Federal Funds for University Research: The Best Model for Society?

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Introduction

This is an essay based on professional observation and analysis as a scholar of higher education for over thirty years. My purpose is to identify critical questions, and their multiple dimensions, regarding an important but often unquestioned policy.

Donald Trump, an admitted white supremacist and convicted felon, has launched a full attack on a largely accepted concept of national research and development. For decades, it has been a mostly accepted principle that investment in “research and development,” or “R &D,” is a sound use of federal dollars. While some such federal funds have gone to nonprofit research entities and for profit businesses, much of the federal investment in R & D has been allocated to private and public universities.

Historical Context

In his book, “Beyond Affirmative Action” (2001), Ibarra traces the historical development of higher education institutions in the U.S. Many colleges and universities in the early twentieth century replicated British institutions. Harvard, Yale, and other Ivy League institutions were like finishing schools for the Eastern, white elite, providing their students with knowledge of basic Eurocentric literature and history to facilitate their ability to function as leaders of corporations and to thrive socially at cocktail parties where they constructed social capital

However, as Ibarra details, those institutions and others later trended toward the replication of the German research institution. Such institutional models emphasized product over process, competition over collaboration, hierarchy over equity, and Western/white society over a more inclusive perception of the heritages of Chicanos, Blacks, and Native Peoples.

Thus, the idea that federal and state tax dollars be allocated to universities for R & D seemed logical. Many in the public envisioned a process in which federal grants were provided to universities for research described by those institutions in proposals for funding. Their research design ensured public accountability by identifying objectives, strategies, necessary personnel and other resources, and evaluation.

Measurable outcomes would be clearly identified. Above all, the concept was that federal research would focus on improving the human condition—finding medicines for crippling illnesses, building more stable housing and bridges, developing more effective treatment for mental illnesses, effective communication technology, etc.

Obviously, when important discoveries were made, corporations would often patent them and make money from the sale of medicines, treatments, technology, etc. However, this was cool, as the point was that all people would supposedly access the benefits of this research.

Ov course, at least two other options were and are available to the federal government in allocating funds for research. As mentioned, the feds can award funds for R & D to private, nonprofit research entities such as the Salk Institute in La Jolla. Those entities are not driven by a thirst to maximize profits. Nor are their scientists distracted by teaching responsibilities. The other option is to award federal R & D funds to private corporations such as Moderna or Pfizer that quickly developed vaccines during the Covid epidemic. Such for profit entities often concentrate on R & D that is expected to yield quick results.

Still, the current model of investing federal dollars for R & D concentrates mainly on competitive grants to public and private universities. That is, until President Donald Trump, Elon Musk, and their minions decided to drastically reduce the federal budget for R & D, in many cases suspending payment for research grants that had already been allocated.

I do not have first-hand knowledge of the processes and dynamics internal to corporate research entities or nonprofit research entities. Thus, it's difficult for me to analyze and identify their strengths and weaknesses regarding the objective of federally funded research that improves the human condition.

However, from 1989 to 2017, twenty-eight years, I worked and taught at a major Research I university, the University of California San Diego (UCSD). Of course, UCSD is actually located in La Jolla, one of Southern California's richest areas and one detached from San Diego's working-class communities. For years, UCSD has been one of the largest recipients of federal research dollars among all U.S. institutions of higher education. During my years at UCSD, I was a faculty member in the Education Studies Department and a Student Affairs manager, running the campus' learning center, OASIS. My Ph.D. in higher education contributed greatly to my ability to analyze institutional structures, policies, practices, and dynamics as well as the institutional conditions and outcomes they produced.

Assessing the Pros and Cons of Federal Funding for Research at Universities

Making major investments in universities for R & D has some obvious disadvantages. The "scientists" that work in such institutions are in fact faculty, that is, professors, teachers. Their professional responsibilities explicitly direct them to facilitate the learning of university students. That often applies to both undergraduate and

graduate students. Teaching at any level is an awesome responsibility and even Research I faculty are supposed to own that.

Unfortunately, from my observation and involvement over twenty-eight years at UCSD, most UCSD faculty do not honor their teaching responsibilities. Most work at an institution like UCSD because of their research, and teaching is merely a necessary distraction. This dynamic is embedded in the incentive structure for faculty at research universities. The formal system of faculty evaluation lists three responsibilities—research, teaching, and service. The reality is that only research is seriously considered in the process of awarding tenure and promotion to such faculty.

Teaching is barely regarded at UCSD, especially in STEM fields, although some research faculty take seriously the instruction and mentoring of elite graduate students. At UCSD, undergraduate teaching was assessed through a superficial process of student evaluations of their professors, generally a popularity contest. The folks that formulated the evaluations were not scholars of higher education and had limited knowledge of effective pedagogy and how to measure it.

Likewise, “service,” measured mostly through faculty engagement with academic senate committees, received cursory attention in the promotion and tenure process. A professor could perform extensive campus service and receive the highest teaching evaluations. However, if the faculty peers in their department felt that one’s research didn’t bring more prestige to that department, such a faculty member was likely denied tenure. At UCSD, I saw more than one case of a Chicano professor denied tenure largely because her/his research focused on the Chicano community instead of more “exotic” subjects.

Indirect Costs: A Current Source of Controversy

One current aspect of controversy in the federal funding of R & D at universities is the “indirect costs” included in all federal proposals and subsequent contracts. An academic department, usually in a STEM field, will request funding for personnel—scientists, technical workers, clerical support---as well as the supplies and equipment needed to conduct scientific research. Such costs are not estimated; they are very specific projections of necessary expenses. Research project personnel are projected to earn a specific salary and benefits.

In addition, research proposals request “indirect costs,” which includes the cost of utilities, building maintenance, and other such ancillary costs that are typically paid by a university entity outside of academic departments, such as business affairs. A building on a university campus might house several labs, and specifying the cost of electricity at just one such lab is imprecise at best. Thus, indirect costs are much more an estimate than other research expenses.

As the director of UCSD's learning center, I worked with the OASIS staff to write and submit successful proposals for federal funds. These were not research proposals. Instead, we requested funds for support services to help underrepresented students thrive on UCSD's racist, toxic campus racial climate. I believe the indirect costs we received for such projects were eight percent of the total project budget.

Those of us outside the power structure of UCSD were told that academic STEM departments "negotiated" the amount of their indirect costs. The estimates I've heard of such costs are as high as forty percent, which is absurd. There is no way that the actual indirect costs for a research project that might total in the millions of dollars could be calculated accurately at such a high level.

If I'm not mistaken, when expensive STEM grants are funded by the federal government, the direct costs requested are provided directly to the academic department from which the grant is requested. However, the funds to cover indirect costs are sent to the chancellor's or president's office. Some go to business affairs to cover actual costs of utilities and maintenance, but the rest often becomes part of the chancellor's or president's "discretionary funds," often referred to has that office's "slush funds." Those funds are allocated toward "pet projects" of the institutional CEO, regardless of merit. Thus, having tax-payers' federal dollars pay for such unaccountable expenses is clearly inappropriate.

The Lure for Scientists in Higher Education

So, if university professors don't really enjoy teaching and would rather devote full-time to research, why do they seek employment in universities instead of for-profit research corporations or nonprofit research entities such as the Salk Institute? The answer involves a mostly antiquated concept of "tenure."

Most university faculty are hired shortly after they complete their Ph.D., a process through which they enter an academic department as an assistant professor, often referred to as "junior faculty." They are assigned to teach certain courses in the department, often those that "senior faculty," i.e., associate or full professors, don't want to teach. For example, at UCSD, a new assistant professor in the Chemistry Department might be assigned to teach a section of the general chemistry sequence to undergraduates, often students in their first year as well.

Sometimes, junior faculty are pressed into service teaching a course in which they have little or no expertise. A new Chicana faculty member in UCSD's Communications Department once told me that she was assigned to teach a course on "The Situation Comedy," a subject on which she had no expertise or interest. Regardless of the courses they teach as new faculty, their limited mentoring by senior

faculty reinforces that their teaching is unimportant. Only research will lead to them being awarded tenure by the university.

The process through which university faculty receive tenure, especially at a Research I institution, is so complex that it merits a separate essay. As mentioned, during my twenty-eight years at UCSD, I saw Chicano faculty denied tenure despite an impressive record of research, teaching, and service. It is an extremely subjective process impacted by academic peers within and outside of one's academic department as well as higher level academic administrators. After six-eight years of proving one's academic research mettle, fortunate faculty are awarded tenure and become associate professors.

Once a professor earns tenure, they have essentially a life-time appointment as faculty. They can be fired only for the most heinous of crimes. They are expected to continue their research achievements and become a full professor. However, the key point in this discussion is that tenure provides security of employment for faculty without the pressure to produce immediate or especially consequential research results. Such security could not be achieved at an entity such Pfizer or the Salk Institute. This provides a tremendous incentive for scientists to join a university faculty, despite the troublesome responsibility of teaching. Tenured faculty often claim that their status enables them to pursue long-term research without pressure to achieve quick results, and that such a process is necessary to solve the most formidable scientific problems. However, documenting that such a slow approach yields more beneficial results has not been accomplished.

The Corporatization of Higher Education and Its Intersection with Federal Research Funding

During each of the twenty-eight years I spent at UCSD, I taught a course on higher education policy and outcomes that analyzed the racial achievement gap in U.S. colleges and universities. My students were recent high school graduates and first time students participating in our OASIS Summer Bridge Program as they matriculated to UCSD. For several years, their assigned reading included portions of the book, "Leasing the Ivory Tower: The Corporate Takeover of Academica" (1999). Lawrence Soley's book detailed the multiple dimensions through which corporate funding of university research, combined with federal funding, corrupted its previous purpose. Such combined corporate and federally funded research, relatively new to higher education, became an increasingly important supplement to R & D funding. Virtually all such corporate and federal R & D funding was allocated to STEM departments at research institutions.

This funding model had several important effects on university R & D. As STEM departments sought greater corporate and federal contributions to its research, such

funding sources were not interested in “improving the human condition.” Instead, they sought a different outcome—to discover innovations that would maximize corporate profits. Now corporate funds would often dictate a major part of a STEM department’s research agenda. The construction of knowledge became commodified at an unprecedented level.

Corporate and federal funding of R & D brought more resources and subsequent prestige to universities. As a result, hierarchy among academic departments was exacerbated. Non-STEM departments such as Literature, History, and Ethnic Studies were regarded as institutional nonentities, a perception that existed to some extent previously. In order to receive more institutional respect, such non-STEM fields were led to copy elements of STEM epistemology, becoming more “scientific and objective.” This meant that they often became detached from the needs of working-class communities and their students. They developed and utilized “academic” jargon that is incomprehensible to communities of color. In this context, the corporate funding of university R & D contributed to policies, practices, and outcomes that reduced equitable access and outcomes to underrepresented students of color.

Jacobs’ Engineering Invention a Faculty Fantasy

In the early 2000’s, Irwin Jabos was a nondescript, run-of-the-mill engineering professor at UCSD. Through his salaried position paid from the California state budget and his federally funded research, Jacobs “discovered” wireless technology that would be highly marketable in the private business sector. Through federal legislation that enabled public university faculty to secure individual patents on such research discoveries, Jacobs capitalized on his discovery. He took his patent, resigned from UCSD, and formed a corporation, Qualcomm, that became the envy of UCSD’s STEM faculty (and those at other universities). Jacobs became a multimillionaire and a philanthropist that donated millions to UCSD without any encouragement to end its rampant institutional racism.

In 2024, a San Diego State University professor of Biology admitted to the San Diego Union-Tribune newspaper that he and his faculty peers aspired to replicate Irwin Jacobs’ strategy. These STEM faculty had no interest in research to improve the human condition, simply for intellectual curiosity, or to expand disciplinary knowledge. Their view of research entailed the use of state and federal tax dollars to make discoveries that they could patent and convert into personal wealth This occurs as San Diego State acquired the status of a Research I institution with no apparent guardrails against a subsequent decrease in institutional priority and focus on SDSU’s supposedly primary mission, teaching and learning. Needless to say, this obsession among STEM faculty has likely reached an epidemic level across the U.S.

Institutional Racism Through Shared Governance

Institutions such as UCSD have been highly resistant to efforts to eliminate institutional racism and increase access and success for underrepresented students of color—Black, Chicano, and Native students, respectively. Even somewhat "liberal" institutions such as SDSU and Cal State San Marcos have been very slow to hire and promote more Black, Chicano, and Native faculty that are tenure track. One of the sources of institutional racism is an often-overlooked dimension of public higher education leadership—shared governance.

Shared governance refers to the structure and process of leadership that constructs institutional policy, and subsequent practice, at colleges and universities. One side of the shared governance system is the administration. In the case of UCSD, the administration is made up of the chancellor and her/his vice chancellors. Each VC heads a specific area of institutional responsibility, such as academic affairs, student affairs, business affairs, development, etc. The administration might also include a legal counsel and the deans of academic departments. Although not always true, it is assumed that such leaders have extensive experience and expertise in the area for which they hold responsibility.

The popular public perception is that the administration develops and implements almost all institutional rules, both formal and informal, that govern behavior by faculty, staff, and students at colleges and universities. Recently, a U.S. Congress controlled by the Republican Party brought the presidents (a term used by many institutions, including SDSU and CSUSM, instead of "chancellor") of several universities before congressional committees. The congressional members grilled these administrators about the degree to which they ensured the safety of Jewish students on their campus. The congressional members were clearly making a show, and their ignorance of higher education led them to completely overlook the second dimension of institutional shared governance, the academic senate.

A complete explanation of the role of the academic senate in U.S. colleges and universities is far beyond the scope of this essay. Suffice it to say that the senate is composed of tenure track faculty, i.e., those professors that have achieved tenure along with those in the process of achieving tenure. Those faculty exercise the senate's power through committees that focus on a particular dimension of institutional function. Although it sounds silly, at institutions like UCSD there is a "committee on committees" that appoints tenure track professors to one of the various senate committees. Not every eligible faculty member is assigned to a committee; however, they can all participate in periodic votes of the entire senate on policy issues.

Unlike the administration, there is no assumption that a professor is knowledgeable about the policy area for which her/his committee is responsible. In fact, many faculty are very ignorant about the work of the committee to which they are assigned. At UCSD, I saw several professors appointed to the senate committee on Diversity, Equity, and Inclusion that had zero knowledge, experience, or interest in DEI. Such committees, especially at an exceptionally racist institution like UCSD, contributed virtually nothing to policy or practice that increased institutional equity.

However, some senate committees have considerable power. One example I observed at UCSD was the sente committee on undergraduate admissions. UCSD had arguably the most biased, formulaic admissions criteria among all UC campuses, including UC Berkeley and UCLA. The UCSD administration was committed to excluding an equitable representation of Black, Chicano, and Native students, respectively. The UCSD office of admissions was administered by Student Affairs, and its vice chancellor was happy to carry out the charge to minimize the admission of underrepresented students of color. That VC was a member of the senate admissions committee and he consistently advocated for racist admission criteria, particularly standardized test scores. This occurred during an era in which most UC's had moved to a holistic admissions process that emphasized applicants' high school extracurricular experience and the life challenges they surmounted.

Most faculty assigned to the UCSD admissions committee had little interest or experience in undergraduate admissions policy. Most of the faculty viewed committee service as a distraction that did not contribute to their tenure or promotion. The subsequent dynamic saw the VC of Student Affairs, who supported racist policies, lead the apathetic faculty to construct senate policies on undergraduate admissions that largely excluded underrepresented students of color.

This is where the impact of federal funds contributes significantly to institutional racism at universities such as UCSD. The STEM departments that secured large amounts of such federal funds accrued a high degree of institutional status and resources. Those departments grew in size and status. The examples were departments of Math, Chemistry, Engineering, and Biology, respectively. Those departments had many tenure track faculty, and they were deployed to most academic senate committees. In turn, the STEM departments exercised an inordinate amount of power in the construction of institutional policy and practice, including racist admissions policies that limited Chicano/Latino students to approximately twenty percent of undergraduate enrollment while their community amounted to over forty percent of the California population and over fifty percent of the state's high school graduates.

The academic senate also develops and implements policy on students' general education requirements. One result of the Math Department's power at UCSD was the

requirement that many students majoring in areas such as Social Sciences or Humanities were forced to complete three courses in Calculus. In effect, such requirements subsidized the Math Department, ensuring that it would maintain its considerable size and influence.

The power of STEM departments in the academic senate inevitably exerts a conservative, even racist impact on policy and practice. The great majority of STEM faculty are white, and most received their education in a program that lacked diverse curriculum. Such faculty enjoy the white privilege they receive from the U.S. racial hierarch, and they gladly perpetuate institutional racism by excluding Chicanos and other underrepresented communities from the faculty, administration (where they serve on search committees), student enrollment, and curriculum. The bottom line: STEM faculty enjoy institutional power from their federal research funds, and they utilize their power to perpetuate institutional racism in higher education.

Such racial animus by white faculty extends to the very control of the senate itself. At UCSD, I frequently heard Chicano tenure track faculty, of which there were few, complain that they were almost never appointed to influential senate committees. On the other hand, the same conservative white faculty maintained appointments on the senate committees that wielded considerable institutional authority.

Research or Teaching?

It bears repeating that scientists at either nonprofit or for profit research organizations do not have to divide their priorities between research and teaching. However, university faculty must do so. At a Research I institution such as UCSD, the incentive structure for faculty does not reward teaching. While I observed some STEM faculty at UCSD that cared about the quality of their teaching, clearly most did not, and their apathy was reinforced by an incentive structure that discouraged their interest in teaching.

I have also observed a complex situation at both UCSD and SDSU regarding research responsibilities of Chicano faculty. In such situations, Chicano faculty receive federal funds for research and as a result, their institution reduces the teaching load for such faculty. Community advocates for more Chicano faculty are often especially concerned that Chicano students have access to the teaching and mentoring of Chicano faculty. Unfortunately, such access is undermined when Chicano faculty teach fewer courses because of research grants they secure.

As SDSU transitions to an R1 institution, one must question how it will maintain an equal level of priority on both teaching and research as their leadership pledges to do. It appears inevitable that R1 institutions like UCSD will continue to provide an inferior quality of teaching, and their students will pay the price for such negligence

through a lesser degree of learning. Needless to say, UCSD's academic departments conduct virtually no assessment of student learning, and the California legislature does not hold them accountable for such assessment. Thus, taxpayers provide funding for research as well as a lower quality of teaching and learning.

Conclusion

This essay is to raise questions regarding the critical issue of federal funding for research that improves the human condition. The Trump administration's attempt to cut off such funding from U.S. colleges and universities seems shocking. However, it might force us to think more deeply about those most likely to pursue research for collective benefit rather than individual or corporate profit. There is clearly some evidence that the current model of funneling tax dollars to STEM departments at U.S. colleges and universities leads to research that aids corporations and faculty individual profits rather than society, while reinforcing institutional racism and undermining teaching and learning on those campuses. Clearly, scholars in all academic disciplines must pursue research to construct knowledge. This includes non-STEM disciplines. As a society, we must determine which model best supports those efforts.