

Statement of

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“The Globalization of R&D and Innovation, Pt. II: The University Response”

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Chairman Gordon, Ranking Member Hall, members of the committee. Thank you for this opportunity to submit my thoughts on the topic of the university role in the globalization of innovation, research and development. It is a consuming issue on almost every major American university campus today.

I am Mark Wessel, Dean of the H. John Heinz III School of Public Policy and Management at Carnegie Mellon University. As many of you are aware, Carnegie Mellon University is one of the nation's leading private research universities. The university consists of seven schools and colleges with more than 10,000 students and more than 4,000 faculty and staff. Founded in 1968, the School of Urban and Public Affairs (SUPA) set as its purpose an aggressive effort to understand the causes of critical problems and to train individuals to use knowledge and technology to bring about positive change. In April of 1991, SUPA became the H. John Heinz III School of Public Policy and Management in honor of the late Pennsylvania Senator H. John Heinz III. The Heinz School is consistently rated as one of the premier public policy schools in the nation.

The globalization of R&D and innovation is critical to the future not just of our institutions but of the economic success of the United States. It also challenges us to answer a critical question about our obligations as institutions to people, cultures, societies and economic systems beyond our borders.

To my knowledge, no university has "solved" this challenge. We each proceed in idiosyncratic ways based on our individual cultures, needs, capabilities and existing positions in the global marketplace. This is as it should be. Experimentation breeds innovation and the competition among these experiments will ultimately determine which models are most likely to be successful. Still, ultimately we must find ways to share information about our many individual experiments and gain a collective understanding on how to capitalize effectively on the opportunity globalization provides to enhance our capability to achieve our core mission – the advancement of knowledge and the training of citizens for productive roles in society. The efforts of this committee to understand this activity in universities can be critical in that process of coming to consensus.

The Heinz School and Carnegie Mellon have long been known for fostering practical problem-solving in an interdisciplinary environment that blends technology and the sciences with the arts, humanities, business and policy. Without question, innovation and collaboration characterize our success. Now more than ever, these strengths match up with important, emerging needs in our complex world.

I would like to specifically highlight the great strides the university has made globally. In 1997, the university offered just one academic program in three countries outside of the United States. Today, it offers 12 degree programs in 10 countries and has student exchange and joint-degree programs in Singapore, Taiwan, India, China, and Portugal. Additionally, we have an official presence in Athens, Qatar, Kobe, and Australia. My college participates directly in three of these four “branch campuses.”

General Forces Influencing University Globalization Initiatives

You have asked us to comment on what is driving efforts by our universities in responding to globalization. Let me start by saying what is NOT driving this effort. Over the last 50 years there has been no lack of global collaboration in research. Particularly at the level of the individual researcher, international collaborations to advance knowledge and spur innovation have been profoundly important and often unnoticed components of the engine of the American university innovation machine. There has been no shortage of willingness of researchers across the globe to seek out others in their fields that can advance their understanding of problems of interests. In addition, particularly at the graduate level, major American universities have typically been open and welcoming environments for foreign students coming to seek the benefits of our educational system. In both these senses, American universities have always been intimately tied to a global system of innovation and knowledge transfer.

The difference today is that the institutions that are these researchers’ and students’ homes are deeply engaged in the process of globalizing as institutions. The process of engaging global economic and social systems is becoming part of the strategy for universities, not simply an outcome of what we do. This has taken many, many different forms. But the forces that are driving these efforts are reasonably clear.

Globalization of Economic Systems and the Public Good

One of the realities we face as universities is that the fundamental conditions around our value proposition have changed on several dimensions. For much of the latter part of the 20th Century governments at both the state and federal level accepted the proposition that universities were a “public good” – i.e., that the research and education output of American universities would make the society stronger in ways that would not be captured if not for the public subsidy. While this basic proposition is still accepted, the degree to which the public

sector is willing to provide subsidy for this activity has declined – at least relative to the overall cost of providing these outcomes.

The implication is that (if we are smart) we must be far more conscious of the value added we generate that customers will pay for. And the nature of those customers' needs has changed fundamentally as a result of globalization. Every business of any scale has been transformed by technology-driven global supply chains, by the emergence of new competitors in every market and by the increased need for continuous process and product innovation – innovation that can now come from anywhere and anybody. Responding to the needs of these organizations requires us to change much about the way we do things. It is not sufficient that we just study the phenomena driving economic globalization. Because of the rapidity of change in this environment (often driven by rapid change in technology), we must partner with firms to determine the sources of potential innovation. Moreover, those firms are no longer North American or European firms. Being present (or at least more proximate) with these new players in the world economy is critical.

This new economic system has other important implications for our students. For our traditional base of international students the advantages of coming to the U.S. for a university education are diminishing – not because the quality of our education or employment opportunities are declining but because the quality of those options in their home countries are improving. As emerging economies generate globally competitive industries, the opportunity for students from those countries to build their careers in their home countries increases and the relative value of access to U.S. labor markets (a traditional motivation for international students) declines. As foreign countries invest increasingly in tertiary education of high quality, the difference in the value added of our education relative to theirs declines.

For U.S. students, the likelihood that you might spend your entire professional career in the United States has declined. Education MUST become more global to accommodate the demands of their careers. And this “globalization” of education is fundamentally different than the traditional mode of staying at home and studying international business (with a possible semester abroad). It requires, at least to some degree, the ability to actually study their professional fields in the contexts in which they will practice.

Finally, this new economic system and the rapidity of innovation and change that drive it require the ability for firms to upgrade the skills of their employees more or less continuously. And because the value in the marketplace of human

capital is higher than ever, this requires universities to deliver this capacity where the employees are globally resident rather than requiring them to come to us exclusively. While distance learning can serve some of these needs, it cannot meet them all for any of a number of reasons.

The demand of our mission that we serve the public interest generates even more impetus for us to include globalization in our strategic objectives. For all intents and purposes, there are no domestic policy issues any longer. The interconnectedness of economies, societies and the welfare of individuals cannot and should not be undone. Understanding the ways in which this interconnectedness will change our view of how good policy is made is critical. Moreover, our society depends on the willingness and ability of emerging societies to develop modern systems of governance – systems that are responsive to their internal constituents, weigh alternatives rationally, are invested in the future of the global economic system and are informed of the collective as well as the parochial interests in policy making. For universities to contribute to the emergence of rational governance we will need to view ourselves as partners with the individuals and institutions in these societies that are moving in that direction. I believe that requires physical presence.

The World has Come to Us

The second force influencing American universities' desires to "go abroad" is that the world is adopting our model of tertiary education. Many governments around the world have come to recognize the role the American tertiary education system has played in supporting the innovation and productivity that have generated the most powerful economic system ever known. Public and even private investment in what aim to be high quality university systems around the world is truly impressive. This creates both opportunities and threats for us. The opportunities come because many of these governments have come to our universities for assistance in establishing these systems. These new institutions will become increasingly effective, they will become centers of innovation and knowledge creation in their own rights and our faculty and students will increasingly benefit from connection to them. Moreover, these institutions will create cadres of individuals with significantly higher capabilities that we might then engage in our own pursuits. My view is that the more assiduously we pursue institutional relationship with these new entities, the more likely our faculty and students are to benefit from their emergence.

But, of course, these new institutions are or will be competitors. They will inevitably compete with us for the faculty, students and resources that support

us. Our advantage is that if we can assist these societies in fulfilling the role they might otherwise fill by creating new competitors we will be better off. And to the extent that requires us to modify how we do things to accommodate the local demands of these societies, the richer we will become as institutions on every dimension.

Our Industry Structure Will Change

My provost and former dean of the Heinz School, Mark Kamlet, is fond of saying that higher education is the last service industry in the world to undergo major structural change – but it is coming. Arguably, there are simply too many universities in this country. To put it another way, if we were largely for-profit institutions one would likely see significant merger activity in our sector. What that means for our discussion, I believe, is that the emergence of new markets abroad – i.e., markets that can't easily be accessed in our traditional educational and research delivery models staying at home – offer opportunities to take advantage of inherent economies of scale without jeopardizing the branding and selection fundamentals of our business model at home. Thus, for many of us, going global is simply efficient.

These are, in my mind the three most important general factors in driving the push for American universities to seek opportunities abroad. Of course, this is all enabled by advances in communication technology that in innumerable ways have facilitated building global institutions in many endeavors of life.

Specifics of the My Institution's Efforts

Beyond those general principles, what any university or college chooses to do on this front is a manifestation of that institution's particular circumstances, capabilities and values. I will speak with respect to the goals, objectives and strategies of the Heinz School but will reference broader activities at Carnegie Mellon. The Heinz School is a graduate professional school with two major areas of emphasis: a) public policy analysis and implementation; and b) information systems management and strategy. Our core aspiration in pursuing our globalization effort is to have a significant impact on both the evolution of the global IT-driven economy and to influence the process and structure of governance in emerging societies that have and will become such an integral part of this global system. We believe our comparative advantages are a commitment to objective, empirically driven, interdisciplinary inquiry and education and a commitment to innovation to produce value added for our constituents.

It should also be said that there is no single model that we believe is optimal as an instrument to achieve our goals. In reality, the replication of the model represented by our home campus in anything like the scale of the original has so far proven impractical and far too risky for our tastes and resources. At Carnegie Mellon, we do have what might commonly be referred to as "branch campuses" but they are smaller and more specialized than our home campus. However, we have sought to build real presence in the other nations I previously mentioned through a very wide variety of other means.

We evaluate every global opportunity according to its ability to support us in achieving the following objectives:

1. Build alignment with the important organizations and individuals who are leaders in the global economy and policy environment;
2. Reach new student markets that are unlikely to access our education by coming to Pittsburgh;
3. Create opportunities for our existing students to expand their professional education through professional experiences abroad;
4. Improve our curriculum by broadening our exposure to global policy and business issues;
5. Build a globally aware faculty with an institutional environment capable of support the broadest possible intellectual inquiry.

Of course, this is not an unconstrained problem. The primary constraints we pay attention to are:

1. The constraints on the managerial capacity of a small institution to deal with issues generated by a globally distributed organization;
2. The absolute need for every global venture (and all ventures collectively) to exhibit a high probability of positive financial returns and very low down-side financial risk;
3. The necessity of maintaining quality standards in research and education consistent with our home campus.

You have rightly asked what outcomes we expect from our efforts to become global institutions. Ultimately, I believe that this is a bold but necessary activity whose full dimensionality will not be known for some time. Nevertheless, we expect some or all of the following to result if we are successful:

1. Increased recognition around the world of the potential constructive impact of our institution on the efforts of societies to fulfill the aspirations of their people and a consequent increase in our "brand equity";

2. Increased financial support for our efforts from both public and private sector entities that are convinced of this value;
3. The ability to deliver education to highly qualified students whom we would not have been able to serve previously;
4. Improved quality of education for all our students as we modify our curricula to reflect what we learn in partnerships around the world and provide opportunities for true professional development in these contexts;
5. Better research outcomes as we expand our reach to include new intellectuals from around the globe;
6. The ability to experiment with and learn from new models and modes for research and education in a highly decentralized and distributed environment.

I believe that these outcomes that we expect as one institution reflect what we might hope to achieve collectively in this effort. We will produce citizens better equipped to deal with the changing economic environment that has accompanied globalization. We will build partnerships that will increase knowledge generation and facilitate its transfer to society. Our universities will be financially stronger and require less government subsidy. We will become more efficient individually as we leverage existing infrastructure. We will support innovation in firms that fuel global economic growth.

These outcomes are difficult to measure. It is even more difficult to prove conclusively causal connections between university globalization efforts and these types of generalized social welfare outcomes. However, at the institutional level I believe we will be able to determine if we are successful. Successful global universities will have the following characteristics:

1. The number of our students who are able to spend portions of their education at our facilities or partners abroad in gaining education and experience in curricula and practicums that are fully integrated across campuses will increase;
2. Revenues generated from activities abroad can be used to support education and research at home campuses;
3. Our graduates will be sought out because of their ability to translate what they have learned to solve global economic and policy challenges;
4. We will have built a network of research partners with multiple collaborations across faculty and institutions globally;
5. We will have many private sector partners for whom our educational offerings are an integral part of their training and development efforts and who provide us with access to data and intelligence about emerging issues in technology and business;
6. We will have government and other academic partners around the world who rely on our expertise in developing their institutions and tertiary education systems, with whom we share infrastructure for the benefit of our students and faculty, and

- from whom we learn how our organization and system can adapt to be more effective in their environments;
7. Our board of trustees and advisory committees will be increasingly populated by influential business people and policy leaders from around the world.

Carnegie Mellon's globalization efforts have been a remarkable experience and we have learned much, even at this early stage. Largely because we are inexperienced at this, there have also been surprises – particularly at how difficult this task proves to be. Some of the major challenges for our future efforts are predictable. Because we are generally not-for-profit organizations, we do not have access to the kinds of financial markets that are capable of providing risk capital to these kinds of ventures. Most of us can or will only tolerate a limited amount of financial risk in almost any venture. Hence we will be constrained in our ability to pursue many of our goals by the degree to which we can identify partners with philanthropic or public interest motivations willing to provide us with this kind of capital.

A second source of challenge for us is that we have built a model for research activities that is dependent on a highly idiosyncratic environment and culture that is not well adapted to the global enterprise. At a policy level, many of the public agencies that fund research at universities will not fund foreign-based faculty – making it difficult to structure an integrated global research environment. Tax treatment for foreign-based research enterprises is uncertain, at best. Locally, our systems of supporting, evaluating and promoting faculty have relied heavily on a high degree of personal interaction and mentoring that is difficult to replicate in a global environment. To a significant degree, our educational programs have relied on extracting students from their homes and other productive activity to educate them in fairly isolated environments. Our management systems from finance to human resources to student services are all largely structure on the assumption of a geographically proximate environment.

We are also challenged to adapt to a highly varied global regulatory environment. Each nation in which we consider operating has a different set of requirements with respect to the operation of tertiary education environment and in many of these countries the sector is completely closed to external entry. Even understanding the implications of these differing regulatory and policy environments is very challenging for us.

Finally, the management challenges of inherently small institutions achieving global scale are truly daunting for us. This is more than a question of management and efficiency. Ultimately it is a question of whether we can

globalize and still maintain the quality standards in research and education that has been the core of the success of American universities.

Thank you for the opportunity to testify on this important topic. I would be happy to answer any questions the Committee might have.