and perhaps also the result of cynicism, is the failure of universities in Australia to respond with any vigour to what is being done to them. Not only have they failed (until too late) to present an ideology of the university but they have demanded neither empirical evidence for accusations concerning their performance nor a proper analysis of the likely effects of the changes being introduced.

Although some fairly drastic changes can take place locally in the USA when ideology and political expediency converge, in general the history of American universities is one of evolution rather than revolution. One reason for this, as I have indicated, is a strong adherence to a system of values deriving from its traditions, which politicians cannot ignore with impunity. The onus on advocates of change in the USA is to demonstrate deficiencies in the present system and to show how the proposed reforms will remedy those deficiencies.

In addition however, the separation of the executive and the legislature in the USA makes it more difficult for the executive to impose poorly conceived policy, since each legislator votes according to their own agenda. This system not only requires more telling arguments on the part of the executive to change the status quo, it also gives opponents much more opportunity for lobbying and persuasion. Finally, since universities are not federally funded but are either state funded or privately endowed, no government can control more than a small proportion of the institutions available. Any one state government would run a risk in introducing major changes which a substantial proportion of the academic community considered ill-advised. Good staff and students can always go elsewhere.

Different models of tertiary education in the USA

The USA has developed an enormous number and variety of tertiary institutions, reflecting many different conceptions of higher education and of national and state needs. These range from poor and small religious colleges almost entirely dependent on fees, to the extremely well-endowed private colleges and universities of New England; from community colleges with negligible academic standards to the best State universities of the country's West and mid-West which have some departments consistently rated the best in the land by other departments.

The best known distinction is between public and private institutions. This distinction is, however, relatively recent. Ivy league universities such as Harvard and Yale were by and large set up in close association with the state[1] and with considerable financial dependence on it, as well as on private benefactors; not altogether unlike the early days of the Universities of Sydney and Melbourne. The ambiguity in the relationship between the Colleges and the State came to an end in the landmark Dartmouth case (in 1819) in which it was ruled by the Supreme Court that Dartmouth College, which had originally been chartered by the State of New Hampshire, was not a public institution subject to public control.[2]

From then on the established colleges tended to promote the view that they had been privately set up with a traditional independence of the state which could only be preserved by generous alumni donations. Although a myth, this view was convenient in establishing the Ivy league mystique. In fact it was not until the late nineteenth century, when huge fortunes were made by people with a philanthropic bent, that major private universities, such as Johns Hopkins and the University of Chicago, were established and financed independently of the state.[3]

By the late twentieth century, however, the great private universities were again heavily dependent on government funding in the form of student loans and indirect costs on research grants and contracts. The indirect cost rate is negotiated separately with the federal government by each institution and is very substantial. At the State University of New York, for example, the rate is 70 per cent of the salaries and wages component of a grant, so that for a grant of $60,000 in which the salary component was $40,000 the university would receive an additional $28,000. At elite universities such as Princeton the rate is much higher.

It is not the custom for this money to be given to the individual researchers responsible for gaining it or even to their departments. It may be used by the university as it sees fit and represents a very large government-sourced income for the top institutions, where many people have grants. Indeed, it represents a non-burcaucratic and politically non-controversial way of subsidising institutions with public funds roughly according to their research quality. I'll say more about this later.

The diversity of institutions in the USA and their competitiveness with each other means that new ideas and experimentation flourish. Innovations in curriculum, graduate education, student living arrangements or governance can be tried by one institution and copied if successful. This is the basic mechanism for evolutionary change. For example, the idea of a largely elective undergraduate curriculum was first introduced by Harvard in the late nineteenth century[4] and later spread widely. Similarly, Johns Hopkins was a pioneer in graduate education.[5]

Diversity has also allowed tertiary training to be developed for half the population of the country at all levels of ability without diluting the quality of the best. Different states have solved the problem of varied student requirements differently. The university systems of California and New York, for example, have many academic levels, with highly prestigious university centres and less prestigious state colleges, as well as specialised institutions, such as colleges of agriculture, fashion or maritime studies.[6]

The funding for any component institution per student unit[7] depends upon its classification which largely reflects the degree to which academic staff are expected to conduct research. Indeed, tertiary institutions in the United States are informally classified as to quality, largely on the basis of the teaching load carried by staff, which is inversely related to the time they have available for research. A good state university would normally require academic staff to teach two courses per semester, some of them graduate seminars. Any more than three is considered the mark of an academically inferior institution. Prestigious four year colleges, such as Amherst or Swarthmore, may require up to three courses, slightly more on the average than universities with students of equivalent calibre. (Colleges, as opposed to universities, normally only offer BA degrees).

However it is quite wrong to suppose that in institutions such as these, academic staff do not do research. The best of the four-year colleges hire staff with excellent research records, especially in the humanities and social sciences where expensive laboratories are not required. The staff at these colleges are willing to tolerate a somewhat higher teaching load in exchange for an intimate and pleasant atmosphere and the high quality undergraduates these colleges attract. Some faculty even welcome the absence of graduate students.

The nearest approximation to an all-purpose university in the USA is Pennsylvania State University (Penn State), one of the biggest universities in the country in a remote region of Pennsylvania (in a town called State College) with everything from high-quality academic departments to the best course in icecream-making in the country. It is said that one in every thousand Americans is a graduate of Penn State. It began as a land grant college in the 1860s, being one of many set up at the time on grants of federal land given by Abraham Lincoln's administration for the purpose of establishing institutions to teach rural people agricultural and mechanical arts.[8] These institutions provided a stimulus to the introduction of science and technology in the American University.

In general, the more distant a top level state institution is from the East Coast of the USA, the higher the quality tends to be, since it does not have to compete with the long-established "private" universities. The universities in Michigan, Wisconsin and Iowa are in that sense more similar to Australian universities than are any East Coast institutions.

While it is, of course, not necessary nor desirable for Australia to mimic overseas institutions, it is important in the present climate of change that the Australian public are not misled about how things are done elsewhere. Both the government and the press in this country have been guilty of using inaccurate or superficial accounts of the US system to justify innovations in tertiary education here which lack face validity and violate our own traditions.

Despite impressions to the contrary,[9] nearly all state systems in the US are at least binary, not unified, both in funding and student intake. Furthermore I know of no reputable university department there in which it is considered acceptable for some academics to devote themselves entirely to teaching whereas others do research. (There are however entire institutions, such as community colleges, where almost no academics

do research. These have different goals from institutions taking in academically gifted students.)

Governance

Governance of institutions in the USA is carried out by Boards of Trustees, usually appointed by other trustees in the case of private institutions, or by the state legislature or the Governor, in the case of state institutions. In general, Trustees, numbering about 25,[10] are appointed for fixed terms or until retirement. It is not common for them to be dismissed at will by a governor or state legislature. Indeed in Michigan early last century, the instability resulting from changes in the legislature meant a "failure to thrive" for the university until a Board of Regents was elected free of government control.[11] New York also has an independent academic Board of Regents which accredits all degrees in the State, both public and private.

In recent years alumni (especially those who have given large donations) have played an increasingly important role in university governance. They often elect their own representatives to the Board of Trustees. At Harvard the alumni elect the five person Board of Overseers, which monitors the activities of the Corporation (as its Board of Trustees is called).

A Board of Trustees is concerned largely with overseeing the management of the property and investment portfolio (although this is now usually done by professional managers), and broad policy. It does not usually have any substantial representation of the academic staff, does not manage the institution and nowadays does not concern itself with academic matters although it has the ultimate authority on everything.

The system can work well with a Board of Trustees that does not abuse its power. Unfortunately this condition is not always satisfied and the history of the governance of US universities has been turbulent and the source of endless discussion.

Because the American practice of governance by Boards of Trustees not themselves members of the university is being promoted here, especially in NSW, it is worth analysing some of the features of the system and its history.

Until the early nineteenth century, College Boards of Trustees in the USA were composed largely of clergy.[12] Later there was increasing pressure to include lay members to break the hold of the clergy on the college curriculum and to give the institution credibility in a more secular age. At first, lay members had a liberalising function. However in later years they tended to become older, narrowly concentrated in certain professions and conservative. The necessity for Boards of Trustees has been challenged a number of times, most notably by Thorsten Veblen who wrote in 1923:

> *The governing boards — trustees, regents, curators, fellows, whatever their style and title — are an aimless survival from the days of clerical rule, when they were presumably of some effect in enforcing conformity to orthodox opinions and observances, among the academic staff.*

He deplores the fact that:

> *The final discretion in the affairs of the seats of learning is entrusted to men who have proved their capacity for work that has nothing in common with the higher learning.*[13]

On the other hand, governance by Lay Boards of Trustees was defended by President Lowell of Harvard in 1920 on several grounds.[14] First, that they ensure that community interests are represented in higher education, second that they constitute an arbiter among different interests within the university, and third, that they bring forward men of affairs who are able to manage (and raise) money. Unfortunately the last of these functions has tended to usurp the first so that professions other than business are usually very poorly represented.[15]

There have been cases of Boards of Trustees interfering with the academic curriculum and with text books. Not only do the Trustees lack expertise in these areas but tend to base their views on nostalgia for their own youth and the way things used to be done.

Even more commonly, Boards of trustees have dismissed professors whose views they opposed or have intimidated them by grilling them about their political opinions, particularly in wartime (hot or cold). A number of quite celebrated academics have been dismissed in this way, including the psychologist James McKeen Cattell, President of the American Psychological Association, dismissed by Columbia University in 1917 for making unwelcome suggestions about US war policy.[16] He expressed his views about academic governance in the following words:

> *It would ... be advisable to permit the professors and other officers to elect for limited terms representatives — not necessarily from among themselves — on the board of trustees in the manner now becoming usual for alumni representation. It is undesirable for the individual professor to tease the trustees with his needs or grievances; but there should surely be some way by which trustees and professors can consider together the problems confronting the university.*[17]

We are fortunate in Australia in having this combination in our governing bodies and also in having a stronger formal input of academic staff in management than is the case in the USA.

Perhaps the most important function of the Board of Trustees in an American university is the appointment of the President (who is often the only academic member of the Board). He or she is very powerful, although power in large institutions is delegated to the Provost and the Vice Presidents. To give an example, the Vice President for Arts and Sciences at Columbia University controls the budget of 28 departments.[18]

The power of Presidents in the US system has been criticised by Cattell and others. While it is generally acknowledged that certain Presidents have led their universities to great pre-eminence, and have been forces for useful innovation, an ill-chosen President, especially one lacking in vision and insight who fails to consult and delegate properly, can be a long-term disaster. This tends to be more likely in small institutions since the sheer size of a large institution limits the President's control over academic matters.

A major problem with having an entirely non-academic and external governing board is that it hears only the President's side in any dispute with the faculty. Boards of Trustees often have no knowledge of the academic life of the institution beyond what the President chooses to tell them. They can rarely make a proper evaluation of the President's policies and even if required to do so by Statute rarely do a serious review.

The power of Presidents in the US system has been increased during this century by the tendency to think of universities as analogous to business corporations.

The danger of the corporate analogy for universities has been pointed out many times in the American context. The President of a corporation has to make a profit, with accountability built into that goal. College Presidents are given the power of a corporate President without that accountability since the criteria for judging them are less explicit.

Furthermore, the staff of a corporation are there to enhance the earning power of the company. If they do not contribute to this end they may justifiably be dismissed. In an important sense a university staff's activities in mastering, teaching and furthering their own disciplines can be seen as ends in themselves. The institution, including the President and Board of Trustees, exists to further the activities of the academic staff, not vice versa. On this view the success of administrators must then be judged by the degree to which they nurture and foster these activities.

A recent subtle change in the balance of power within universities has resulted from the introduction of research funding by external agencies, which has allowed many faculty members to achieve status and funding independent of their role in the institution. It has been claimed that this contributes to a tendency for faculty to identify with their national disciplinary communities rather than the institutions in which they teach.[19]

As a result of the 19 years I spent in the United States, I have come to regard the academic governance arrangements there as undesirable in several ways. The corporate model seems inappropriate and the power of the President at odds with the normal American political system of checks and balances. On the positive side, however, traditions and practices develop over many years which tend to compensate for faults in organisations and which make them work. To quote Lowell:

> *... the respective functions of the faculties and the governing boards — those things that each had better undertake, those it had better leave to the other, and those which require mutual concession — are best learned from experience and best embodied in tradition.*[20]

Indeed it is now unusual for Trustees to try to influence the academic programme or the appointment of staff.

Furthermore, the somewhat less than satisfactory and non-collegial governance system which has developed in US universities has gradually been mitigated by the evolution of three strong principles which prevent untoward interference in academic work and intimidation of faculty. These principles are tenure, academic freedom and peer review. Lowell, in his defence of lay Boards of Trustees, emphasised the importance of these safeguards.

> *...in the university the usefulness of the scholar depends largely upon his sense of security, upon the fact that he can work for an object that may be remote and whose value may not be easily demonstrated. In a university, barring positive misconduct, permanence of tenure is essential for members who have passed the probationary period.*[21]

Tenure and academic freedom

Tenure in a good US institution is difficult to obtain. The onus is on individuals to show why they should be granted tenure rather than on the university to show why it should not be awarded. It is usually granted after a five or seven year untenured period, a much longer period than is customary in Australia, after extensive peer review.

At an institution like Brandeis in Massachusetts (a good but not Ivy League institution), as many as 25 people in the applicant's field from all over the world may be consulted before the tenure is granted.[23] At an Ivy League institution the expectation is that young staff members will not be granted tenure. Job offers from another prestigious university are usually necessary before it is even considered, and even that is often not enough. Many people are consulted and must strongly support the applicant's work.

Top institutions usually recruit full Professors after they have made their reputations elsewhere. Leading institutions of the state systems also solicit extensive peer support but with more hope of tenure than in the Ivy League: perhaps 50 per cent of applicants will be successful. Junior staff who do not get tenure in the Ivy League will normally obtain a tenured position at a lesser institution although in bad times this may not be easy.

The tenure system provides a major and thorough performance evaluation of every individual in the US system. There is almost a binary divide between the tenured and untenured within a department with an evaluative approach on the one side of the divide and a collegial on the other.

A tenured staff member who is not doing well will simply not be recommended for salary increases beyond cost of living adjustments. For a high flyer, job offers from elsewhere will normally force the university to increase the salary as an inducement to stay, although early this century it appears that U.S. colleges had approximately fixed salary scales as in Australia.[23]

Peer review is paramount in the evaluation of academic staff. In some departments at Berkeley, staff members rate each other yearly.[22] Peer review is also used to evaluate teaching, although student ratings are also used, particularly in state institutions. In the City University of New York each staff member, tenured or not, has their teaching evaluated several times a year by other staff. In Ivy League colleges there are famous teachers and famous courses and awards for inspiring teaching given by alumni associations. However good student ratings cannot save a poor researcher who is untenured from dismissal.

Once tenure is obtained it is honoured with few exceptions. Even for non-tenured staff, elaborate retrenchment guidelines are usually followed to ensure that if an institution is financially strapped, and wishes to reduce its commitments, it must follow due process and cannot target particular individuals in the system. This usually means that the "last hired is first fired" or that entire programmes are eliminated.

In a number of state universities, such as the State University of New York, a legally binding contract is negotiated every three years between the Trustees and the union. Staff elect one of several rival unions to represent them. The Trustees try to chip away at job security in exchange for salary increases and other benefits.

Private institutions tend not to be unionised, with members typically belonging to the American Association of University Professors (AAUP). Founded in 1915, this organisation was a pioneer in laying down the basis of academic freedom and tenure in the US and it will defend its members in particular cases. The AAUP censures delinquent institutions and warns academics against them. For example, it has had the State University of New York on its black list for several years along with a number of obscure southern colleges for violating what AAUP regards as acceptable practices with regard to dismissal.

The concept of academic freedom came to the US from Germany where it referred to the right to express views about one's discipline. In the US this was broadened to include the right to express opinions of any kind without reprisal. In addition to protection of this kind, academic freedom in the US means that individuals are responsible for the content and the evaluation in their own courses to a greater extent than in Australia. While a new course must be approved by the department and the whole faculty it is seen as belonging to the individual who proposed it. Other staff are therefore most reluctant to interfere with any aspect of its procedures.

Excellence and peer review

External peer review is paramount in the achievement and evaluation of excellence in American universities. It extends beyond the granting of tenure and promotion, for example, to the awarding of grants and to the influential comparisons which are regularly carried out of disciplinary departments across different institutions. It means a great deal to a university to have top-ranked departments, especially in pivotal areas.

The prevailing philosophy is that since university academics work at the frontiers of knowledge, only their peers have the expertise to evaluate what they are doing. There is a wariness towards quantitative indices of excellence. Harvard medical school last year issued guidelines for the prevention of scientific fraud which included a recommendation that only the best papers (perhaps 10 for full professor) be considered in promotion decisions.

Despite the "publish and perish" image of American academia, as far as I know there has been no tendency there to replace peer review with such computerised or quantitative performance indices as number of publications or citations (although these may be taken into account in a peer review) nor with "in-house" evaluation, for example by department chairs. The tendencies in this direction in Australia are ominous, with the demand for performance indicators and a decision by the Australian Research Council to restrict peer review to grants above $25,000.

In the United States, all government grants are subject to peer review, including the small grants given by the state universities themselves.

Research funding

There are many foundations and independent government agencies funding university research in the United States. After the war, when government agencies such as the National Science Foundation were set up, it was decided to fund individual researchers rather than institutions, using peer review of submitted projects as the mechanism. This

policy which differs from that of many European countries, has been notably successful in that since it was introduced, the USA has come to lead the world in almost every scientific area.[24]

The system is highly flexible and adaptable, allowing fast changes of focus and a speedy redirection of funds to more promising projects. It depends heavily on the willingness of academics to undertake peer review.

At the National Institutes of Health (NIH), for example, expert panels of top researchers, mostly from universities, are appointed in each major research field to serve for 3 to 4 years. They are paid expenses and a daily honorarium, as in Australia. Each panel is chaired by a professional administrator, who will normally have a PhD in the field. They handle and supervise all clerical work and the solicitation of external reviews which are taken into account in the panel's deliberations. Membership of panels is based, as it is in Australia, on informally solicited recommendations from grant holders and previous panel members.

What takes place at each meeting (normally held in Washington DC) amounts to a mini seminar on each grant proposal with the principal reviewer (someone working in the same field as the proposal) reading a summary of the project and a written critique followed by two more reviewers who have also prepared written critiques. After discussion, the entire review panel (of about 10 to 12 people) rates the grant proposal on a 1 to 5 scale by secret ballot. Their average score determines its academic ranking.

The Council (a separate body), whose task it is to reflect national priorities in the area, can alter the rankings to reflect national priorities but it cannot fund a project which was not approved by the academic panel and in general it maintains the academic ranks. This procedure is followed for all grants submitted to the NIH. At the National Science Foundation a similar system operates, but with more formal weight given to external reviews. There is no council as at NIH, since the goal of NSF is solely to support basic science.

Applicants are not interviewed except on the rare occasion of a site visit for a borderline or problematic proposal. This is the major single difference between the two grants assessment systems of Australia and the US.

The proportion of grant proposals funded is no greater in the USA than in Australia but those that are funded tend to be more costly. For one thing a summer salary is paid to the principal investigator. Since academic salaries are normally for nine or ten months, academics are legally entitled to earn another salary during the summer and all government grants routinely give summer salary (usually for two months) at the same monthly rate as the researcher's salary. This system automatically rewards good researchers.

The American system mentioned earlier of giving institutions large amounts for overhead and infrastructure costs associated with research likewise automatically rewards high quality institutions. However it does give infrastructure support for good researchers in poor institutions. It also gives universities an incentive to treat the best researchers well and to allow them facilities after retirement if they are still able to compete for funds.

Researchers who lack grants or are between grants are worse off in the USA than they would be in Australia, although this varies with the institution. Most people find themselves in this position from time to time since grants are difficult to get. Facilities associated with research, such as machine shops, are very sparse unless paid for on a grant. It is one of the weaknesses of the US system that technical support in universities is usually financed by soft money. Technical personnel therefore do not have a proper career structure and tend to be of lower quality than we are used to here.

Very large amounts of money are available from the military for unclassified basic research, which does not have directly strategic applications. It is a mistake to believe that the enormous amount of military spending on research is for obviously sinister purposes. Nevertheless it favours certain kinds of basic research and influences what people do. The control of university research by mission oriented agencies has been criticised by Gerard Piel, long-time publisher and President of *Scientific American*, among others.[25] He favours giving the universities more research money with which to develop their own priorities.

In recent years there has been much discussion concerning the role of "targeted" research in the university and in particular in the kinds of arrangements which universities should enter into with industry. Although there are differences in the resolution of these questions as befits a pluralistic system, the consensus seems to be that the relatively low level of research targeting in the US, compared to many other countries, is one of its great strengths and should be maintained, that universities should undertake both basic and applied research but not product development, and that arrangements made with industry must protect traditional university goals of objectivity and the free flow of information as well as the university's right to appoint its staff.[26]

Most of the private money received by universities in fact comes from foundations, donations or bequests, rather than direct from industry.

As in Australia, academics may work as paid consultants one day a week. There is much interaction between the high-level research staff of corporations and academic researchers, with corporate researchers often adhering to the values of the university. For example, in its heyday, Bell (telephone) Laboratories at Murray Hill New Jersey was sometimes called "the best university in the world." The outstanding scientists there were extremely well paid and supported technically, with job security and a completely free rein, resulting in the birth of technologies such as the laser and the transistor.

Students

In the USA it is the custom to complete a BA before continuing with professional study, although there are some exceptions, such as engineering. It is no longer true that professional considerations are irrelevant to the choice of undergraduate courses since a number of professional schools, notably medicine, require prerequisite undergraduate courses for admission. Nevertheless many more Americans acquire a liberal arts education than is the case in Australia.

At many colleges what is offered is superficial and trivial. At others it is possible for an 18 to 22 year old future banker, doctor, teacher or inventor to listen to the best minds of the time. Such colleges are selective, with the selection based as much on potential as performance. The Scholastic Aptitude Tests (SATs), standardised tests of mathematical and verbal ability, are taken by almost all students and considered by almost all colleges in their admissions process. It is common practice, now somewhat criticised, to summarise the admissions standards of a college by the range of SATs scores of the students admitted. Private colleges in particular take personal and extracurricular factors into account, which they justify on the basis of achieving a well-balanced student body, but which others may see as allowing prejudice and favour to enter into the selection process.

The fact that such a high proportion of the population obtains some version of a liberal arts degree has some interesting effects. It means that Americans are not hostile to universities since they are in some form or other so widely available. This can result in an encounter with a person of obviously modest understanding parading ill-digested philosophical or psychological knowledge which may seem pretentious and even somewhat ridiculous. The important thing to remember, however, is that this indiscriminate process does tend to ensure that the intelligent have wide exposure to the main ideas of the culture, which is not necessarily the case in Australia.

Another result of the American BA system is that the humanities and social sciences are well supported and well represented among academics since all undergraduates study the humanities. In fact the undergraduate college, that forms the nucleus of the great old universities of America, is the most prestigious and selective part of the university and great attention is paid to its curriculum and to who teaches it.

The American College system is very flexible, which has both advantages and disadvantages. The flexibility resides in the lack of prerequisites for entry into undergraduate courses and even into graduate programmes, which provide course work as well as supervision of a thesis. The advantage of course is that it is less common in the USA for the bright late bloomer or the victim of unfortunate circumstances or early wrong decisions to miss out on a desired career because of an inadequate background. On the other hand it means that the education is not cumulative, which is not only wasteful but tends to trivialise high school in particular. To some extent this is offset by the really excellent and tough programmes available in the US for the gifted (as well as the handicapped) but it does tend to delay serious study for the ordinary student.

American college is expensive, not only because of the tuition fees but also because of the custom of "going away" to college. By a combination of parental sacrifice, loans, scholarships and part-time work, most students who finish high school and wish to go to college do so. The extracurricular components of college are just as much part of its desirability and popularity with the public as the educational components. It is a way of life, leading to an early break from parental control and influence which undoubtedly contributes to the generation gap and the conformity to a youth culture.

This aspect of college has been criticised as undermining its educational mission. It is also argued that the pleasant physical environment, the fraternities, sporting events and communal living arrangements of an American College are responsible in large part for the nostalgia and loyalty with which most Americans regard college and which, together with the philanthropic tradition of America in general, result in the huge amount of financial support many institutions are able to obtain from alumni.

The American university system with its great diversity, its freedom from direct government control and its emphasis on peer review of individually generated effort as the best guarantee of excellence, has lost some of its standing in society and has seen a diminishing level of funding in recent years.

However it has not been subject to the revolutionary reshaping imposed on university systems elsewhere. In its present form it has the capacity to alter to meet a changing society as much as is necessary or desirable without losing the ideals which form its core.

Just as during the nineteenth century, America, the nation, was a refuge from poverty and oppression, so at the end of the twentieth century the American university is proving to be a refuge for scholars from all over the world who face oppressive regulation in their own countries and the intellecutal poverty which is likely to result.

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2. ibid, pp. 207-212.
3. ibid and J.S. Brubacher and W. Rudy *Higher Education in Transition* New York: Alfred E. Knopf, 1958, Ch. 9.
4. Rudolph *The American College and University*, pp. 290-295.
5. Brubacher and Rudy *Higher Education in Transition*, pp. 187-189.
6. The current government policy in Australia of amalgamating specialised institutions like music and art schools with universities is not custom in the USA where, for example, the most famous music schools, such as Juilliard in New York or Curtis in Philadelphia, stand alone.
7. For example in the State University of New York, University Centres such as Stonybrook are funded at $200 per credit, University Colleges, such as New Paltz at $141 per credit and Health Science Centres at $297 per credit (1988 figures).
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