

**NJS Presents****Invited Talks****In this Issue:*****Becoming a Modern Public Research University:******The Postwar Challenges of Rutgers and Penn State, 1945-1965<sup>1</sup>*****By Roger L. Geiger****DOI: <http://dx.doi.org/10.14713/njs.v2i2.46>**

*Both Rutgers and Penn State Universities developed into modern research universities in the two decades after World War II. This paper describes how both overcame uncertain relations with their respective states and relatively weak financial support. Both evolved a significant share of the public provision of higher education. And both also strived to establish a reputation for quality undergraduate education. For research, it was necessary to obtain the resources to compete for grants in the federal research economy. Continuation of the advances made in these decades have allowed both institutions to solidify their standings among the top 40 American research universities.*

Rutgers and Penn State are generally regarded as rivals—and not always friendly ones. This belief largely reflects an athletics mindset, especially now that Rutgers has joined the Big Ten. In fact, the two universities have had much in common over their respective histories. Both were among the earliest institutions designated by their states as beneficiaries of the Morrill Land-Grant Act. And today both are separated by less than a point in the Shanghai Jiao Tong rankings of world universities—in places 60 and 64.<sup>2</sup> The intervening years also saw some significant links.

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<sup>1</sup> This talk was the 30th Annual Bishop Lecture, delivered at Alexander Library, Rutgers University, March 30, 2016.

<sup>2</sup> See <http://www.shanghairanking.com/>.

George W. Atherton, Rutgers professor of politics and staunch defender of the Land-Grant movement, was named president of Penn State College in 1882; and he is rightly regarded as the Second Founder of the university.<sup>3</sup> In 1921 Penn State appointed John Thomas as president, who was dedicated to making the college into a true university. He was thwarted completely by the governor. In frustration—he welcomed the opportunity to become president of Rutgers. Having been designated the State University of New Jersey in 1917, Rutgers appeared to be accomplishing what Penn State could not. But Thomas's efforts in New Brunswick were undermined by his own Board of Trustees, who wished to keep the institution free of any public controls. In 1929 the title of State University of New Jersey was rescinded, and no constructive relationship with the state could be devised. Thomas resigned the next year to join an insurance company, where presumably he would not be frustrated by dreams of universities or nightmares of state governments.<sup>4</sup>

My subject today is the frustrations—and accomplishments—that attended the developments of these institutions in the two decades after World War II—a crucial period for the formation of American research universities and particularly for the transformations of these institutions.<sup>5</sup> Rutgers and Penn State had a good deal in common in the challenges they faced in these years, and viewing them together allows these challenges to be seen in a broader perspective. I am not an historian of either institution. Rather, I hope to place their histories in a national context of the issues facing American higher education, and particularly public universities, during these two eventful decades.

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<sup>3</sup> Roger L. Williams, *The Origins of Federal Support for Higher Education: George W. Atherton and the Land-Grant Movement* (University Park, PA: Pennsylvania State University Press, 1991).

<sup>4</sup> Historical material for these universities is largely drawn from Michael Bezilla, *Penn State: An Illustrated History* (University Park, PA: Pennsylvania State University Press, 1985); and Richard P. McCormick, *Rutgers: A Bicentennial History* (New Brunswick, NJ: Rutgers University Press, 1966).

<sup>5</sup> Roger L. Geiger, *Research and Relevant Knowledge: American Research Universities Since World War II* (New Brunswick, NJ: Transaction Publisher, 2004 [1993]).

And, what were those issues? We might make a simple dichotomy between relationships with their respective states and state governments on one side, and on the other how they related to the higher education system. In an era in which states expected—and were expected—to provide most of the funding for public higher education, state relations were obviously crucial. But behind the funding was a larger phenomenon of the role, or roles, of the principal state university in the state's total provision of higher education.

Universities were also embedded in the national system of higher education, which sociologists would call an organizational field.<sup>6</sup> That is, a complex web of markets and organizations that affect all the things that universities do, and particularly the various resources that are essential for doing them. These resources include the markets for students and faculty, professional associations, and the research economy, among other things. Collectively, these and other factors determine what roles a university fulfills, and how effectively they are fulfilled. The nature of higher education's organizational field changed rapidly and dramatically during the first two postwar decades, so that aspirations tended to far exceed resources. Thus, public universities perforce attempted to optimize their mix of instruction, research, and service within numerous constraints.

Specifically, Rutgers and Penn State faced four challenges in the postwar era:

1. Defining their relationship with the state;
2. Determining their share and role in the provision of public higher education;
3. Upholding the reputation of the flagship college in the market for undergraduate education;

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<sup>6</sup> Paul J. DiMaggio and Walter W. Powell, "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields" in Powell and DiMaggio, eds., *The New Institutionalism in Organizational Analysis* (Chicago: University of Chicago Press, 1991), 63-82.

4. Establishing and advancing their position in the federal research economy.

### **Relations with the State?**

The unhappy experiences of John Thomas reflect the fact that neither institution was accepted as the state flagship university, nor did they enjoy the backing of anything like the majority of the state population. Higher education in both New Jersey and Pennsylvania was dominated by the private sector—not as completely as in our neighbors to the Northeast, but nothing like the prominent role accorded state universities further to the West. Consequently, in a period of accelerating enrollments in higher education, Rutgers and Penn State had difficulty conveying the argument that their respective states should provide funds for the faculty and facilities needed to provide quality higher education for state citizens. And politically, state politicians had no difficulty ignoring such arguments.

Growth was the greatest challenge of this era. Veterans who attended under the GI Bill were particularly drawn to state universities, which stuffed in as many of them as was possible, with all kinds of ad hoc arrangements. After they graduated, mostly by 1950, enrollments reached a low point at most universities, but still above prewar numbers. After 1951, enrollments began to rise at an accelerating pace. This growth was tilted toward the public sector. The public-private split was 50-50 in 1950, but in the ensuing decade, public institutions added 5 students for every 2 additional students in private colleges (1.3 million students vs. ½ million). Always looming on the horizon were the Baby Boom cohorts, who would start graduating from high schools in the early 1960s. They would require a substantial expansion of places in public colleges and universities, under any set of assumptions. Educational planning was not the forte of these state governments, to say the least; but they received a powerful jolt by the Sputnik crisis in 1957.

Suddenly, expanding the quality and quantity of American higher education appeared to be a national imperative.

But back to 1945.<sup>7</sup> That year, Rutgers was restored as the State University of New Jersey. In the fleeting aura of postwar idealism, this act papered over the fact that the university was governed by a private Board of Trustees. A reckoning soon followed. A proposed bond offering that would have provided funding for desperately needed buildings allowed the university's enemies to mobilize. Private college interests opposed expansion of the state university, and taxpayer groups attacked public funding for a privately controlled institution. Voters summarily rejected the bond issue in 1948. Taking the bond issue to the public was an unfortunate action, since it exposed the lack of popular support for the university and the vulnerability created by its private status. But the failure set in motion efforts to deal with this seemingly anomalous status.

Rutgers in 1950 was a conglomerate, public-private institution. It consisted of a women's college, a men's college that included the land-grant colleges of agriculture and engineering, and several other units in New Brunswick, Newark, and Camden. Officially an "instrumentality of the state," its 58-member Board of Trustees had a majority of self-perpetuating members—making it privately controlled. Was this an impossible structure? Well, we might recall that Cornell was also a public-private hybrid, and was doing quite well. However, Cornell had been dedicated to being a full-fledged university since its founding under President Andrew Dickson White. Its endowed colleges were legally separated from the state-supported land-grant units. And those colleges were supported by a large endowment, thanks to Ezra Cornell and subsequent donors. The New York State Legislature was even more hostile to public higher education than New Jersey or Pennsylvania, but it provided reasonable support for its portion of the university. New Jersey

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<sup>7</sup> Paul G. E. Clemens, *Rutgers since 1945: A History of the State University of New Jersey* (New Brunswick, NJ: Rutgers University Press, 2015).

supplied just one-third of the operating funds for Rutgers, and its grudging increases limited the rest of the budget, which had to come mainly from student tuition—and which was sinking as the veterans departed. The university was badly squeezed, having to endure inadequate facilities and non-competitive salaries for faculty, which were given a “C” rating by the American Association of University Professors (AAUP).

These difficulties began to be addressed in the late 1950s. In 1956 a new Board of Governors, with a majority of public appointees, assumed governance of the whole university. The old board of Trustees, which largely represented Rutgers College and its alumni, was reduced in size and function. The State University of New Jersey was now, in large measure, governed by the state. Then, the Soviet launch of Sputnik in 1957 provided the catalyst for a concerted push to improve and upgrade American education. Even the New Jersey legislature was not immune. This juncture marked the beginning of a decade and a half of large and growing appropriations for capital projects and operating expenses. And these were supplemented by an increasing flow of federal monies. In the seven years after Sputnik, undergraduate and graduate enrollments at New Brunswick doubled, aided no doubt by the fact that New Jersey did not yet have a state system of regional universities and community colleges.<sup>8</sup> Enrollment growth and revenue growth at Rutgers engaged in a frantic race. The state’s contribution to operating funds rose to 50 percent, and the rating of faculty salaries rose to an “A.”

Pennsylvania State College suffered not so much from hostility in the state as from neglect. The Commonwealth of Pennsylvania has the dubious distinction of never establishing a public college or university. Penn State was founded by the agricultural societies; members of what is now the Pennsylvania State System of Higher Education were all founded privately as normal

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<sup>8</sup> Donald R. Raichle, “Richard J. Hughes, Frederick M. Raubinger, and the Struggle for New Jersey Public Higher Education,” *New Jersey History*, 114, 1-2 (Spring/Summer 1996): 19-47.

schools; and Pittsburgh and Temple were private universities until they were rescued from bankruptcy by the state in the 1960s. Penn State was more fortunate than Rutgers in receiving state building funds after the war. It seems that Republican contractors and Democratic trade unions could agree on the benefits of spending public monies to erect buildings. And, conveniently, construction funds did not need approval from the legislature or voters. But also unlike Rutgers, Penn State was surrounded by rural countryside—it was described by one president as “equally inaccessible from all parts of the state.” It could only teach students it could house, and a succession of dormitory complexes were erected from the late 1950s into the 1970s. New dormitories allowed the main campus to add 5,000 students in the 1950s and 10,000 in the 1960s.

For 20 years Ralph Hetzel had presided over the college. A proficient internal manager, he was noted for extreme caution and a myopic focus on state service. For example, he did not believe that the college should seek students or research funds beyond the state borders. His successor in 1950 was Milton Eisenhower, one of the most dynamic and effective figures ever to lead the institution, if only for six years.<sup>9</sup> And he was effective in Harrisburg as well. State appropriations for general operations rose from \$10.5 to \$25 million. After his departure—to join his brother near Washington—the institution girded for the coming enrollment explosion, and the state funding that would be required to accommodate these students, assuming a coverage of 40 percent of expenditures. Instead, the state’s largesse was curtailed. The state after Sputnik greatly increased spending for public schools, but not so much for higher education. Appropriations fell far short of requests, and the university had to resort instead to tuition increases. This became a more or less permanent condition in Pennsylvania, which is why Pennsylvania has had the highest rates of tuition for in-state students at public universities.

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<sup>9</sup> Stephen E. Ambrose and Richard H. Immerman, *Milton S. Eisenhower: Educational Statesman* (Baltimore: Johns Hopkins University Press, 2009 [1983]).

### What Share of State Higher Education?

Another fundamental issue—one rarely addressed forthrightly—is the role of the state university in the provision of higher education in the state. What portion of the state's students should it aim to educate? Every state has evolved their own answer. The University of Minnesota, for example, long attempted to monopolize ALL public higher education. The University of Virginia took the opposite approach, remaining rather small and selective. Where this issue was confronted directly and publicly, as it was in California, negotiating and resolving a solution presented enormous difficulty. Clark Kerr overcame these obstacles in pushing through the California Master Plan in 1960, which imposed a definite formula for the university role: namely, to educate the top 1/8 of high school graduates, while remaining open to transfers, and monopolizing the major professions, doctoral education, and research.<sup>10</sup> Elsewhere, however, the role of the flagship state university tended to be shaped by random events and circumstance.

After the War, most state universities enlarged their educational role by establishing branch campuses. Michigan responded to overtures from Flint and Dearborn; Indiana moved into Indianapolis; Illinois into Chicago and Springfield; Purdue into Fort Wayne; Minnesota into Duluth. Thus, Rutgers and Penn State were in good company in their postwar expansions. In many cases state universities moved into the comparative educational vacuums of major cities—that is, localities that were underserved by existing or faltering private institutions. So, in some cases state universities annexed struggling private colleges, and in other cases built new campuses from scratch.

Why did they do it? Not for prestige. Branch campuses attracted commuter and part-time students; the faculty tended to be less credentialed than those at the home campus; and branch

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<sup>10</sup> John Aubrey Douglass, *The California Idea and American Higher Education: 1850s to the 1960 Master Plan* (Stanford: Stanford University Press, 1960).



campuses inevitably required major capital expenditures. In the 1930s Rutgers judged that such considerations weighed against taking over private schools in Newark.

The actual process reveals how branch campuses emerged. All these universities established extension divisions before the War. Thus, extension centers were already serving clienteles in numerous locations. Once institutionalized, there were few obvious limits as long as demand existed. Under the GI Bill, universities relied on extension centers to educate large numbers who could not be squeezed into the main campus. Usually some trigger then occurred: a local gift or initiative prompted the elevation of a center into a branch campus. Such a move had many benefits for the locality—a better institution of higher education, established more quickly, and some trickle-down prestige from the university.<sup>11</sup> For the university? A strong sense of public mission, particularly in the postwar years; fear of the emergence of a politically potent rival; and expectations, in some cases borne out, that the state would pay the bills.

The university, President Clothier declared after the War, “recognized a moral responsibility to accommodate all qualified veterans and high school graduates” that it was possible to provide for. A university task force ten years later pledged “that Rutgers provide educational opportunities for all qualified persons”<sup>12</sup> Of course, “qualified” can be an elastic concept. But the intent was no doubt sincere—a rhetorical, open-ended declaration of moral responsibility. Still, such rhetoric implied a demographic impossibility. Probably other considerations led to absorbing the University of Newark in 1946. According to historian Harold Wechsler, Rutgers thought the merger would give it more clout with the governor and legislators, divert students for whom there was no room in New Brunswick, and prevent the emergence of a

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<sup>11</sup> Once established, localities develop deep ties with branch campuses: E.g., Perry Dane, Allan R. Stein, and Robert F. Williams, “Saving Rutgers-Camden,” *Rutgers Law Journal*, 44 (2014): 337-412.

<sup>12</sup> McCormick, *Rutgers*, 271, 300.

potential rival.<sup>13</sup> It also gave Rutgers a law school and a business school, as well as some arts and sciences students. The takeover of another floundering law school five years later created a new branch campus in Camden, which occurred under considerable political pressure, historian Richard McCormick tells us.<sup>14</sup> Nonetheless, universities seem to have an inherent urge to expand. In the case of geographical expansion, one cannot help suspecting, it was furthered by the hope or belief that such acts demonstrate service to the citizenry, and are likely to be rewarded by the legislature. Negatively, Rutgers expansion seemed to compensate for the Board of Education's refusal to expand the mission of New Jersey's six teachers colleges.<sup>15</sup>

Penn State also had reason to react to a seeming vacuum in public higher education, including the same restrictions on state teachers colleges. Penn State had grown a large system of extension education in the interwar years. After World War II, Extension operated 4 undergraduate centers and 12 technical institutes through engineering extension. Penn State would entertain any credible request for a center as long as the community furnished and maintained the facilities and the centers were self-supporting. With the Philadelphia and Pittsburgh regions dominated by private institutions, Penn State had a vast swath of the state to serve through such centers. They absorbed much of the GI overload, and then shrank in the early 1950s. But not for long. In 1953, the centers began awarding associate degrees, thus becoming, in effect, junior colleges. In 1959, 14 locations were upgraded to Commonwealth Campuses, no longer part of university extension and no longer required to be self-supporting. The Pennsylvania State University was morphing on its own initiative into a state system of higher education.

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<sup>13</sup> Harold S. Wechsler, "Brewing Bachelors: The History of the University of Newark," *Paedagogica Historica*, 46, 1-2 (Feb.-April 2010): 229-49.

<sup>14</sup> McCormick, *Rutgers*, 278.

<sup>15</sup> Raichle, "Richard J. Hughes."

The notion that Pennsylvania should develop a system of community colleges instead of branch campuses was raised as early as 1957, but the Community College Act only passed in 1963. Although it offered state support for establishing these colleges, few communities found the terms attractive—just four were founded by 1966. Nonetheless, the legislature commissioned two successive studies to formulate a “master plan.” Both advocated converting some of the Commonwealth Campuses to community colleges. President Eric Walker and the university Board of Trustees were adamantly opposed. Walker repeatedly presented evidence that the campuses were more effective educationally than typical community colleges, even those of California. Moreover, Penn State continued to launch additional campuses, and to upgrade the existing ones. They were able to point to considerable local support in the form of organization, advocacy, and donations. This controversy raged through the mid-sixties. By the end of the decade, Pennsylvania had no master plan, and Penn State—referred to by some as “the octopus”—had 19 Commonwealth Campuses, enrolling more than 20,000 students.<sup>16</sup>

Penn State in the 1960s wholeheartedly embraced the mission of providing public education for the Commonwealth. In 1965 it enrolled 3 of 8 students in public higher education. With a state government that was incapable of formulating a higher education policy, and unwilling to adequately support higher education for its citizens, Penn State took it upon itself to shoulder this burden. However, there were drawbacks as well. The main campus housed a faculty increasingly oriented toward research and scholarship; but faculty on the campuses, nominally belonging to the same departments, were largely confined to teaching. Two-year courses at the campuses may have been superior, as President Walker maintained, but they probably offered the most expensive public associate degrees. And the state government, not out of any particular

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<sup>16</sup> Bezilla, *Penn State*, Chapter 12.

animosity, but rather out of a traditional unwillingness to pay for public higher education, failed to provide the support that these initiatives warranted.

### **Undergraduate Education for Whom?**

The most distinctive feature of undergraduate education at postwar Rutgers was certainly single-sex colleges. When the New Jersey College for Women was established in 1918, this practice was consistent with private colleges in the East generally. It also seems evident that the Trustees' determination to preserve private control was linked with keeping historically male Rutgers College much like neighboring Princeton. The College for Women became a coordinate college, like the Barnard College that Mabel Smith Douglass had graduated from, although on a far leaner budget. All this was in keeping with eastern notions of prestige—separate men's and women's colleges and a heavy emphasis on liberal arts. Plus, there was a prevailing Eastern disdain for coeducational state universities. Thus, the College for Women changed its name to Douglass College in 1955, as if to emphasize its coordinate status and distance itself from the state university.<sup>17</sup>

This structure was increasingly anachronistic in postwar higher education. It helps to account for the pattern of expansion already referred to: selective men's and women's liberal arts colleges in New Brunswick, and all manner of useful courses for New Jersey citizens in Newark, Camden, and through the University College. But it had its costs. The separate colleges in New Brunswick were inefficient and certainly cramped for growth. Of course, all universities have separate units called colleges, but only Rutgers accorded these colleges their own separate departmental faculties, and this arrangement impeded academic development. In the late 1960s, less than one-half of Douglass faculty had PhDs; and just 62 percent for Rutgers. The consolidation

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<sup>17</sup> George P. Schmidt, *Douglass College: A History* (New Brunswick, NJ: Rutgers University Press, 1968).

of academic departments in 1981 by President Bloustein was later described by President McCormick as “a giant step toward academic distinction.”<sup>18</sup>

Being a state university—and a land-grant too—made the men’s and women’s colleges different from their private, would-be peers. Students came overwhelmingly from New Jersey high schools, and a significant number were commuters. Douglass, for all its emphasis on liberal arts, had vocational roots in home economics and education—subjects that were disdained at the Seven Sisters. For Rutgers, the effort to preserve the ostensible prestige of single-sex colleges in a land-grant, service-oriented university produced a split personality that endured long after the decades covered here.

Postwar Penn State College faced the opposite challenge. Although the 14<sup>th</sup> largest institution in the country, it still carried an image of a cow college and was best known for its football team. Its inward-focused president did nothing to dispel this. However, Milton Eisenhower perceived this to be a problem from the start: Penn State had to change its image in order to establish its character as a major university. One of his first steps was to change the name to Penn State *University*. He carefully laid the groundwork for this by canvassing all interested parties and discovered—apparently no one cared! Then it was simply a matter of going to the county courthouse and changing the charter. Eisenhower went further and renamed the various “Schools” in the university into “Colleges,” including establishing a College of Business Administration (1,100 undergrads by 1954). The symbolism was important, but far more significant were Eisenhower’s efforts to build morale among students and faculty—and also to enhance recognition of the university and its contributions throughout the state. And, of course, being the brother and close advisor of Dwight D. Eisenhower in itself brought prestige and recognition. Eisenhower

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<sup>18</sup> Richard L. McCormick, *Raised at Rutgers: A President’s Story* (New Brunswick, NJ: Rutgers University Press, 2014), 41.

made a tangible difference: after just six years, Penn State looked and functioned like a major state university.<sup>19</sup>

Through the 50s and 60s, Rutgers and Penn State attracted above average students, but could not match the more selective private colleges and universities. When classifications were made in the late 1960s, both colleges were ranked “Very Competitive”—along with 160 other institutions, including other state universities. Both catered to public high school graduates from their respective states. Eisenhower’s successor, Eric Walker, complained, “Penn State is still not getting its share of the brightest students.”<sup>20</sup> Then, as now, Penn State was used as a safety school, but in the 1960s private schools used their scholarship funds for what we now call merit aid, attracting those brightest students. When student qualifications plummeted nationally after 1970, so did the SAT scores at Rutgers and Penn State. Rutgers remained technically “selective” by rejecting many students, since each of its units had its own admissions criteria; whereas Penn State found a place for virtually every applicant at its many campuses. By the mid-1980s, taken altogether, the average student at each university was . . . pretty close to average. How that changed in the following two decades is an intriguing question. In the 21<sup>st</sup> century, both universities have risen to the “Highly Selective” category, and the growth of research most likely had something to do with this.<sup>21</sup>

### **How to Become a Research University**

Large public universities have an inherent disadvantage in the selectivity sweepstakes, but they have done far better boosting their prestige through research.<sup>22</sup> However, an important

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<sup>19</sup> Ambrose and Immerman, *Eisenhower*, Chapters 8 & 9.

<sup>20</sup> Bezilla, *Penn State*, 275.

<sup>21</sup> Data on selectivity and SAT scores from: *Barron’s Profiles of American Colleges*, multiple editions.

<sup>22</sup> Roger L. Geiger, *Knowledge and Money: Research Universities and the Paradox of the Market Place* (Stanford: Stanford University Press, 2004), Chapter 3.

distinction needs to be made. Only a handful of land-grant institutions were established as flagship universities, committed to fulfilling that role. They adapted to the academic revolution of the late 19<sup>th</sup> century and emerged as research universities in the 20<sup>th</sup> century. Others were named A&Ms, or agricultural colleges, or just colleges, as were Rutgers and Penn State. In these institutions, research tended to be confined to agriculture, and the basic academic disciplines remained stunted.<sup>23</sup> Penn State was an engineering school in the early 20<sup>th</sup> century, and Rutgers's focus was on its liberal arts colleges.

The litmus test for participation in academic research is the awarding of PhDs. They require both teaching and research at an advanced level, and PhD candidates comprise a small market with limited demand. In the 1930s Rutgers graduated just over 100 PhDs, mostly in agriculture and related subjects, including chemistry. Penn State produced less than 200, half in chemistry.<sup>24</sup>

In these schools, research tended to become institutionalized in applied fields and dedicated research centers, and these units often served as seedbeds for expansion into more basic subjects. At Penn State, agricultural research stimulated development in both chemistry and physics. At both schools, such efforts began to bear fruit after 1945. Selman Waksman's great discovery of streptomycin led directly to the creation of the Institute of Microbiology (1954) that now bears his name.<sup>25</sup> The Department of Ceramics provided another node of advanced research. Notably, both these efforts were related to (and supported by) important state industries.<sup>26</sup> Penn State exploited its engineering expertise after the war to break into federally sponsored research. It acquired the Ordnance Research Laboratory focused on underwater sound, and in 1955 began operations of the

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<sup>23</sup> Roger L. Geiger, *The History of American Higher Education: Learning and Culture from the Founding to World War II* (Princeton: Princeton University Press, 2015), 298-306, 532-3.

<sup>24</sup> PhD data from the American Council on Education, *American Universities and Colleges*, various editions.

<sup>25</sup> See <https://www.waksman.rutgers.edu/about/history>.

<sup>26</sup> Clemens, *Rutgers since 1945*, 204-6; Allen B. Robbins, *History of Physics and Astronomy at Rutgers, 1771-2000* (Baltimore: Gateway Press, 2001).

first certified university nuclear reactor. Specialized undertakings such as these four examples continue to expand and diversify into adjacent scientific fields, both basic and applied. The difficulty for latecomers like Rutgers and Penn State was developing departments in basic academic fields.

In the 1950s, both schools increased PhDs by a factor of six over the 1930s, but they were still skewed toward applied fields. Thirty percent at Rutgers were still in agriculture. At both, doctorates in the Humanities and Social Sciences were miniscule. Until well into the next decade, increasing the academic standing of the universities was merely one priority among many—and not very high on the list. Accommodating the rising tide of students was the uppermost necessity, and finding the resources that this required. In the 1960s, the National Science Foundation delayed science development funds for Rutgers until faculty salaries were raised closer to national norms, so that the personnel specified in the proposal could be hired.<sup>27</sup>

In 1966, the first rigorous rating of graduate programs, led by Allan Cartter, revealed the nearly marginal status of both universities.<sup>28</sup> Roughly half of the 1,600+ departments surveyed were rated as distinguished, strong, or good. However, out of 30 departments, both universities had 7 rated as “good” (English, history, botany, entomology, physiology, zoology, and physics). Only microbiology was rated “strong” for Rutgers; chemistry and geology for Penn State. What are we to make of such state of affairs? Let me conclude with three points.

First, in the state of the academic research system in the 1960s, rising latecomers like Rutgers and Penn State found niches in semi-applied fields that were not reflected in peer ratings. Thus, Rutgers’s strength in ceramics and Penn State’s in acoustics and nuclear engineering did not register.

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<sup>27</sup> Robbins, *Physics and Astronomy*, 133-55.

<sup>28</sup> Allan M. Cartter, *An Assessment of Quality in Graduate Education* (Washington, DC: ACE, 1966).



Second, the Cartter ratings changed perceptions of prestige. If universities played down the ‘rankings game,’ deans and department heads did not. The ratings gave them a powerful incentive to seek to strengthen their faculties and graduate programs. Academic standing moved up several notches in institutional priorities and, more important, stimulated university investments in academic quality.

Third, they had a good deal of company. An amalgamation of the departmental ratings placed Rutgers and Penn State in a range from 29<sup>th</sup> to 42<sup>nd</sup> in academic standing.<sup>29</sup> A presidential report in 1960 had called for a doubling of American research universities from the existing 15-20.<sup>30</sup> Only seven additional public universities might be said to have risen to that level by the mid-1960s. Rutgers and Penn State were poised to join that group.

And, indeed, that is where you will find them today—comfortably within the top forty American research universities (#s 36 & 39).<sup>31</sup> So, you might ask—what is new? In fact, in the expansive and highly competitive American system, this is a tremendous accomplishment. While the top of the academic hierarchy never seems to change, that is not true for the middle ranks. Of the 13 universities ranked in 1964 in the same stratum with Rutgers and Penn State, nine have fallen out of the top 40. In the last comprehensive ratings, the average departmental score was “strong” at both schools. And research expenditures are nearing \$700 million at Rutgers and over \$800 million at Penn State. These are measures of enormous progress and achievement since 1965, all the more remarkable for having been accomplished, for the most part, with little state support.

Becoming a contemporary research university—a world-class university—is a step-like process. Strenuous effort is required to attain a foothold on that high plateau, only to realize that

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<sup>29</sup> Geiger, *Research and Relevant Knowledge*, 208-11.

<sup>30</sup> President’s Science Advisory Council, *Scientific Progress, the Universities, and the Federal Government* (Washington, DC: GPO, 1960); Geiger, *Research and Relevant Knowledge*, 169-74.

<sup>31</sup> See <http://www.shanghairanking.com/>.

the advancement of science and the competition from peers demand renewed efforts. That Rutgers and Penn State have repeatedly succeeded in such efforts—in the 1960s, again in the 1980s, and again since 2000—and have accomplished these feats with little assistance from their respective states—is testimony to the astute leadership of these universities, but also to their enduring spirit.

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