International Competition in Higher Education: China, Asia, Europe and the United States

Kathryn Mohrman
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05:42

Moderator (Xue Lan): Today we are very pleased to have Professor Kathryn Mohrman, who is the director of the University Design Consortium and faculty member of the school of public affairs at Arizona State University, to come to our school to give a talk on International Competition in Higher Education: China, Asia, Europe and the United States. She has very wide experience in working both at the public and private universities in the US, and also has much experience in looking at the governance and management of universities in different countries, including serving as the Executive Director of the Hopkins-Nanjing Center. She is now involving in some international projects. Now let's welcome Professor Mohrman.

06:56

Mohrman: Thank you very much. I'm honored to be here and I especially appreciate Xue Lan being the moderator of the session. As you know from the introduction, I had wide experience in higher education in both the United States and China. The University Design Consortium is a new project in the U.S. It is a boundary spanning organization that focuses on higher education innovation. My research interest is on world class universities, a topic that I became very interested in when I was a Fulbright Scholar at the Chinese University of Hong Kong (CUHK) in 2002. Since that time, I've done a number of different things around this general issue. So the general research question that I'd like to discuss with you today is how universities worldwide are responding to increasing global competition. I began by looking at this at the national policy level: what was China doing? How were national governments putting their policies in place? But I thought it would be very interesting to try to look more closely at what it means at the implementation stage, what is really going on at institutions, how are they responding individually, how are things playing out at the campus level. This is very much in the working progress, so I would like you to ask questions, I'd like to you interrupt, to give suggestions and have discussions with me, rather than wait until the end. I would really like it to be a conversation, not just a presentation.

09:00

In this study, I have done the case study on 17 universities. As we go through that, you will see that information is really important. For example, US universities provide a whole lot more information about their enrollments, their faculty, their budgets, and so forth, than do universities in other parts of the world. I was lucky when researching on the Chinese universities where information is especially hard to collect. I had help from the institutions themselves that participate in this study. There is always a problem of course with comparability. Because not everyone sees things the same way and when you get to different countries that involve, it makes it even more difficult. So I encourage you to ask questions or raise suggestions on how to deal with questions of comparability because it is quite difficult. Let me tell you about the institutions

in this study. The Chinese universities, you know, are all 985 universities. They range in size and scope in some significant ways. And in the US, the three universities also should be familiar to you, MIT, the University of California at Berkeley, and the University of Michigan. In Europe, you've heard about Oxford, Paris06, one of the major research universities focus on sciences, and ETH is the Swiss Federal Institute of Technology in Zurich. Then in Japan, three top institutions, Tokyo, Kyoto and Tohoku. And other Asian universities: Australian National, Chinese University of Hong Kong and National Taiwan University. I had approached some others but wasn't able to get information from them. Even with European universities, information and statistics are very hard to get. But as you'll see, if you look at things not in fine details but in an order of magnitude, I think you can get some sense of the comparison that I've trying to focus on.

11:35

Some of the research questions that I would like to discuss with you today are about wealth of these universities, their research intensity, because that's what rankings largely are focused on, their research publications, funding for scholarly activities, and how are they regarded by their peers and then some speculations about which universities do I think are the strongest in terms of their positions in the competitive market place, which one might be the most successful in the future, and what are the some of the issues and opportunities for future investigation.

12:20

First of all let me just tell you a bit about these universities very quickly in basic forms. They range quite a bit in size. The largest is Sichuan University with 60,000 students and more today. The smallest is MIT with only 10,000 students. Most of them fall between 15,000 and 30,000. That's what I think is the typical size for a research university. Enrollment alone cannot tell you much. Look at the student-faculty ratio, with the hypothesis that the lower student-faculty ratio, the more research intensive the university is. If faculty members are not responsible for too many students, then there has a chance that they spend more time on research. And certainly the four universities with the lowest student-faculty ratio, they are definitely research intensive institutions. But the ones with the highest, like Berkeley and ETH, are also extremely research intensive. So my first hypothesis about the negative correlation between the student-faculty ratio and research intensity doesn't truly hold out.

13:40

Panelist (question): Why did you choose these universities?

Mohrman: I started this study specifically at ranking issues, although I have gone beyond that now. I looked at who are some of the top universities in the Shanghai Jiaotong Rankings. Then I looked at which of these universities that I have some *guanxi* where I can get information, particularly about the Chinese universities. So I went to places where I know someone, where I had access to information, because otherwise… Institutional level information is not easily available. I'd like to get some advices and suggestions about how I might be able to extend my sources of information as well. As for US universities, I picked MIT because it is the most technologically intensive; Berkeley and Michigan are large state universities and both have strong educational schools, since I had Beijing Normal on the study. Then in Europe, ETH is once again a technology school; Paris06 is science focused; Oxford has a broader curriculum. The Japanese

universities, we have friendly relationship with, and certainly both Tokyo and Kyoto are very highly regarded institutions, and he happens to be from Tohoku, so he picked that university's information for me. Then the Australian National University, the information is publicly available again. I chose CUHK particularly because of the connection and as well a highly regarded institution in China.

15:55

Panelist (question): I'm not sure about the statistics of the student-faculty ratio, especially for the Chinese universities.

Panelist: Tsinghua University has about 33,000 students and more than 4,000 faculty members.

Panelist: There is a problem with the student-faculty ratio of Tsinghua, because many of the faculty members don't teach.

Moderator: In terms of the student-faculty ratio, two issues are raised. One is who are included in the faculty members. There are three kinds of people, people who do research and teach, people who do research only, and people who do administration. I think Tsinghua's number includes people do teaching and research, so I think the student-faculty ratio of Tsinghua is correct. As for Sichuan University, they have too many students, so in calculating their student-faculty ratio, administration staff may have been included. I think you may have to distinguish that number further.

Mohrman: Well, I tried very hard to make distinctions between people who do teaching and research and people who only do research. I have all sorts of tables and I have a researcher only column, which is a separate number. For instance, if someone is a dean, you still call him/her a faculty member, even if he/she has administrative responsibility, because he/she comes as a faculty member. People who are in clerical positions or managerial positions perhaps do not. Here I met at the mercy of how people count. I know, for example, some of the opinions of universities, they count quite differently. So there is a certain amount of problems of comparability as I said at the outset. That's a really good question.

Moderator: Another indicator of research intensity I think could be the number of graduate students, particularly doctoral students in the percentage of the total student numbers. For example, MIT has a very high percentage of graduate students.

Mohrman: That's very helpful, thank you.

20:30

Mohrman: Next I look at wealth, because money talks. First, let's look at how much money do these institutions have. When you have statistics about universities in different countries, you should have a way to compare them. So I use purchasing power parity which as many of you know is a World Bank statistics that is designed to equalize buying power. That is not the same with currency exchange rates. The World Bank took a market basket of goods and figure out how much it cost in each country to buy that market basket of goods and how do you equate that into dollars. Numbers you see here are all in US dollars regardless of the country. On table 1, it shows that university expenditures between 2003 and 2007 grew a lot in virtually every case with a couple of interesting exceptions. The largest increase was the Sichuan University budget, which grew by 82% over 4 years, which was largely due to the enrollment growth because they really responded to government pressure for enrollment growth more than some of the other universities

in China. Oxford's budget grew by 52%, which is a pretty impressive number as well. Their increase I think was related to government commitment to raise equality and trying to keep Oxford competitive along with Cambridge and a few others as well. Beijing Normal grew 48%, which was in part due to their expansion from being purely education institution to one that was taking on a broader range of subject matters. Then what surprises me is that Tokyo University, which actually drops. How can this be? So I went back to my Japanese colleague, and said, can you please explain to me how the total number of budget of a university can drop. He said, remember, Japanese universities have gone through a privatization process, in which they are more like corporations than government bureaucracies. Their goal is to increase efficiency and so Tokyo has increased its efficiency. However, when you get to other statistics, Tokyo has also devoted much higher proportion of its budget to research in comparison with other purposes, even though the budget itself hasn't grown. The other two Japanese universities yet do not have the same experiences with Tokyo.

24:15

Mohrman: With the Chinese universities, I think a huge part of the growth was related to the 985 program. In phase 2 of the program, which is a 4-year grant, divided out, converted into dollars and purchasing power parity, and then compare the size of the annual grant to the total budget of those institutions, and what impress me was the magnitude of the 985 program, that 12% (Beijing Normal), 16% (Peking University) and 20% (Tsinghua University) of the annual budget coming to this purpose. Other government money throw out to these Chinese universities as well, to research programs, to 211 program, and to a number of other activities, but this single investment really speaks to the seriousness of the government to higher education. When I told American audience that the size in US dollars of this grant, especially given the current economic situation in the United States. "Oh, I'd love to have 200 million dollars". It doesn't explain completely, but it does explain a lot about these institutions.

But when you compare institutions of very different sizes, you really need to try to standardize them in some way. So I use two kinds of per capita analysis. One was the total university expenditure per student, and one was the total university expenditure of per professor plus researcher. And you can see the yellow bars are expenditure per student, and the red bars are the expenditures per professor plus researcher. It's no surprise that the American universities are the richest. But what to my surprise is that how poor the European universities are. Tsinghua according to both per capita is richer than Oxford. That to me was a very surprising statistic. The other Asian universities are doing very well. I would expect them to be richer on per capita than Chinese universities. That was not the surprise. European numbers were surprises. But what is going to be interesting is as we go through some of these, is the extent to which, even the school which don't have much money on per capita basis, like Paris06, how productive they are in terms of research.

Michigan is the richest university on per capita basis, Sichuan is the poorest. Michigan has an enormous medical program, so that is a really inflated budget. So if you look at UM along here on the table, it is the highest bar on the per professor plus researcher basis. Is this a perfect number? No. Is this a order of magnitude number? Yes. That's how I see it.

Panelist: Does expenditure per professor include salary?
Mohrman: Yes.
Panelist: And there is equipment?
Mohrman: There is equipment, teaching, building, endowment, scholarships for students. It contains everything the university spends.
Moderator: I think the numbers about medical schools should be excluded.
Mohrman: I'm sure I can do deeper.
Panelist: I think you may want to take the average of several years. Because this year this university may buy equipment, establish the laboratory, next year, it may not do it. So it'd be better to take the average of several years.
Mohrman: That's also a very good suggestion. Sort of smooth out the variations. But I still think it is true, even you took out the medical school. The comparisons between the European universities and some of these others, 2,3,4 times is still going to be some significant multiples. Just comparing Michigan and Sichuan, even if Michigan's number has to be worked down some, the multiples are huge. So it suggests that poorest Chinese university in this study has a long way to go if this going to be competitive on a worldwide basis. I grouped all these universities based on overall expenditures per professor plus researcher, what interests me is that in the lowest category, you have some European universities, and in the higher category, you have Asian universities. So it is not geographically distinct, and to me is an interesting finding.

31:47
Mohrman: So next I want to see how research intensive they are. This how most people judge, a worldwide standard. Look at table 2, which is about research expenditures from external sources in 2003 and 2007. We also know that a lot of researches conducted using institutional money, the university's own funds. At ETH, for example, they said they have very low external research funds. They get a huge grant fund from the national government. Most of their research was done on that. They don't have to seek lots of outside funds. But the piece I found interesting is that when I compare some of these ratios in 2003 and 2007, the gap between the richest and poorest in terms of research funds is narrowing. So what is means is that, there are more institutions seem successful in getting research grants. There is more pressure on faculty and institutions to seek outside support, whether government support, international support, business enterprise support, whatever. And I think it is particularly important for some of historically more successful institutions in Europe and the United States to become aware of how serious universities in other parts of the world are increasing their research funding. But if you look at the research grant change column, there you see some pretty amazing numbers. I mentioned earlier that Tokyo University is actually decreasing its overall size of its budget but it increased its research expenditure by 62%. You got Oxford doubling its research expenditures in a 4-year period. It is particularly interesting to me to see, Michigan and Berkeley, two historically strong research universities, have very small increases. Personally, I think some of this actually relate to U.S. government policy. The Bush administration was not very supportive of research and scholarly activities. Therefore, there wasn't much money to be had. But there is a big commitment to research all over the world, in all of the 17 institutions we've been looking at here.

34:58

Mohrman: In table 3, another way to look at research intensity is to look at what the percentage of the total budget is devoted to research, or how much does outside support provide to the budget of the university in itself. The share of the budget devoted to research ranges from 36.8% at Oxford which is a lot I think. Tsinghua is fairly close in that regard. And the lowest is the Chinese University of Hong Kong, at less than 10% of its budget (9.8%). As I'm going to argue later, this is not an appointed mission, a self-defined mission. So in a sense it provides the counter-balance. You cannot tell that what it needs now. It is much stronger in teaching. But table 3 really suggests that the devotion to research is really important worldwide. I think it's quite telling that the 3 U.S. universities actually has a smaller percentage of their total budget going to research in 2007 than they did in 2003, which I think is a political issue in large part. Here these same numbers arrange visually because it shows dramatically these differences. It's not surprising that Oxford didn't change very much because 2003 and 2007 it is already very high in 2003. But you can see that throughout the series of these institutions, there is a significant commitment to increase in research.

37:28

Mohrman: There is another way to talk about research intensity is publications. Publications can be seen as one outcome of the research expenditures. Professors are expected to get research dollars to produce results, written results that can be shared in the scholarly community. Here I counted up the number of the articles that were in Science Citation Index and Social Science Citation Index and Arts and Humanity Science Index and divided them up, per professor plus researcher to even out the problem of the size of institution. And ignore that yellow bar from MIT, because they counted their staff differently between 2003 and 2007. Almost every institution increased their publications output per person. They have increased their size of faculty and their expectations for faculty were to increase their publications with very few exceptions.

Then we go back to look at the percentage increase of some other universities like Tianjin and Sichuan, they started with a pretty low base, so they can get a high percentage increase. But the Chinese, European and Asian institutions are all mixed together here. It once again suggests higher ranked universities are strongly competitive regardless of their region. What's interesting here is that there is a lot of emphases on indexed articles not in Asia, but in other parts of the world as well. The ETH increased its publications by 65%, that's huge, Michigan by 28%, Oxford by 24%. So it is a kind of academic arms race in many regards that if writings can count publications and can be considered as object numbers, then rational people will follow the goal there. And the pressure on young faculty in particular to produce is really significant. Also it's interesting to know that the most productive in terms of numbers of articles per professor is Tokyo followed by Kyoto and Berkeley, and then Paris06. You know that Paris06 has very low budget and very low research expenditures according to above mentioned statistics, but they are very productive in a significant term.

42:12

Mohrman: If you turn to table 4, which is look at research expenditure per article, MIT was the most expensive and Paris06 was the lowest. And 8 universities have reduced their expenditures per article, which means greater efficiency, or maybe more knowledge of how international

publication process works, especially for non-English speaking countries. 6 universities increased their expense per article, some by much as 80%. Here I don't know the details of what their research dollars were designed for and how they allocated their funds. So it is likely that you get research funds in year 1 and it may take 4 or 5 years before you start to see results that laboratory or that investigation. It could be investment in long-time projects, if you are trying to find a cure for cancer or do some special kinds of DNA research which may take 10 or 20 years before you have results. It could be just throwing money. I don't have the allocation information of the research dollars and so I can't make the judgment about that.

43:53

Panelist (question): So the 6 universities are mostly Chinese universities?

Mohrman: The universities that have increased their research expenditures are Tsinghua by 40%, Tokyo by 55%, Tohoku by 50%, and CUHK by 80%. The CUHK one could be that they haven't had very strong research expenditures so they took a lot to ramp up, whereas most of the other Chinese universities have reduced their expenditures per article. In other words, their output of articles grew faster than their external research dollars.

Here is some other information that the most productive institutions on per capita basis are not necessarily that ones that spend most per publication, or conversely, universities that spend most per article are not the ones that are most productive. So money alone is not the way to develop a strong research base. Money is essential but not enough to actually produce the results you want.

45:53

It seems to me that it is important to look at how universities are regarded by their peers and rankings are here to stay whether we like it or not. And the Shanghai Jiaotong (SJTU) rankings are certainly the one that does. The information on table 5 is selected factors from the SJTU rankings for 2003 and 2008. This ranking only looks at research and they are showing relative relations not absolute. So you can increase in all the things in SJTU measures and still fall in the rankings because other people have been increased faster than you. So I can make several generalizations from this. First, Chinese universities are becoming more competitive in the sense of both Sichuan and Tianjin. Until the rankings in 2008 they were not in the top 500 in the earlier year. CUHK moved up in the category from 300s to the 200s, still low but better than it was. The Japanese Universities are quite competitive. We saw earlier that they have many publications and so they are doing very well. I think one of the things is quite telling is that Chinese institutions are relatively new comers to the international education game. In the category called highly cited scholars, which are scholars who are quoted often by others, no Chinese university has a highly cited researcher. My theory is that the greater output isn't always equals to greater impact. But if you are fairly new to the game, you are highly cited because you have a body of work, because you have done some ground breaking research, you have done some important theoretical work, and if you only fairly recently began publishing in international journals, you wouldn't fall into that category. But I do believe that it will happen to Chinese universities. American institutions have all these things scholars in other parts of the world do not. But I think that is going to change slowly. A lot of Asian institutions are going to make enormous strides in the years ahead. That's where some of their investments have paid on.

48:56

Now really speculative, which universities are likely to be most successful in the future and which are the strongest base for comparison. Certainly, American universities are the richest but they are growing very slowly in terms of research. As an American, I think that is very troubling from our policy perspective. If a county is going to remain significant the knowledge based economy, you've got to continue to improve the quality of your ideas, the new discoveries, new ideas and theories and so on. So the US right now is not doing that. The Obama administration wants to make changes in that regard but we have a real problem. We don't have a higher education policy and we don't really have a research policy in the United States. Our public universities are governed by states, not by the national government. And our research enterprise is governed by a series of independent agencies for health, for energy and for other purposes. There is not really a coherent policy nationally. While we are talking about higher education system in the United States, we aren't really a system. We are a collection of individual institutions and a collection of 50 state policies. We suffered in that regard and some of the numbers I showed reflect that. I think Chinese universities are doing very well and are continuously getting stronger in the years ahead. I think there is an enormous impact of government policies, whether that's growth in Oxford, the comparison of Tsinghua to some of the European universities in terms of their research and the budgets on per capita basis. So we really see equal levels of funding in many ways between the best Chinese universities and some of the best European universities. In my opinion, you can look at this in at least two paradigms that once could approach. One I think that dominates in US universities is a paradigm of competition that sees growth in Asian universities in particular as a threat to US dominance. There has been a number of articles say: "Oh, look at all those engineers Chinese are producing! Look at all those engineers India is producing! This is terrible, and we've got to do something in the US". There is a report by the National Academy of Sciences called *Rising above the Gathering Storm*. And the book had a lurid cover with storm, clouds, lightning and thunder. This clearly indicates that growth in any other country is harmful to the United States. Maybe we do need more engineers in the United States but we should not do it because Chinese is producing more, we should do it because we think we need it for our own sake. There is another paradigm I support, which is to say that there are more potential partners in the world than before. Suddenly, there are Asian universities, European universities that are equal in terms of their research, funding, and their potential to be collaborators. In my opinion, I don't think US universities consider Oxford as a threat, why should they consider Tsinghua a threat? To think about it differently, here are more brains looking at some kinds of same issues and policies. Let's find ways to work together would be more productive than the threat model.

53:36

Mohrman: Let's continue to think about what kind of basis people have. The current research is global, and we are going to continue. The institutions that are rising rapidly will continue to have increasing impact. Here I just summarize some of the statistics that we've been looking at on the charts before. You can't count everything, so what else is important? A scholar of international higher education at Boston College named Philip Altbach wrote an article 5 years ago about the characteristics about world class universities. He didn't use the words hardware and software. What he meant is similar. He said that you have to have the kind of ability for resources, the

libraries, the equipment, the infrastructure, and the people in particular, in order to do the kind of research that have international impact. But you also need software, by that he means free inquiry, academic honesty, governance, the ways in which universities operate, the ways in which they relate to the government, the way in which they relate to society, to enterprises and so on. Here is the very interesting case of Paris06. Because we saw that it was lowest in expenditure per professor plus researcher, it has relatively low percentage of its total budget going to research, but it has higher productivity than Michigan, Oxford or MIT. So something is going on at Paris06 that isn't about money. You can't do it without money, but money alone cannot do it for you. High quality output requires more than just funding. This is borne out by a recent study by a man named Jamil Salmi at the World Bank. He is a Moroccan economist who recently published article called *The Challenge of Establishing World Class Universities*. In this he argued that there are three complementary sets of themes that are required for a world class institution. You have to have a high concentration of talent, students and faculty. You should have really smart people. Secondly, you have to have abundant resources. You have to have the hardware. But you also have to have what he calls the favorable governance. There he is talking about a series of factors supported the regular framework, the relationship between university and government, institutional autonomy to make its own decisions, strong university leadership, and academic freedom to pursue ideas wherever it takes you. He cites a recent survey of European universities, which said that funding and governance go together. So look at one of the highly ranked university in Europe in this particular study, those that are ranked the highest tend to have greater management autonomy, which leads to increased efficiency, both in process and also in cost allocations, leading to higher research productivity. Secondly, he said the survey showed that simply investing money or trying to become more selected in choosing students do not lead to being a world class university, in the absence of an appropriate governance framework and strong leadership. He is not using the same words as Altbach, but he is saying many of the same things that the ethos, the environment, the flexibility and the freedom of the institution to teach its own course, whether it is public or private institution, it is extremely important. I think it explains some of the numbers that we've seen here. It is not just dollars or *renmibi* that make a difference, but what do you do, in what environment do you do those, and how your government relates to your institution. It is also important to think about the thing you can't count very easily. That's about next generation of scholars and citizens. So the question earlier about percentage of graduate students will be a part of this. (Several sentences missed)

59:20

Mohrman: Here I think the CUHK is an interesting example. It is the blend of east and west, the combination of Chinese and British in a positive sense. It has followed an American style organizational system, grouping students in residential colleges, requiring general education. Though it has a low commitment to research relatively speaking, a modest scholarly productivity, it is performing a different mission. It does not want to abandon research in any means, and it has increased its investment in some of the research, but it still remains relatively low compared with most of other institutions in this research. So I think it provides a reminder that all of the staff we talked about in rankings doesn't get that education many of the people care in this room and other 32,990 or so students at Tsinghua, millions across China and billions around the world. We have to have ways when we think about rankings and comparisons. We should think about the qualities of

university that can't be missed out, the governance structure, the ethos of the place, the commitment to teaching, the production, scholars, citizens and as well as knowledge. What are those people going to do in their lives? So these are wonderful tantalizing statistics which are taking a lot to collect and you have given wonderful suggestions about some other things I can do with them. But they are tantalizingly general. So there is a whole lot more I'd like to know at the institutional level. Maybe you can help me think of this together about how I could get the information to do this. First, I want to know more about how institutions allocate their funds. You could make more judgments about policy decision making, what is the strategic vision, is it a long term investment strategy for research, say 20 year strategy let's see fantastic results down the load but we must be patient. How could we separate medical schools and clinical faculty is a different mission. These data have to be collected on a case by case basis, and to see if I can find out in some micro details of what is going on. Therefore I have to talk to people. Even with American institutions, I cannot get the information without individual contacts. Secondly, if I could have more cases in the study, if you had 30 or 40 institutions, you could begin to do some single regressions on different factors or other sorts of statistical methods. So then the question comes to how to get more information. And China is the toughest one for information gathering because so little is publicly available. I know that the Ministry of Education has a whole lot more numbers than they publish, and they put out a little book each year about national universities and I got a lot of things there. But you cannot buy this in bookstores. I would be interested in knowing if any of you have suggestions on ways to do that. It is not easy to get information from institutions in other parts of the world, but comparatively speaking, it's easier. As for taking statistics of multiple years to smooth out trends, let's say 15 or 20 years, even if that is not every single year, I have two data points and that is not trend. I need more to do interesting things at institutional level, what's the behavior, what's the growth pattern, what are some of these trends at the national level. For example, I think it would be very interesting, this might be possible, to take China's rapid growth over the last 20 years, and compare to US rapid growth in 1950s and 1960s, and see if there is any similarities. If so, could we make any suggestions based on the US experiences? How to do lessons learnt across different cultures, but it could kind of interesting speculations. With more years, you could do more trend kinds of things with more institutions. I would be quite interested in getting feedbacks in any of these, particularly about the prospect of extending this beyond simply descriptive statistics. Thank you very much for your time and attention and excellent suggestions.

Q&A Session

1:06:10

Moderator: Thanks very much for the fascinating talks on world class universities. Now the floor is open.

Question: My question is about the number and the quality of articles. You just mentioned indexed articles per professor plus researcher, but you didn't mention the impact factor of those articles. So if you sum up the total points of impact factors of articles of one university, perhaps you may find that MIT performs much better than other universities.

Mohrman: There is a certain amount of quality control in the process, because only high quality

journals that are peer reviewed are listed in the SCI, SSCI and AHCI. If your articles have been selected for one of those journals that have passed the peer review process, it at least meet the minimum standard for quality. But you are right, for example, postgraduates contribute a lot to indexed articles, thousands of articles for each university one year. Desperate for money, they might be willing to do such a project. So to include the impact factors is a really good suggestion.

Moderator: SCI, SSCI and some others as Kathryn said are indeed good indicators of quality. But each citation index has certain disciplinary biases. For example, SCI does not include some very important journals while EI does. Discipline bias can be reduced by looking at different citation indexes. The other thing is that in Chinese research communities, a lot of Chinese scholars also publish in Chinese journals. China is large enough to have a sort of Chinese based academic journal publication systems. I think a lot of articles published in Chinese and other languages are not counted. And I argued last year in an article, Chinese scholars' increasing publication in International English journals may do harm to Chinese knowledge system. Many of the people who are using the knowledge in China, they can only read Chinese language based journals. Now papers are all gone to international journals, so the actual quality of knowledge in Chinese language is declining. So it brings adverse effect.

Panelist: Free inquiry is very important, isn't it? Those who are interested in publishing in international journals must believe there is no harm to the Chinese knowledge base.

Moderator: Overall I think it is positive, but if Chinese knowledge system does not have a good way to retranslate English materials back into Chinese very quickly, we will have that knowledge lag.

Mohrman: I think there are a few Chinese journals in the Arts and Humanities Citation Index.

Panelist: Actually, they are published in China in English.

Panelist (female): Even in Chinese we have journals in the AHCI, for instance, Foreign Literature and Research.

Mohrman: In general, this whole ranking system is biased against languages other than English. Other countries whose native languages are not English really suffer a great deal. I've sort of heard which is called the knowledge drain.

Panelist: You have some advantages to publish in English. There is a stereotype that articles published in English are more important than in Chinese.

1:14:22
Question: (miss)
Mohrman: They are publishing in English and they are doing at a quite high rate, even compare to who speaks English.
Panelist: The current system of evaluation on research quality tends to encourage excessive

publications. And you spend a lot of time on one article in one year or two years you can still have a lot of impact as a matter of fact.

Panelist (female): Because they are published in English, so they can have a worldwide publicity.

Mohrman: If you are trying to have your ideas spread worldwide, that's true. But it also seems to me to that encouragement for publication also has a perversive effect. You'd better to take your projects break into several pieces, get 4 articles instead of only 1. For example the young assistant professor in the office next to mine, the pressure she faces is a couple of articles a year. At if you are at a second-tier institution that works very hard to be better, your pressure would probably be even greater than if you had been at Berkeley which I think is well established now. Berkeley professors are stacked to publish a lot too. (miss one sentence)

1:16:41

Panelist (Lin): I think the whole framework maybe divided as input and output. A university uses a lot of resources as input in order to achieve some output. To measure a good university, there are two major criteria. One is research quality. We spend a lot of money and build a lot of buildings and laboratories. Eventually its output is research results, which shall be measured by quality. Others can be classified as inputs, grants buildings and so on. The second criterion to measure a university is its graduates. To measure it, one is the attraction to students, how many people are applying to Tsinghua University. If the quality is really good, good students will come from different parts of the world. Probably in the future you can do some input and output analysis, a CG model can easily generate the results.

Panelist: You have used published articles to measure the research of universities. But you haven't touched upon educated professionals, the future leaders of the society. They create social roles, job opportunities for others. I think it is another measurement of universities, which stands for social recognition. Professor Lin mentioned how attractive a university is. For example, a lot of people know Yale because of the professionals, politicians, lawyers or business people, graduate from there.

Mohrman: I would certainly agree with you that one appropriate measure is the quality of leaders of the society and the contribution to the society of the graduates. In the American universities, we say, Harvard has wonderful students. Harvard doesn't have to do anything to turn out wonderful students because they were wonderful when they came. In the US, having a Harvard degree means a great deal in terms of employment, postgraduate studies and so forth, which doesn't necessarily link to their personal abilities. People try hard to go to Harvard because it will put an "H" on their forehead. So for the rest of their life, they will have Harvard attached to their name.

Panelist: (miss)

1:22:25

Mohrman: (miss one sentence) I would not want to use that as my only judge of the quality of students by how many students (miss) You are mixing input and output in a difficult way that might be hard to peel apart. How you judge the total contributions of graduates of any institution?

Panelist: How to judge quality of a product? You don't ask the government, you don't ask the experts, the market will do the selection. If a product is good, people will come and buy.

Panelist: The mission of different universities is different. The focus and career path of graduates at different institutions are rather diverse.

Mohrman: (miss one sentence) I recently read an article in Austria about the little mobility there is. If your father is a carpenter, you would not go to the best university. China and the US have much more mobility so people have the opportunity to move ahead. Different missions will apply in different countries as well as for different universities.

1:25:00
Panelist: What about to judge the universities from the employers' perspectives? Is that a quality indicator you use?

Mohrman: The other frequently used international rankings system is a British system called the Times higher education. They do a survey for employers and they ask employers to rank universities based on the sort of things you are describing. The real challenge is that they have heard of Harvard but they haven't heard about a less famous one. (Interruption, saying Tsinghua) It is worth noting here that I believe the survey has to do within the same country. Let's imagine that an American student went to a small liberal arts college called the Carleton College which happened to have an extremely strong education program. But more people have heard of Harvard than Carleton. Then we also have a name recognition bias. But that is happening worldwide, which explains why people want to go to Harvard.

1:26:39
Mohrman: Also the US news and world report system asks the peers to rank the academic quality of different institutions. I was the college president and you must know I have cheated. I was at the Colorado College which is a private liberal arts college. So I got to list only other liberal arts college. Some of them like Amherst College, Williams College are very good. I could not fail to give high marks. But then I got to colleges that have more competitions with Colorado college, I tend to rank them a little lower. People who are knowledgeable about the quality of academic programs at similar institutions could also provide such lists. As for me, I would like to have a kind of system in which we could judge how much the value added on undergraduate education. So you know something about where was the student the day he/she entered. In first year, what did they know and how do they write, how clearly could they think and analyze, and them at the time of their graduation, how much have they improved. Schools could take students who are fairly weak and make a huge improvement in their abilities. Perhaps in some ways they are doing better job of education than schools that admit only very smart students and graduate them four years later. Then how would you do that? You have to test every sample of every student in every school every year. It would be fantastically impressive if we could pull that out.

1:29:03
Question: Did you try to break down the research expenditure by the field of study?

Mohrman: If I can get that information, I definitely would. That would be very interesting even within institutions. Beijing Normal University would have very little percentage of its research in science and technology and a great deal much more in social science because of its historical background. And Tsinghua would have a very significant amount in engineering because of its history and priorities. If I could get more information, I would like to investigate into the allocation not only between teaching and research, but also within research, and also their short term and long term performance.

Question: (miss)

Mohrman: MIT is the only private university in this study. You could argue that Japanese universities are quasi-private. I chose MIT specifically as a sort of technology comparison for Tsinghua.

1:30:47
Panelist: I have some doubt about the argument that over selection of students cannot make a world class university.
Mohrman: Jamil Salmi said that. He means that just trying to get the very smartest students only will not get you to a world class university. That is one component. Smart people, lots of money and favorable governance structure, these are the three categories. Smart students alone won't do it. It may be necessary but not sufficient.

Panelist (female): Tsinghua University and Peking University try to compete for the 10 top students in National College Entrance Examination in each province.

1:32:35
Moderator: A good student comes in and a good student comes out, that is really hard to measure efficiency or we say the value added to the student. China has an NCEE. I always argue that there should be a new system selecting students. For example, every university can only say select 10% from the top 10 in each province, and then the 10% from the top 10-20. Then you get students from all percentiles. Then the quality of students in Sichuan and Tianjin can be comparable with that of Tsinghua.

Panelist: One thing important is that NCEE is not a 100% quality measurement for students. This is a measure of social justice. The reason is not to select the best students, but to inherit from *keju*, then poor people can have an access to the national education. At least 50% of the exam represents social justice. In this case, even people having a lot of money may not have achieved high score enough for Tsinghua.

Question: What is the drop-out rate of these universities?
Mohrman: I would think that the drop-out rate varies a lot from country to country. At Tsinghua, the drop-out rate is nearly to zero. It would vary tremendously from school to school in the United States. Two things happen in US university. First of all, students move around a lot. For instance, some started at community college and doing well enough to transfer to Berkeley, or they started

at Berkeley but then their families move so they end up in UCLA or finish up at New York University or something like that. If a student starts and finishes the degree at different institutions, which will be counted as drop-out for the schools he/she previous enrolls. The mobility of American students makes it extremely high drop-out rates. That's why there is an effort now to track each student wherever they go to school. That is a very controversial policy suggestion right now, because it violates the Americans' sense of privacy rights. You don't want the government collecting too much information about you. To Berkeley, it is a drop-out, but in the system as a whole, the student graduate from college.

1:40:09

Mohrman: Right now, because of the economic situations, a lot of American students are leaving private universities with high tuition and heading for public universities with lower tuition. It is not because they think it's better but they think they can afford it. There are many reasons why people move around. I think the mobility may sounds strange to people who are more familiar with Chinese systems where people go and finish degrees in the same place. Even Harvard has people who transfer out. If you are a really good student, you are not going to flock out unless you have economic or personal problems, etc. In general, people who are smart enough to be admitted are smart enough to finish study.

1:41:20

Question: How seriously do European universities take the indexes of articles?

Mohrman: I really can't say it in general just like I can't speak of American universities in general. But universities share a certain goals. Chinese universities may put more emphasis on it than American universities because they want to be competitive on the world stage. So do European universities. Oxford doesn't want to fall behind that's why the government invests so much more money. Additionally, I do think that the SJTU ranking has an enormous impact all over the world. I was surprised at the number of universities I have visited, the number of speeches I have heard, they tell me to the numbers of what exactly the ranking is, not only with the whole universities, but also the program, all the major programs, the faculty and the administrators alike, they pay a lot of attentions to it.

Panelist: You did not mention that such indexes have a very negative effect on teaching.

Mohrman: Even before the ranking systems were created, in large American universities, most rewards go to research and publications. Very few rewards go to teaching. And the ranking only makes that worse. When I was the Dean for Undergraduate Studies at the University of Maryland-College Park, I was sort of the countervailing force, trying to persuade people that they should pay more attention to teaching. My best success was that a professor had a summer daughter go to college. Suddenly they realized how important teaching was. They became much more interested in participating in the honor's program, the teaching and learning center, etc. Even if they send their children to another university, they will recognize how significant it is for undergraduate students to have good teaching. So they are often more willing to invest in teaching as well. (Ideas cannot be fully grasped, so few sentences neglected)