CLARK KERR LECTURE 2
The Californian Model of Higher Education in the World
Thursday, October 2, 2014, 4pm-5.30pm

[start graphic nine globes]
Thank you for coming to the second lecture. In the first lecture I reflected on Clark Kerr, on the Californian Master Plan, on Clark Kerr's *The Uses of the University*, and on two other Californian scholars of higher education, Martin Trow and Bob Clark. I discussed the three scholars in terms of what I called the Californian Model of higher education. The Californian Model is a higher education system that serves the state and its people, expands at need, combines access with excellence amid diverse provision, and is crowned by the large research Multiversity with its many missions.

The Californian Model is in trouble in California. But today I will talk about the passage of these ideas beyond the US, amid the globalization of higher education and science. Concepts drawn from the Californian Model, the Master Plan and Clark Kerr's Multiversity have become near universal, and practices are widely 'Californised', though Californian ideas are articulated through divergent political cultures and educational structures. Today I will also discuss the global pluralisation of knowledge power, the epochal return of East Asia to the front rank, and the potentials of this for American higher education. I will illustrate the argument with tables and graphs.

[growth of foreign students]
Global systems are changing higher education. These systems include world science, the accumulation and circulation of knowledge in English; Internet-mediated communications; and global comparison and ranking of national systems and universities. In the daily affairs of higher education institutions, the weight of these global systems is increasing. More incrementally, so is global people mobility. The number of students outside their country of citizenship increased from 1.3 million in 1990 to 4.5 million a generation later in 2012. Foreign students are relatively marginal in the United States, just 4 per cent of the enrolment, but increased from 408,000 in 1990-91 to 820,000 in 2012-13.

[interconnected world]
Internet penetration has reached 3 billion, more than 40 per cent of the world's population, 85 per cent of North America. Nations and universities can no longer isolate themselves, and this has changed the strategic conditions in which they operate. It has not changed the essential project of the nation-state, which was already global in character. Philip Cerny calls it

the 'global competition state'. Nation-states around the world watch closely what other nations are doing, especially in military technology and industrial innovation. There is an on-going process of emulation and borrowing, of imitation combined with strategic initiatives, as each nation strives to secure a competitive advantage. Since Hiroshima, and more since Silicon Valley, nations have seen higher education and science as primary arenas of global competition. At the same time, universities and science are also primary mediums for global cooperation, often between the same parties that are competing.

In this period two worldwide tendencies are at work. One is the rapid growth of participation in higher education. The other is the growth and spread of research science. These tendencies are partly driven by nation-states and economies, especially in relation to science; and partly driven by middle class aspirations for social position via higher education.

[OECD/ Europe GTER]
First, the worldwide pattern of participation. Here we see the Martin Trow factor at work, the tendency of middle class social demand for higher education to expand from mass levels of participation until near universal participation is reached.

The Gross Tertiary Enrolment Ratio, or GTER, refers people enrolled at tertiary level, including two-year programs, as a proportion of the school leaver age-group. The GTER is larger than age-group participation, it includes mature age and foreign students, but is the best number for trends and comparisons. In 1975 the GTER in the United States was 51 per cent, much the highest at the time, with just one other nation above 30 per cent. That was Soviet Russia at 43 per cent.

Fast forward to 2012, two years ago. There were *54 national education systems* with a GTER of above 51 per cent. In 2012 the United States was number three in the world with a GTER of 94 per cent, behind South Korea and Greece and a whisker in front of Finland. The gap between the US and other high participation nations is closing. In itself that is not bad. But I want to emphasize the broader pattern. There is a worldwide tendency towards High Participation Systems in higher education. It extends beyond the OECD countries in the graph to middle-income countries and emerging states. In almost every nation with a per capita income of over $3000 US per head—one twentieth of the USA—participation is increasing, usually at a rapid rate. And everywhere, when participation in higher education reaches Trow's 'universal' level of 50 per cent, it goes on increasing.

[Global regions GTER]
This tendency was discussed in a 2005 article in *American Sociological Review* by Evan Schofer and John Meyer. They state that the older notion of higher education as constituting a closed society and occupational system has been replaced by an open-system picture of education as constituting useful human resources for unlimited progress. This is pure Californian Model thinking. Schofer and Meyer also link worldwide patterns of expanding participation to factors such as democratization, human rights and global linkages. This is more tendentious. The great growth of higher education extends to multi-party states like Norway or Korea, single-party states like Russia or Singapore, and dynastic regimes like China. Everywhere, states once restricted growth and feared 'over-education'. Everywhere, states now accommodate the insistent middle class demand for higher education, though in many countries, states ask those same middle classes to bear more of the cost.

At the world level the GTER jumped from 14 per cent in 1992 to 32 per cent in 2012. Most of the growth occurred in the last decade. The GTER now exceeds 50 per cent across the whole of Western and Eastern Europe, North America, much of Latin America, and East Asia except China. Between 1992 and 2012 it increased markedly in each world region except Central Asia. It remained low in South Asia but in India it rose from 6 to 25 per cent.

[China GTER]
Participation in higher education is growing faster than national economies. The growth of participation correlates better with urbanization and the growth of the urban middle class, than with economic growth. With the spread of rapid urbanization to India, China and Indonesia, three of the four largest nations, the total number of higher educated people is advancing on a monumental scale. China's participation rate is at 30 per cent, heading for an official target of 40 per cent in 2020, though it is uneven by region. In Beijing and Shanghai, the GTER exceeds 60 per cent. Most of the expansion in China has been in second and third tier institutions, including sub-degree colleges. Until recently, China followed the community college template in developing mass higher education. However, in June this year China announced that 600 higher education institutions would be remade as vocational institutes, establishing a dual track higher education sector parallel to the German and Korean systems, where the vocational sector feeds into high-skill export manufacturing industry. China's first vocational *gaokao* (end of school examination) was conducted in June 2014.

[Africa GTER]

In the map of growing participation, there are gaps in South Asia (Pakistan, Bangladesh), and in pockets of Latin America and the Carribean, but the major gap is Sub-Saharan Africa. The regional GTER was still only 8 per cent in 2012. Private and public incomes are low, middle class demand is limited, and in unstable states, the long-term construction of higher education and research is a low priority. This gap in Africa has global consequences. Family size and birth rate are correlated to education levels, especially the education of women. When enough women reach tertiary education, growth of population slows sharply. The world population projections have just been revised. For the last twenty years it had been expected that global population would peak at 9 billion in 2050. The revised projections state that population will keep on increasing, reaching 11 billion in 2100, with no peak in sight. While fertility rates have come down in most countries, it is not the case in sub-Saharan Africa. Its population will grow from 1 billion people today to more than 4 billion in 2100. In Nigeria alone the expected growth is from 200 to 900 million. The average Nigerian woman has six children. That is, population will grow to 900 million unless and until high participation higher education can be established. In the roll out of the Californian ideal across the world, there is much at stake.

[GTER Latin America]

So far I have talked about 'participation' as if it is a uniform quality across each student place. It is not. In every nation, student places have unequal value, in terms of selectivity, cost, the unequal status of institutions, and the unequal firepower of diplomas. All higher education sectors are stratified between prestigious institutions—mostly research-intensive universities, sometimes selective teaching colleges—and institutions relatively easy to access, whose role is largely confined to teaching. Between the selective institutions and the mass sector lie a layer of middle institutions that combine aspects of Martin Trow's elite and mass higher education. The size of the middle group, and the vertical 'stretch' between institutions, the steepness of the hierarchy, vary considerably between countries.

Higher education systems take a range of structural forms and these differences can play into stratification in the value of student places and diplomas. Some countries like UK and Australia run a unitary system, in which all institutions have the same nominal role in teaching, research and service, but vary sharply in research output and student selectivity. Some countries like Germany and the Netherlands maintain binary systems with two different mission-based groupings of universities; though in Germany, there is greater parity of esteem between sectors than is the case in the Netherlands .A third group of countries, such as US and China, use classifications to sort institutions. This formalizes stratification, for example

by defining and limiting the group of high value institutions, though there is also some stratification within each category.

Many systems have a different shape to the Master Plan, especially in Western Europe. However, in nearly all systems, elite research-intensive universities are formally or informally demarcated from other institutions. In many systems, the expansion of participation is concentrated in a large lower tier sector. In China, Russia and the US the lower tier is predominantly public with some private enrolments. In Korea, India and Brazil it is largely private. Again the world is following the outlines of the Californian Model, except those nations that sustain unitary higher education systems with parity of esteem, as in the Nordic countries. These nations offer all citizens high quality higher education as a matter of right—a more completely public policy than the Californian Model.

The form of stratification is a key issue. Across the world, elite research-intensive universities are travelling well but mass higher education mostly is not. Mass provision is fragmented between struggling large public institutions with high workloads, small often-solipsistic private colleges, shoestring for-profits, and technology without teaching. Mass higher education is under-valued, under-resourced and often low quality. Quality assurance techniques are installed almost everywhere. But while Quality Assurance encourages internal institutional reflexivities, it has failed to generate broad-based momentum for measurable quality improvement. It is mostly used to control faculty, and to augment marketing. Quality Assurance provides institutions with a way of 'demonstrating' that they are going well even if they are not.

[Nations with 1000 research papers]

I will now turn to the second worldwide 'Californian' tendency, the spread of science and the research university. All nation-states want capability in science and technology, though not all can pay for it. Nations need an indigenous science infrastructure and trained personnel just as they need clean water, stable governance, and a globally viable financial system. They need to be able to interpret, understand and apply the world science system. To do this they must connect to it, actively. This means that they need their own trained personnel capable of creating research. Nations that lack indigenous research capacity find themselves in a position of continuing dependence and locked out of knowledge-intensive production.

The growth in research science is almost as spectacular as the growth in student participation, though it is not yet as universal as the latter. Science has moved from the margins of state-building, something that only the

leading global players in North America, Europe/UK and Japan could afford, to part of the normal business of established and emerging states. Again, there is no end in sight to the process of growth. In policy, the spread of science takes the competitive form of an arms race in innovation. Governments lack strategic purchase on the innovation process—international comparisons are elusive, and governments rarely direct business activity in any case. As a result, policy makers focus on global science in universities, where the indicators are visible, and where government does have policy sway. In the universities, global research rankings compare national performance and signify competitive position.

[Nations with 1000 research papers / numbers]
In 1995, 37 nations published over 1000 research papers in the science journals, a proxy indicator for indigenous capacity in global science. By 2011 there were 51 such nations. The new science nations include Croatia, Serbia, Slovenia, Chile, Malaysia, Thailand and Tunisia. The fastest growing science system is Iran, where since 1995 the number of journal papers has increased by 25 per cent a year, mostly in strategic physical sciences. Other nations where output growth exceeds 9 per cent a year include China (17 per cent a year), South Korea, Turkey, Portugal, Singapore and Brazil.

[examples of fast growing science systems]
All governments now want universities that can 'participate effectively in the global knowledge network on an equal basis with the top academic institutions in the world', as Phillip Altbach puts it. This sustains the desire for so-called 'world-class universities', conventionally defined by position in the global university rankings. There is an obvious fallacy. Rankings signify relative not absolute performance. If everyone improves in the same proportion, ranked position is unchanged. All the same, for most policy makers and university leaders, it is enough to be in the Shanghai Jiao Tong University Academic Ranking of World Universities (ARWU), or perhaps the Times Higher Education ranking. When science is valued in the terms of the global competition state, science power equals competitive position.

[Shanghai ARWU ranking indicators]
Many governments, and universities, now set strategic goals based on reaching the world top 500, or top 100, or top 50 research universities. France, China, Korea, Japan, and Saudi Arabia are among the countries that have specifically increased research funding to either augment the output of their leading universities, secure mergers to combine measured outputs, or create new institutions. For example Saudi Arabia has pushed four universities into the top ARWU 500 by playing the indicators (a large number of foreign researchers are hired for part of the year) and investing

heavily. The King Abdullah University of Science and Technology was founded in 2009 at a cost of more than $10 billion.

American universities are indifferent to their global research ranking. *US News* is the arbiter of domestic standing and everyone sees US higher education as the only 'world series' that matters. It is not so in other nations, which compare their progress against American strength, and also take Europe and Asia seriously. The Shanghai ARWU, and to a lesser extent the *Times Higher* ranking (which uses a multi-indicator measure that claims to cover teaching, resources and internationalization, as well as research), stratify the sector on a global basis. The research ranking by Leiden University Centre for Science and Technology Studies is the best ranking in methodological terms, and informs serious research policy and strategy.

Research by Ellen Hazelkorn shows that global rankings closely shape the choices of many international students, and influence the decisions and judgments of governments, foundations and private investors in higher education, faculty, and university executives. Most research university presidents in most countries are focused on improving their ranked position. By installing strategies designed to increase measured research inputs and outputs such as high citation papers, publications in *Nature* and *Science*, and other indicators that feed into rankings, these university leaders normalize university resource allocations, and faculty activity, according to the content of the global rankings. Ranking indicators, joined to executive strategy and institutional organization, are reshaping higher education.

The normative content of the rankings is that of a globalized version of the Multiversity, the large English-speaking science university. If you are a university president it helps to be comprehensive in the sciences, especially Engineering and Medicine; to publish in global journals; to concentrate resources on large research teams not spread money more thinly across a range of teaching/ research disciplines; to favour research against teaching, especially undergraduate teaching; to shift resources out of arts, humanities, most of the social sciences and professional disciplines; and (if you are in a non English-speaking country) to encourage English language publishing in the relevant disciplines, and reduce publishing in national languages. To make short-term gains it is better to recruit global talent, not nurture local talent, and to sharply differentiate pay in favour of faculty stars in ranked fields.

[UNAM]

However, the English-speaking science university template is in tension with other norms. Take the Latin American national universities such as Sao Paulo in Brazil, UBA in Argentina and UNAM in Mexico. These are much larger than the Multiversity and have a broader scope. UNAM has over 300,000 students, dozens of sites, and carries out a quarter of all research in Mexico. It is a major access provider and sustains part of Mexico City's cultural life. Its social roles hurt UNAM in the rankings, which penalize universities with many teaching only and service staff. Given UNAM's flagship role in Mexico, a ranking outside the top 100 hurts it in the eyes of public and government. Rankings create a no-win situation for UNAM. Should it dramatically reduce national mission to meet the ranking template? If narrows mission it loses national funding and perhaps status. If it does not narrow mission, it loses ranking, and status, and this also can trigger budget cuts. And what happens to the extensive Spanish-language scholarship in the humanities and social sciences? It is doubly excluded, by language and by discipline. All else equal, global competition regulated by ranking tends to reduce diversity in knowledge, ideas and cultural forms.

National systems of higher education have developed a range of institutional types. There are technical-vocational universities, liberal arts colleges, and many different discipline-specialist institutions, in business studies, social sciences, humanities, medicine, film and television, music and visual arts. All these institutional types fall outside the global rankings. As rankings become increasingly important, over time the unrankable institutions will experience a reduced capacity to attract money, and attract high quality faculty and doctoral students.

[Greater plurality in ARWU top 200 and 500]

Despite the English-language bias in the rankings, because of the spread of science, the lists of top research universities is becoming more plural. In the 2004 Shanghai ARWU ranking there were three universities from East Asia, other than Japan, in the top 200. There were none from China. In the 2014 ranking there were 12 East Asian universities in the top 200 including six from China—Tsinghua, Peking, Shanghai Jiao Tong, Zhejiang, Fudan and the University of Science and Technology—and two from Hong Kong SAR. In 2004 there were eight Chinese universities in the top 500. In 2014 there were 32. Numbers from Taiwan, Korea, Malaysia, Brazil and Chile also increased. Iran, Egypt, Turkey and Saudi Arabia entered the top 500.

These countries have internationalized their research universities, using strategies such as benchmarking universities against American, British or Western European comparators; offering incentives to faculty to publish in

English; and enticing back the national research diaspora from postdoctoral and faculty positions in the United States.

[Chinese in ARWU]
By internationalizing in this manner these universities have become bi-lingual. One result is that faculty in, say, China or Korea know more about US research universities than US faculty know about China and Korea.

At the same time, these internationalization strategies have been joined to growing levels of investment in research.

[R&D as % of GDP]
The standout has been East Asian science and higher education—China, Hong Kong, Taiwan, and South Korea, together with Singapore in Southeast Asia, which shared the cultural heritage of classical Chinese civilization. In these systems the quantity and quality of science, and the number of research universities, are improving with extraordinary rapidity. This follows the accelerated development of science and higher education in Japan in the 1960s/1970s. The Sinic East Asian systems invest in R&D at a similar rate to Western European research systems. In 2011 South Korea invested 4.03 per cent of GDP in R&D, second in the world after Israel.

[Change in R&D spending]
There are time lags between investments in research, greater scientific output, more citations, and better rankings. Today's pluralization of the top 500 research universities reflects the growing R&D investments of a decade ago. Today's new investments in R&D and university research will show in stronger university rankings a decade hence. In 15 years time there will be many Chinese universities in the top 200 and universities from China, Singapore, Taiwan and Korea will be pushing into the world top 50/40.

In some research rankings the National University of Singapore is already a top 30 university and Tsinghua and Peking University are in the top 50 already, though in the Shanghai ARWU all three are still in the 100-150 bracket. Lack of Nobel Prizes (30 per cent of the ARWU) has slowed the progression of the East Asian universities in the ARWU.

[three R&D regions]
East Asia has become the third great region for research, after North America and Western Europe/UK. By 2014 East Asia will have passed North American in aggregate terms. In China R&D investment is increasing by 0.1 per cent of GDP each year, and is currently just below 2 per cent.

[journal papers per year, USA and China]
The policy target is 2.5 per cent of a GDP similar in size to that of the US. Only about 8 per cent of China's R&D money goes to the universities, half as much as in this country. Most of China's R&D goes to the state enterprises.

[Journal papers East Asia]
But because of the overall growth of R&D, the trickle down to the universities is increasing significantly. Science output in the C9 and 985 group universities is expanding very quickly. The number of journal papers per year is also growing rapidly in South Korea, Taiwan and Singapore, though not quite as rapidly as in the largest East Asian country, China. It is clear that in future much of our science will come from East Asia.

[graph of engineering top 1% papers]
Average citation rates in East Asia are lower than in the English-language countries and Western Europe, but quality is improving. Average citations are high in Singapore, where the National University of Singapore has a research profile similar to a strong UK university, and in Hong Kong SAR. The slide shows the improvement in Engineering in China. Another case is Chemistry. In 2000, China published 3.7 per cent of the world's total journal papers in Chemistry; in 2012, 16.9 per cent. In 2012, China published more papers in Chemistry than did the US. More strikingly, in 2000 only 0.6 per cent of the Chemistry papers ranked in the top 1 per cent on citation rate were from China—but twelve years later in 2012, China published 16.3 per cent of the leading papers, half as many as the US. This is an astonishing improvement in only 12 years. There were similar patterns in Physics, in Computing (where China publishes more top 1 per cent papers than the United States, as yet the only discipline where that is the case) and in Mathematics.

[graph of China's top 10% papers by discipline]
China, Taiwan, South Korea, Japan, and to some degree Singapore, have concentrated research in the Physical Sciences and related applied fields like Engineering, Computing and Materials. In Korea and Japan this bias supports advanced manufacturing. China emphasizes research related to accelerated modernization: energy, urbanization, construction, transport and communications. The most recent development in China is a surge in papers in bioscience, but from a low base. The humanities and social sciences have relatively low status in East Asia (except in Hong Kong), despite the elite universities that emphasize liberal studies, such as Peking and Fudan in China. There is no clear-cut economic rationale for investment in those disciplines, and they contribute little to ranking performance. Yet the social sciences and humanities nurture nationally distinctive values.

This may yet led to an increase in support for culturally-specific work, especially in humanities. The social sciences face greater difficulties with East Asian government because of the ambiguous relationship of the social science disciplines with states. The social sciences were formed partly as an adjunct to modern state building, yet they are academically autonomous as well as heteronymous, swinging between ultra-instrumentalism, and free-wheeling criticism, of state programs and methods.

[PISA overall table]

East Asian higher education and science are underpinned by the world's highest performing school systems. In the OECD's Program for International Student Assessment (PISA), which compares the learning achievements of 15 year olds, the seven top systems in mathematics are all from East Asia. Even Vietnam, with a per capita income of only 10 per cent of the United States in 2013, does better than the United States in all three PISA disciplines. Vietnam, which was occupied by China for almost a thousand years, shares the deep-seated Sinic commitment to education.

The 30 million population Shanghai region has a long lead over every other school system in the world. This might be considered an unfair comparison, as Shanghai is an affluent region and there are marked inequalities within China. However, even in the poorest and lowest achieving provinces of China, the 2012 PISA results were just below the world average, while the strongest American state, Massachusetts, was outside the world top ten. The comparison between Shanghai, Hong Kong and Singapore is more apt. All are predominantly middle class zones with globalized economies.

[PISA distribution in maths]

Not only are average PISA scores very high in the Sinic systems, the size of the highest achieving student group is large, and there are few students in the lowest achieving group. In Singapore, 40 per cent of students are in Levels 5-6 in PISA math compared to 9 per cent in the US. Only 8 per cent of Singapore students are in the bottom group in PISA compared to 26 per cent in the US. Sinic societies are not egalitarian, but student learning achievement is near universal without an equity/excellence trade-off.

Chinese students work relatively hard at higher education stage also. Just before this lecture I was handed first results from a survey comparing student time use in Shanghai and New York. Both groups of students studied business and economics. Both did paid work for an average of 18-19 hours per week, and watched movies via TV or Internet for 9 hours. 72 per cent of the Chinese students and 73 per cent of the Americans played video games for an average of 6 hours a week. Up to this point the two

groups were almost the same. The Chinese students spent more time on social networking than the Americans. However, the main difference between the two groups was the time spent on intellectually productive activities: studying, and reading for leisure. Chinese students read for an average of 10 hours a week, the Americans 4 hours. The Chinese student studied for 22 hours a week, the Americans for 9 hours a week.

[Qin state]
What are the conditions and drivers of the dynamic development of higher education and research in East Asia? Economic growth and national investment are essential, but the underlying conditions are two-fold. One is the long and deep family tradition of Confucian self-cultivation through education. The other is state strategy. East Asian states, whether multi-party, single party or dynastic, exhibit a remarkable capacity to mobilize resources and effort to achieve policy goals in education and science. This capacity derives from the East Asian or Sinic form of state, which has a 2200 year history, stretching back to the Qin and Han dynasties in China.

East Asian countries do not sustain the state/society and state/market tensions typical of the English-speaking world, with its limited liberal states in the Adam Smith tradition, and recurring anti-statism. States in East Asia are characterized by strong continuity and a long-term view. Government posts enjoy high social status, attracting strong graduates. Though the Sinic state does not administer society in detail, it is supreme viz a viz the economy, and intervenes at will. The present government in China is best understood not in terms of Communism versus capitalism (China does both, it has a uni-party socialist polity and a capitalist economy) but as another dynasty in China's long history. The present dynasty is a relatively strong dynasty. Only the Tang, which reached in the East into Korea and North Vietnam and the West influenced politics in Persia and Northern India, had comparable global reach.

[Roman Empire]
There is greater continuity in Chinese political culture than in the West. It is as if in Europe the Roman Empire had returned again and again, with new developments and in different guises, for the last two thousand years.

[Outline map East Asia]
At best East Asian states can mobilize a high level of popular support for their initiatives. One example is China's policy on energy. Coal use will peak next year and then decline. Low-emissions energy sources such as hydro, wind, nuclear, solo and gas, are growing by 4 per cent a year. The governments of the United States and Australia have so far been unable to

confront their oil and coal companies successfully to shift the balance decisively towards renewables. For us the freedom to trade is a higher principle than the long term health of the common eco-system. The state in China intervenes in energy policy, like education policy, because energy is seen as strategically significant.

[map of Asia]

Effective East Asian states pose questions about university autonomy and academic freedom. Are Sinic political and educational cultures as friendly to disciplinary creativity as in Europe and North America? It is not an easy question to answer. Universities are seen as part of the state. Devolution is normal within the comprehensive Sinic state, but the central state retains the scope to intervene at will. In China government appoints the university leaders, the president and the party secretary, while in Singapore and Japan the president is selected by the governing council of the university. But in all systems normal operations depend on a degree of harmony between university and state. Perhaps the greater problem in China is the chronic state administrative interference in peer decisions about research funding.

China is not like Soviet Russia was in higher education and science. The universities are open and learn freely from abroad, and publish in the global literature. And there is much feisty political debate inside Chinese universities, as there is elsewhere inside the party-state. However, that debate remains hidden from public view. As you know, faculty who challenge the party-state from outside, in the civil sphere, can be savagely repressed. In Chinese tradition scholars challenge the regime only when they believe it has lost the right to rule. Criticism carries more weight than in the West. This is true even in the multi-party East Asian nations.

Sinic norms of academic freedom are distinct from Anglo-American norms. In China there is more emphasis on positive responsibility, and less on freedom from constraint as in the American world. This does not inhibit faculty agency per se but can pre-structure the scope for critical expression in some disciplines, for example the social sciences. On the other hand, as in the US (though less so), much bubbles up from below, and the growth of higher education is creating conditions for liberalization. We do not yet know whether East Asian state forms per se will decisively limit academic creativity. The issue tends to play out differently between disciplines, and between institutions: some operate with greater autonomy than do others. The matter has much further to run.

[US-China: The pivotal relationship]

So the higher education world is becoming more like California. At the same time, this is facilitating the spread of power beyond California and the United States, and beyond the Western European university systems, which are also lifting in this period. China, Taiwan, Korea and Singapore do not do America as well as America does itself, but are improving. East Asian systems also have their own traditions and assets. These systems are a new hybrid of East and West. As they become stronger, their cultural roots will become more determining.

Until recently the United States publish more than half the world's high citation journal papers. It still houses 60 per cent of the top 50 research universities. The United States remains exceptionally strong and the leading power in higher education and science, though its absolute dominance will ebb. A more diverse higher education world is not a bad thing. What are the implications for higher education in the United States of the rise of China?

First, geopolitical strategy. America-China is now the pivotal relationship on which the world turns. The two need to find a way to share power, first in Asia and then globally. It will not be easy to do. Present military tensions are worrying. But it is essential. It is not so much a question of striking a bargain that reflects the new balance of power, as the shape of the future. If there is to be a stable world society and polity, capable of handling the big challenges ahead, it will probably be a hybrid between Anglo-American traditions and Sinic traditions, in political culture and social organization. In all this, universities in the two countries are crucial in drawing together policy makers and intellectuals, combining projects, sustaining long-term cross-border conversations, and developing bi-lingual concepts and ideas. The University of California campuses have long fostered constructive relations in East Asia. Clark Kerr sat on the council of the Chinese University of Hong Kong from its inception. Augmenting productive relations between America and China is a vital contribution to that national and global public good. It is hard to think of any public service that is more important.

In research, the interests of both systems lie in synergistic partnerships. On the Chinese side this facilitates access to the principal and emerging scientific domains. On the US side it provides an economical means of continuing leadership and tapping into offshore talent and ideas. Links with Korea, Taiwan, Singapore and Japan provide alternative ways into East Asia, and different vantage points on China, whose rise dominates regional thinking.

[pie chart of Internet languages]

Second, internationalization at home. Though English will remain the global language of science, the growing strength of non-English speaking nations in economic matters, communications and higher education, means that multi-lingual capacity is becoming more important. Whereas in 2000, 39 per cent of all Internet users had English as their first language, by 2013 that proportion had dropped to 29 per cent, with the proportion who were Chinese rising from 9 to 23 per cent. Spanish speakers rose from 5 to 8 per cent.

Another area for development is student mobility. If American students are to travel to Asia in sufficient numbers, it will be necessary to subsidy the process until critical mass is reached. Inward movement remains relatively low. Foreign students are 17 per cent of all higher education students in the UK and 18 per cent in Australia but only 4 per cent in the United States, though international diversity is much higher at Berkeley. In UK and Australia foreign students are a self-financed 'add-on' to the normal enrolment and there is no perceived conflict with local interests.

[NYU in Shanghai]

But off-shore engagement is more than a matter of temporary people exchange. To lift relations with China and East Asia to a new level it will be necessary to devise strategies transformative at both ends.

Many leading American universities are now active in China. One has developed a game-changing project: New York University. NYU students of NYU will spend at least a semester in each of NYU's three campus sites, in New York, Abu Dhabi and Shanghai. NYU Shanghai is in partnership with East China Normal, a top 40 university in China. NYU Shanghai brings together elite formation in China and the US, and embeds NYU in the Chinese higher education system at a senior level. New York thinking has become an active part of the evolution of higher education within China. New York influence is not transmitted indirectly, though the screen of China's internationalization strategy, but as a living presence. Equally importantly, there is deep learning on the American side. Faculty and administrators will live in China for long periods and develop language. Students from NYU New York and NYU Abu Dhabi will spend long enough in Shanghai to develop language and knowledge of Chinese culture.

My gut feeling tells me that in engaging with China it is necessary to go out ahead of government and public opinion, and perhaps local faculty opinion too (or some if it), as NYU has done, and build something new that will change both American higher education and China. Global exchange and reciprocity, that respects diversity and hybridity, is a global public good.

[NUS graphic]
This is the kind of deep engagement fostered by the National University of Singapore. NUS has an outstanding global strategy, with custom-built links to every higher education region. In 2008 I conducted interviews at a mid-West American public research university. One of my questions was: 'Are there any universities in the world, outside the US, which provide useful models or programmes from which American universities can learn?' Most interviewees had no enthusiasm for the terms of the question. They did not name any foreign universities. Instead they provided long lists of American universities that were doing great things. This showed both the strength and weakness of American higher education. Great capacity to share and learn nationally. Indifference to other cultures. But three university executive enthused about the National University of Singapore. They were negotiating a partnership with NUS and they knew what it was doing..

[world, uses of the university book cover]
So this is my conclusion. The Multiversity is becoming the Global Multiversity. Global engagement has become not just a marginal interest but a core mission of higher education in many countries. In the United States internationalization tends to be held at the margins, the process lags somewhat and could be quickened. Rather than separating international activity from local activity—protecting each from the other, perhaps?—we need to find ways to constructively align them, so that international activity opens up options for local communities and strengthens their capacities.

In the first Lecture I discussed the big ideas that Clark Kerr identified as driving the public mission of the Multiversity and Californian Model in the 1960s—universal access to higher education, and progress through scientific research. Both of these big ideas have become more ambiguous and contested, especially access, but they are still central and agreed objectives of higher education.

In addition, we now have a third big idea for the public mission of higher education. The Global Multiversity, and through it the constructive internationalization of higher education and society. In lifting the mission of the University decisively to the global level, UC can move beyond the bounds of the 1960 Master Plan, seize the times, and exercise national and global leadership.

California harbours the greatest resources in higher education and has been the global thought leader in the sector since 1960. In a global relational environment, in which all countries are now interdependent, California's

world role means not just influence but responsibility. If the Californian Model becomes the globally engaged Californian Model, bringing California to the world, and the world to California, everyone will benefit. All regions of the world are important, but a central part of any internationalization strategy in this period must be intensified links with East Asia and the development of constructive America-China relations. In the American context, California is especially Asia conscious and effective. This provides a good starting point for Californian university leadership in the next period.

Next week, in the final lecture at Berkeley, I will return to the Master Plan and the Multiversity, and consider where the public mission of higher education might go from here. I will suggest two ways forward, and discuss system shape, participation lags and other issues. Thank you very much for being here, and hope you will come again next Tuesday.