

**The Search to Know—What?
Reflections on the Purposes of the University**

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“The search to know” is a good phrase to summarize what universities are about. It captures why there are students (they want to learn, to know something), what faculty are engaged in as they pursue learning, develop courses and pursue research, and what differentiates universities from many other institutions. My late colleague and friend, Edward Levi, once president of the University of Chicago, defined the “what” as the “disinterested, joyously obsessive pursuit of truth.” This, alas, may not be what comes to the minds of most people when they think about universities.

These are the best of times and the worst of times for universities worldwide. They are the best of times, because in even the remotest corners of the globe it is hard to find anybody who does not willingly acknowledge the importance of universities. Politicians from Jerusalem to Washington, from Singapore to Berlin will speak glowingly about the need to invest in research and human capital in order “to sustain economic growth in a postindustrial, knowledge-based global economy.” [Levin 63-64]

These are the worst of times for universities, especially public ones, because as governments face extraordinary budget shortfalls due to their spendthrift ways and the sharp economic recession, they do not generally assign higher education and research funding the priority that their emphasis on innovation would suggest. They do not put their money where their mouth is.

The present, if somewhat abstract, enthusiasm for universities is, of course, not new. Bologna, the first European university, shortly after its founding at the end of the 11th century, attracted the amazing number of about 10,000 students from all over Europe who, for better or for worse, came to study Roman law. In subsequent centuries, interest in universities waxed and waned until, in the course of the 19th century, modern society firmly embraced universities as necessary.

At the founding of Johns Hopkins University in 1876, its first president, Daniel Coit Gilman, spoke about American involvement in promoting higher education institutions in Japan, China, Lebanon, and Egypt:

What is the significance of all this activity? It is a reaching out for a better state of society than now exists; it is a dim but an indelible impression of the value of learning; it is a craving for intellectual and moral growth; it is a longing to interpret the laws of creation; it means a wish for less misery among the poor, less ignorance in schools, less bigotry in the temple, less suffering in the hospital, less fraud in business, less folly in politics; it means more study of nature, more love of art, more lessons from history, more security in property, more health in cities, more virtue in the country, more wisdom in legislation, more intelligence, more happiness, more religion.

In Jerusalem, I do not need to remind you of the Zionist purposes that were part of the proposal to establish a university here as early as 1897, or of the debates surrounding Weizman's initiative that meant to assure that Hebrew University would be useful for building the country.

The founding grant of Stanford University referred to “promotion of the public welfare” as the purpose and, in 1902, Jane Stanford elaborated in a flowery speech to the Board of Trustees: “The moving spirit of the Founders ... was love of humanity and a desire to render the greatest possible service to mankind. The University was accordingly designed for the betterment of mankind morally, spiritually, intellectually, physically and materially.”

Assuming that something like Jane Stanford’s list responds to what many societies hope for as they establish and fund universities, how do universities go about realizing these goals for a better state of society, or, in Jane Stanford’s words, humanity?

Let me address four approaches that are not mutually exclusive but that raise different questions. I shall focus on the first, which is, to my mind, the most important.

1. The pursuit of knowledge through teaching, learning, and research;
2. The transfer of knowledge to the public and private sectors;
3. The cooperation between universities and private and public entities;
4. Participation in efforts to find solutions to global challenges.

First, I shall turn to teaching, learning, and research. Permit me to quote what I used to say to new students at Stanford, admittedly also somewhat floridly.

You are about to begin one of the most elevated, noble, honorable forms of public service that I know. That is, you will promote the public welfare through the increase of knowledge: your own knowledge, your fellow students’ knowledge, your faculty’s knowledge, and society’s knowledge.

I used these particular formulations because in the nineties there was much talk about “the university and public service” that was based on a differentiation between the two.

The knowledge I had in mind was what John Newman called “knowledge as a habit.” Knowledge as a habit demands extraordinary and serious ongoing commitment; you cannot tuck it away as if it were a crystal.

I also spoke about the need to doubt:

The search for truth has always been characterized by the need to doubt, the need to be critical, including being self-critical: looking not just for the evidence, but for the counterevidence as well. As Thomas Huxley, the great 19th-century British scientist, formulated it: “Science ... warns me to be careful how I adopt a view which jumps with my preconceptions, and to require stronger evidence for such belief than for the one to which I was previously hostile. My business is to teach my aspirations to conform themselves to fact, not to try and make facts harmonize with my aspirations.”

The research-intensive university’s advantage in contributing to knowledge lies in its ability, partially at least, to follow its own agenda (free from government and business imperatives), to not make the facts harmonize with aspirations and to remain open to change and serendipity.

Seen this way, research-intensive universities are very much about what everybody wants these days: the search for new knowledge that leads to innovation in how we understand the world, that leads to improvements in scholarship and in daily life. The question always is: can something be understood better, can something be done better? If assumptions, practices, and predictions prove to be wrong, we have to get at the problem.

If one wants knowledge for its own sake or because one assumes that the intellectual and economic vitality of a society, a country, depends on knowledge and human capital, then one must desire scholarship and science, and if one wants excellent scholarship and science for the long run, then the conditions for the students, both undergraduate and graduate students, must be right. Student-teacher ratios must be reasonable and the relationship between professors and students dialectical.

As concerns, specifically, the students' search to know, most universities the world over leave it to students to determine the subject or subjects they want to study. Their main guidance comes from what universities offer as their curriculum. In this respect, there have been fascinating worldwide shifts. In a book called *Reconstructing the University*, David Frank and Jay Gabler have sampled course catalogues from countries in Europe and the Americas to those in the Middle and Far East, Africa, and Oceania. They were able to map broad convergences in the fate of the humanities, social sciences and sciences over the course of the 20th century. The changes in the composition of the academic core that they demonstrate (especially, the phenomenal rise of the social sciences) suggest that—important national and cultural differences notwithstanding—it is more than plausible to think of universities as constituents of a worldwide republic of learning.

In most countries, as students embark on their tertiary education, they also embark on a fairly high degree of specialization. Put differently, higher education establishments do not undertake a curricular responsibility to promote a fuller and better general understanding of the world on the part of all their students. Without such understanding, contributions of universities to the betterment of humanity occur in relatively narrow and diversified channels. Universities basically assume and trust that more general knowledge will have been conveyed in the primary and secondary phases of a student's education. Alas, for that trust there is increasingly little basis in the world. In the United States, for instance, many primary and secondary schools have been deteriorating. You can hear similar observations in Europe and elsewhere.

The most important exception to the early specialization in universities is provided by the college system of the United States. Actually, there are, in the United States, two types of college education that are in conflict with each other, though in the real world frequently mixed. For emphasis, it is useful to contrast them. The first is the classic liberal arts model—four years of relative tranquility in which students are free to roam through disciplines, great thoughts, and great works with endless options and not much of a rationale. In the approving words of Richard Rorty, they receive “a smattering of this and a smattering of that.”

The second type is more pragmatic. A college degree is expected to lead to a job, or at least to admission to a graduate or professional school. Most undergraduate students take, of course, a pragmatic view of college education and are worried from their first day in college about career prospects: the liberal arts, however defined, are not uppermost on their minds. The American system of higher education is a highly differentiated system, which has found diverse solutions to meet various expectations and needs.

In the best places most undergraduate programs continue to be organized around the first ideal: the four-year term, divided into two introductory years and two years of a specialization, the so-called major; distribution requirements that are a rather weak attempt to expose students to a broad range of disciplines and modes of thought; the focus on original texts and good scholarship, and so on. Propagation of knowledge does take place—though mostly in what can only be described as a fairly random way, unless you are an engineering student, or in pre-med, or pre-something else.

How undergraduates structure their search to know in American universities is essentially left to them. For a very long time, and with only a few exceptions, the system has been one of electives among which the student may choose in order to find their “passion,” as the expression has it. If they are lucky, they get some solid faculty advice on their choices.

Otherwise, it is fair to say, that the professoriate as a whole is essentially incapable of reaching any rigorous consensus on the what of the search to know. It also generally does not find it in its interest to require a general education curriculum that then would need to be staffed.

As I said, most universities in the world do not even face these issues because they are not set up for any kind of general education and may not find the American liberal arts model a compelling one.

So, what are universities doing? They all agree on one definition of the what in the search to know. They say that they are teaching how to think, how to think critically and, increasingly, how to think in a multidisciplinary or even interdisciplinary way. Have you ever noticed that “teaching how to think” seems to be what all educational institutions, beginning with kindergarten, claim to be focused on in order to justify themselves? Now, I also believe in teaching how to think, especially critically. And while I do believe it would be desirable if students also knew something to think with and about, I know that opens me up to the most damning of all criticisms: that I favor “information,” which, as everybody knows, quickly becomes obsolete.

Apart from the fact that there are many areas of knowledge where the half-life is not the 2.5 years claimed for computer software engineering, there has to be some level of instruction that can counter the danger of obsolescence. A serious reconsideration of the undergraduate curriculum would have the courage to be more prescriptive and to stress substantive knowledge in addition to disciplinary methods and multidisciplinary analysis of problems.

Having said that, I should like to engage in a flight of fancy and express my hope that somewhere a university will seriously consider asking all students to engage in a rigorous effort to deepen and broaden their cultural knowledge. As Robert Musil once said: “If I want a world-view [Weltanschauung], then I must view the world.”

Though globalization is the buzzword of our age, what I call knowledge parochialism is all around. Students simply do not have a map in their heads to place countries, regions, cultures. Their knowledge of history is scattered at best. This state of affairs is not harmless since geographic and cultural ignorance has consequences in Baghdad, Kabul, and Jerusalem. What is needed more than ever for so-called “global citizens” is a *cultural geography*, or an understanding of the world in humanistic and social science terms. This is indispensable in order to grasp the human condition. It is also indispensable to enable students to locate their own situation in space and time.

Culture is a highly dynamic concept. No culture is ever frozen—not even those that seem completely isolated. Most cultures are not, in fact, isolated but are the result of diverse interactions and cross currents. Since the beginnings of human civilizations, cultures have interacted with one another. There are different degrees of distinctness, but there are also common denominators, and the task of a cultural geography would be to sort this all out and provide a general education that allows for a truer understanding of the world and its openness. We are not doing this successfully now, we are not even attempting it. Instead, in the age of information technology, the attitude increasingly seems to be the one that *Financial Times* columnist Lucy Kellaway has summed up: “Memory doesn’t matter when you have the net.”

As to the mode of teaching, studies done under the leadership of Richard Light remind us that students who get the most out of a university, who grow the most academically, and who are happiest, organize their time to include interpersonal activities with faculty members, or with fellow students, built around substantive academic work. Put differently, it is very important that students be offered the opportunity and be challenged to engage in small group work, lab research, interdisciplinary activities, thesis writing, and so on. In a recent meeting with an especially gifted group of graduate students in the sciences, I was struck by how everyone of them had pursued research opportunities as an undergraduate.

I come to my second point—knowledge transfer. It is, at least today, a generally recognized task of the university to transfer new knowledge and technology. I should like to distinguish two ways of accomplishing this: knowledge transfer and, then, as a separate category, academic partnerships between universities and private and public entities.

The most successful method of knowledge and technology transfer on the part of universities, as I have had occasion to say over and over again, lies in educating first-rate men and women who themselves have been engaged in the search to know and who will then be in a position to take on leadership roles in industry, business, and government. Students who receive their training in university-based research arguably have a greater influence on the economy than the patentable inventions of university scientists.

It is precisely through the intensive participation in university research and through their multidisciplinary networks that graduate students develop the openness and curiosity that will later enable them to transfer the latest knowledge into innovative products. As my colleague, James Gibbons, a former dean of engineering at Stanford, has said, technology transfer is a “bodily contact sport.”

In technology transfer, patents play a role. I am here referring to patents that are applied for and taken out by universities and other research institutions. Patenting is a desirable form of knowledge transfer. However, it also involves universities in potentially large conflicts with other patent holders and in licensing issues, not to mention the tension between the openness and open availability of university research and the proprietary restrictions that are associated with patenting. That said, American universities are strongly encouraged by federal law (the Bayh-Dole Act of 1980) to engage in technology transfer. If lucky, universities may even see considerable royalty streams from these patents, though, in practice substantial revenues are very much the exception rather than the rule. In the case of Stanford, for instance, the university has generated \$1.1 billion in gross royalty revenue over 40 years. However, most of this comes from 80 cases (out of 7,400 inventions), three of which were big winners.

A third kind of public service can be found in partnerships with industry. For instance, in the 1950s, contact between Stanford University and the business world was made easier by the founding, on campus, of the Stanford Research Park, which, incidentally, does not serve as incubator. Furthermore, with divisions such as Stanford's Center for Integrated Systems, we have created partnerships expressly between the university and industry. The Center for Integrated Systems, which belongs to the university and possesses its own complex of buildings on campus, has as its task the integration of hardware and software systems. Represented in it are professors, students (largely doctoral candidates), approximately 10 academic fields, and companies from the electronics industry worldwide. The research priorities of the center develop from meetings between researchers from the university and from industry. The latter spend time at the center and students do research at the companies for mutual enrichment.

I have stressed the special role of universities because that is the world I live in. In other countries, other social institutions, such as in Israel the military, may also be significant when it comes to knowledge transfer and innovation. Dan Senor and Saul Singer, in their book on Israel's economic miracle, *Start-Up Nation*, show that the story is one of the same qualities that have been characteristic of Silicon Valley. It is a story “not just of talent but of tenacity, of insatiable questioning of authority, of determined informality, combined with a unique attitude toward failure, teamwork, mission, risk, and cross-disciplinary creativity.”

Finally, I turn to the fourth kind of public service universities are increasingly asked to render: addressing global challenges in directed multidisciplinary efforts to develop policies for the improvement of the human condition (hunger, environment, health, democracy, etc.).

In some form or another, universities have been engaged in transformative efforts of various kinds throughout their existence. In the past, the university contribution was, however, primarily a byproduct of their scholarly work. Now they are asked, in the service of the public, to work directly on solutions in a multidisciplinary way.

The danger of efforts to improve the world in a highly targeted way is obviously that academic researchers will not only embrace particular solutions but will fight for them in the political arena. As they engage in advocacy, it will become much harder for them not to “jump with their preconceptions” or to falsify their hypotheses. It will also be harder for them not to distinguish between “friends” and “enemies” among their scholarly colleagues. As universities engage in directed, policy-oriented approaches, they must even more than ever dedicate themselves to Thomas Huxley's admonition: “My business is to teach my aspirations to conform themselves to facts, not to try and make facts harmonize with my aspirations.”

Universities have never been (nor should they be) ivory towers. The question with which I should like to leave you is: How much direct involvement with societal problem solving can the university afford without risking its most fundamental purpose, the disinterested pursuit of truth? There are at least three issues.

(1) The ever greater politicization of universities, even in the sciences. Just think of the so-called “Climategate” controversy with its entanglements of scientists with advocacy groups and politicians on all sides of the issues. “Don’t leave anything for the skeptics to cling on to” was the rallying cry for a united front on the part of alarmed climate researchers. [See the thorough account by Axel Bojanowski, How the Science of Global Warming Was Compromised, SPIEGEL ONLINE, May 17, 2010].

(2) Diversion from basic research. For instance, in 2007, 60% of all R&D in the United States was “development,” 22% was applied research, and 18% basic research. Anybody who has had the privilege to lead a university with an outstanding engineering school knows that the distinction between basic and applied research has no deep meaning: basic research leads to new applications and applications lead to new basic research questions. However, are universities now entering the field of “development” at the expense of basic and applied research? Presently, 57% of all basic research in the United States is carried out by universities. Will we be distracted from this task by new priorities? Will that mean that less basic research will be undertaken? What will be the cost of that?

(3) Will the ever greater emphasis on direct usefulness mean even less funding of and attention to the arts and humanities and will it mean decreasing opportunities for faculty renewal in these fields?

In expressing reservations about where universities are headed, I am not a romantic who believes in citadels of pure learning. However, what I am concerned about is the danger that universities are losing their distinctness. Of course, ultimately the search to know at universities is done also in the service of the broad purposes identified by Gilman and Stanford. But we must guard our distinct ways, which are not those of the marketplace or politics. We must convince our societies that they would be poorer but for the continued investment in institutions that combine the rigorous tradition of knowledge and the rigorous search for truth with the excitement of frequently serendipitous discovery and the opportunity for societal greatness.