



The Morrill Land Grant Act of 1862
and the
Changing of Higher Education
in America

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Introduction

The Land Grant or Morrill Act of 1862 is a turning point – a tipping point if you will – in American history. It is, of course, the first social contract between the Federal government and its citizens. Prior to 1862, the Federal government had largely avoided any involvement in education, leaving such matters to the states – given the strong preference among lawmakers and the states for the doctrine of “**States Rights**”.

- I have attempted in the text that follows to provide an overview of the Morrill Land Act of 1862, the history of its conception and development, with particular reference to Justin Smith Morrill, the Act’s author and principle architect, who for the next 40 years continued to champion the cause of higher education and the land grant colleges and universities through his work in the Senate until his death in 1899. In addition, I have included some, although limited discussion on the later legislative building blocks that completed the tripartite mission of the land grant college and universities as we know them today where the mission continues to be instruction (teaching), scholarship (research) and outreach (extension). However, the emphasis of this text is on the “**Keystone**” act – the Land Grant Act of 1862, for without this legislation, none of the following or appending legislation, principally the Hatch Act of 1889 or the Smith-Lever Act of 1914 would have been possible or meaningful.
- In addition, I have included a number of papers (of which there are many to choose from) that I believe will further reinforce the impacts of this historic and world changing Land Grant Act of 1862 for your reading.



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The Morrill Land Grant Act of 1862 and the Changing of Higher Education in America

Introduction

A bold statement! Yes, but true. Few bills in the history of the U. S. Congress have had a more profound impact on America and its citizens. Let us begin:

Passage of the 1862 Morrill Land Grant Act and the subsequent legislation that followed changed forever the role of higher education in America. Until the passage of the Morrill Act, higher education in the U.S. was primarily for the sons of the wealthy land owning gentry to study religion, law, philosophy or medicine (even though it was a rudimentary science at the time). The founding fathers came to realize that if the United States were to be truly the land of the free, then everyone should have the opportunity for higher education. They also realized that education must be for the common man and offer more than law, philosophy, medicine and theology. The founding fathers also recognized that there must be subjects taught in agriculture, engineering (mechanic arts), and other useful subjects for the development of the nation. Pretty bold thinking, at a time when “states rights” dominated the agenda for the federal legislature to think of interjecting itself into issues of education.

As a result of the clear and futuristic thinking of Justin Smith Morrill and others, along with the commitment of President Lincoln, who signed Morrill Land Grant Act into law on July 2, 1862, the land grant university system as we know it today has enjoyed overwhelming success. Indeed, the tripartite mission of teaching, research and extension (outreach) is the envy of the world. As a sidebar, it is interesting to note that the land grant college and university system of higher education has been frequently studied by others, principally by those in the developing world, but never fully adopted and duplicated with the success and impacts it enjoys in the U.S.

Origins of the Land Grant Concept

To better understanding the land grant concept and how it emerged, one might reflect on the statement by Justin Smith Morrill, “*In educational institutions of*

the highest dignity, scholarship in useful learning should stand as equal to scholarship in any other branch of education". Clearly, Morrill had in mind a practical, and useful educational system that would serve all of this emerging nations citizens. While Morrill is given credit for the Act of 1862, this was not a wholly original idea for Morrill, and it can be argued that Morrill was simply the messenger. Regardless, it is a wonderful message and legacy that deserves to be honored.

As one thinks of the evolution of the land grant system of public higher education, one must credit the two men who played a fundamental role in that period of invention, Jonathan Baldwin Turner of Illinois and Justin Smith Morrill of Vermont. Both were inspired by their own early experiences in life, and by their beliefs in Jeffersonian democracy. Another, George Washington Atherton, the seventh president of Pennsylvania State University (1820-1906) is often credited as the "second founder" for the role he came to play in the interpretation of the land grant concepts during the early years.

In his 1806 message to Congress, Thomas Jefferson made a statement that foreshadowed the role of the Federal government in higher education. He proposed that Federal surplus monies be expended for education. He argued that education was an appropriate *"article of public care"* because it is a *"public institution that can alone supply those sciences which, though rarely called for, are yet necessary to complete the circle, all the parts of which contribute to the improvement of the country, and some of them in its preservation."* Jefferson, was as always, ahead of his time.

Jonathan Baldwin Turner was born in Massachusetts and moved to Illinois in 1833 where he took up a career as *"classical scholar, educator, farmer, amateur scientist, orator, social reformer, entrepreneur and rugged individualist"*. He also took up the cause of universal education for the sons and daughters of the working class and eventually designed a proposal for an industrial university. In 1850, Baldwin addressed the Illinois Teachers Institute on the subject of *"A Plan of our State University for the Industrial Class"*, which contained the foundation of what was later to become what we know of today as the land-grant university. Like Morrill, who would follow him, Turner was deeply influenced by Jeffersonian ideals. He sought to develop the reasoning abilities of young people and to cultivate their morals so that commerce, agriculture and manufacturing could prosper and thus benefit every American. His plan included the

establishment of colleges that would be accessible and affordable for laborers in agriculture, commerce, and the arts who needed educational assistance, to develop courses of study that included practical and vocational subjects for the benefit of the working classes, and to endow these colleges by grants of public lands. Using grants of public land is of special interest, for it is easy to forget that the Federal government at the time was essentially broke (as one might suggest it is today!), however, the one asset that the government had was land, thus the grant of land to the states to be used as the core endowment for the new or to-be-formed colleges.

Turner's plan was distributed widely and discussed by farmers, teachers, manufacturers and legislators in Illinois. At the time of its introduction it even merited an editorial in the *New York Times*. Through a series of resolutions obtained during the period of 1851-1853 by the Convention of Illinois Farmers, the Illinois Industrial League, and then finally the Illinois State and House of Representatives, Turner gathered support for his ideas for an industrial university for Illinois and a federally-supported industrial college for every state and territory.

The other important personality who sought to find solutions to fund public higher education was Justin Smith Morrill. Morrill's interest in public education and his propensity for work that "*is not Utopian but practically of real service to our country*" can be traced to his early experiences. Morrill was born in Stafford, Vermont in April 1810. Justin Morrill was a self-educated man. The son of a blacksmith, he was educated at the Thetford Academy until the age of 15, when he was forced to leave school to work in the village store. Luckily, the storekeeper Jedeiah Harris, owned a small, but excellent private library, that was made available to young Morrill. Through self discipline and careful study, Morrill became an educated man, but never forgot that he had not been able to go to college. Many years later, Morrill said that his mind and very nature had been formed by his reading of Harris's library.

This self educated man would eventually write the legislation to direct the proceeds from the sale of public lands toward education as "*a means for the creation of an enlightened and virtuous character among the citizens of this country*". In a speech to the Senate in April 1876, Morrill would later explain that he had been motivated by the fact that the older colleges were valuable, but unequally distributed, reluctant to expand instruction in the sciences and

practical subjects and were too expensive. He also went on to say on that occasion that *“the character of a nation does not altogether depend upon its geology, climate, soil, but very much upon its government and its educational institutions”*.

As a sidebar to history, in 1834 Harris made Morrill his partner and then retired soon thereafter. Fourteen years later, Morrill himself sold the business (at age 38) and in 1854, Morrill was persuaded to stand as a Whig candidate for the U.S. House of Representatives. Morrill would serve Vermont as both a Representative and Senator for nearly 50 years until his death in 1898.

Although we do not know how much Jonathan Baldwin Turner influenced Morrill, it does seem obvious that there was a connection, given that Illinois was the first state to advocate for a national appropriation to establish colleges for every state and territory and forwarded their resolution to Congress in 1852. Interestingly, several other states, namely, New York, Massachusetts and Michigan were soon to follow with similar resolutions. However, Morrill's own state of Vermont was absent from this movement and only after some difficulty did it embrace the land-grant concept when it became law.

On December 1855, some 18 months after the introduction of the Illinois resolution calling on Congress to create industrial colleges did Justin Smith Morrill enter the House of Representatives. Soon thereafter, he introduced legislation to establish one or more national agriculture schools, after the model of the service academies to provide scientific and practical education (note the language *“scientific and practical education”*— for you see it again in the 1862 language that appears in the Morrill Land Grant Act) for two scholars from each state and one from the District of Columbia. The resolution was rejected. This first effort, however, may help to account for the confusion over Morrill's later intentions. Was he trying to establish agricultural colleges or was he trying to stimulate science and a blending of the classic and practical studies?

In 1857, Senator Lyman Trumbull of Illinois who had embraced Turner's ideas, turned to Morrill to introduce the legislation to implement Turner's industrial colleges. After a period of significant debate and several false starts, the bill was finally vetoed by President James Buchanan in 1859. Interestingly, it should be noted that President Buchanan was encouraged to veto this first attempt to establish a role for the Federal government in higher education, by a block of

Southern Senators and Representatives who used the “**states rights**” argument that is, education was the purview of the States, not the Federal government. Given the perilous times and the specter of civil war, Buchanan probably had little choice in his decision.

At the time of the veto by Buchanan, Turner remained undaunted and conferred with his old friend Abraham Lincoln, who agreed to support the concept. The connection was an important one, for two of Turner’s former students had taught Lincoln his grammar when he was still just a hired hand. Just to be sure, Turner had also extracted a promise of support from Lincoln’s opponent, Stephen A. Douglas.

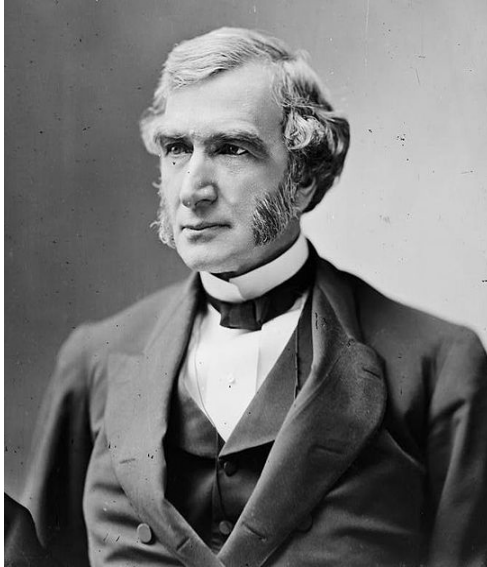
After Lincoln’s election in 1860, Morrill again introduced legislation to establish public colleges through a gift of public lands. He explained to his colleagues that he did so because there was a loud demand for more scientific instruction in the colleges and much of the abundant public lands was being given away to local corporations, railroads, and another entities, that he thought it time to direct a portion of the proceeds to the good of the people. Lincoln signed the bill into law on July 2, 1862 soon after signing the Homestead Act which greatly encouraged westward expansion. It must be added however, that the bill benefited from the fact that the Senators and Representatives from the 13 Southern states who had opposed the earlier efforts to establish a role for the Federal government in higher education, had now ceded from the Congress and the Union. Thus, the states rights argument and the role of the Federal government in higher education was diminished.

The legislation called for the donation of public lands to provide colleges for the “*benefit of agriculture and the mechanical arts*”. The proceeds would endow, support and maintain, “*at least, one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanical arts. In such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in these several pursuits and professions in life*”. More about the richness and uniqueness of the language in the Morrill Land Grant Act shall be presented later.

Justin Smith Morrill – A Public Servant

Justin Morrill, born in Strafford Vermont in 1810, had little formal education beyond primary school. He desired to attend college but his family was unable to afford such luxury. Nevertheless, by the time he was elected to Congress in 1854, he had enjoyed success in the dry goods business. Politics was a second career, as Morrill had retired from business in 1848 at the age of 38 to build his gentleman's farm at Strafford. Most of Morrill's biographers note that he regretted his own lack of a formal education, and that this may have been the great impetus for his life's work in Congress to secure funding for the creation of publicly funded colleges so others might have the opportunity he was denied. Morrill saw the need for practical education in agriculture and mechanics (today, Engineering) for the working people with whom he identified. In the mid-19th century, 80 percent of Americans lived in rural areas, and about 60 percent of Americans were farmers as compared to 23 and 2 percent today), most of them merely eking out a subsistence living.

The idea of agricultural schools or colleges was not a new one or wholly original with Morrill. Agricultural societies had formed in the U.S. after the Revolutionary War. The first of them, the Philadelphia Society for Promoting Agriculture, founded by Benjamin Franklin and still in existence today, pushed with limited success, for the creation of agricultural colleges that would improve farming methods and productivity. The first American school devoted to agriculture was the Gardiner Lyceum, established in Maine in 1823. Pennsylvania established the first agricultural high school in 1855, which in 1862 became the state's land grant college and eventually Pennsylvania State University. Michigan established the first agricultural college in 1855, followed by Maryland in 1856. All of these schools suffered from a lack of quality teachers, curricula and what can only be described as shaky finances.



Justin Smith Morrill, circa 1860

Historians generally agree that Morrill's vision for the land grant colleges had its origins elsewhere – principally in Europe, which by the mid 19th century had its own workingman's colleges, and in the early work of Jonathan Baldwin Turner, a Yale graduate who had proposed providing a liberal education to farmers, factory workers and others as early as 1850. Specifically, it was Turner who proposed the idea of the public lands appropriation as the basis of the endowments to support the creation of these new colleges. More generally, the idea of government-sponsored colleges was at least as old as 1618, when King James granted 10,000 acres to Virginia for a college.

Justin Smith Morrill's Intentions

Much has been written about the intentions of Justin Smith Morrill, given that he spoke out on the issue of higher education on numerous occasions during his long tenure in the U.S. Congress. What was the land-grant institution meant to be and what has it become? This movement is not easily defined and in fact, has changed over time to meet societies changing expectations. In a simple sense, the land grant movement is the collective story of the emergence of over 70 colleges and universities that are predicated on an exclusive relationship with the

Federal government and a shared set of expectations by their respective states.

Over the years there have been numerous interpretations of Justin Morrill's intention and the forces that lead to the acceptance of the first federal grant for education in 1862. The explanations have included the following:

- The democratization of higher education;
- A means of educational reform to move beyond the narrowly defined curriculum of the elite private colleges of the day to a more practical education that would be made available to the working classes;
- The development of an educational system designed to serve utilitarian ends by supporting research and public service, as well as instruction, addressing the most important national economic issues at the time – namely, agriculture and the mechanical arts;
- A desire to emphasize the emerging applied sciences; and / or
- A vehicle to invest in economic development and at a time when the federal government was developing an economic development policy.

Others have suggested, and I tend to agree, that the land grant movement has been over analyzed by scholars attempting to assign some grandiose motives to the effort, when in retrospect the goal may simply have been to make available educational opportunities for the working classes. As a result of numerous efforts to over analyze the motives of those responsible for the legislation that created the land grant movement of public higher education, it is understandable and not surprising that we, even today, lack a clear definition of the land grant mission, either as originally conceived, or as we might wish to interpret it today. It is quite clear from the early beginning that many of the land grants quickly set as a vision the creation of comprehensive institutions focusing on the liberal, scientific and even civic education of well-rounded men and women, and not merely the technical and / or vocational. In fact, quite soon after the creation of many of the land grant colleges, the term “*agricultural college*” began to change, as these colleges began to think of themselves as schools of science being a more descriptive title, and we can see the changing of the names of these colleges from the classical “*Agricultural and Mechanical*” to simply colleges or universities representing the states. Apparently, Morrill had similar concerns, as

he did not seem to care for the term “*agricultural*” either and is reported to have said that the word “*would never have been applied to the institution except that it happened to suit the causal convenience of an index clerk*”. In the end, Morrill often expressed the hope that the Land Grant institutions would develop courses of instruction in which the practical and liberal approach could be blended. Of course, this is exactly what has occurred.

Development of the Land Grant System

Since their establishment, the land grant colleges and universities have grown into a unique system of widely accessible higher education. Certainly this is as Morrill would have envisioned. Clearly, as the U.S. evolved from a colonial state, higher education was available at only a few institutions such as Harvard, Yale, and William and Mary. These institutions at different times were each subject to varying degrees of public control, but in the end, all were essentially privately controlled. After the Revolutionary War, the states began to organize universities as publicly controlled institutions. These were not essentially different in academic orientation from the privately controlled colleges, which by that time had grown relatively strong and were setting the pace for the development of college education throughout the country.

During the first half for the 19th century, the two types of colleges and universities, publicly controlled and privately controlled, developed side-by-side. Both were greatly influenced by the European universities, which had educated many of the faculty. But the European universities were not organized to serve a democratic society; rather, they served the male leisure class, government leaders and members of the professions, in other words, the elite classes.

Initially, the emerging American colleges and universities functioned in somewhat the same fashion, offering a classical and professional curriculum. Although the importance of science was gaining recognition, scientific education was not widely available. By the middle of the 19th century the general and scientific press of the day was making widespread demands for more agricultural and technical education. Agricultural societies in many states were insisting that colleges be created where students could study agriculture. One of the most notable campaigns, as noted earlier, was lead by Jonathan Baldwin Turner of Illinois. In Maryland, Charles Benedict Calvert, took matters into his own hands in 1856 by creating the private Maryland Agricultural College, specifically to

teach and training the sons of the wealthy land owners in all aspects of scientific agriculture.

While it is clear that there was a national movement seeking and perhaps even demanding Federal support of higher education, it was by no means universal. In early 1859, within 3 months of becoming a member of Congress, Morrill began his efforts on behalf of agricultural colleges by introducing a resolution in the House that stated: *"That the Committee on Agriculture be ... requested to inquire into the expediency of establishing ... one or more national agricultural schools upon the basis of the U.S. Naval and Military schools in order that one scholar from each congressional district and two from each state at large, may receive a scientific and practical education at public expense"*.

The resolution failed by the objection of a Representative from South Carolina, however the following year, Morrill introduced the first Land Grant College bill that stated: *"An act donating public lands to the several state and territories which may provide colleges for the benefit of agriculture and the mechanic arts...."* It has to be noted that there was opposition that was swift and pointed and came largely from the Mid-West and South. Senator Rice of Minnesota sneered, *"We want no fancy farmers; we want no fancy mechanics"*, while Senator Mason of Virginia stated for the record, *"It is one of the most extraordinary engines of mischief ... misusing the property of the country ... an unconstitutional robbing of the Treasury for the purposes of bribing the States"*. Despite the opposition, the passage through the House was swift and sure, with a final vote of 25-22; however, it should be noted that the opposing votes were 18 Southern senators and four Northern Democrats. President Buchanan, of course, vetoed this bill, bowing to southern pressures, requiring Morrill to bide his time knowing that the country was changing in dramatic fashion.

While Morrill waited, he did not have to wait long. By 1861 the effect of the Civil War was being felt in Congress. The Southerners had withdrawn and with them had gone much of the insistence on the rights of individual states, e.g., the states rights argument. Morrill came forward again in December 1861 with a new bill that was presented to the House of Representatives. This bill introduced in 1861 was in fact "new", as it contained several substantial change from the previous bill that was vetoed by President Buchanan. The major differences included:

- The omission of the territories;
- The increase of the land grant for each member of Congress from 20,000 to 30,000 acres;
- The exclusion of benefits to states while in the act of rebellion; and
- The requirement to teach military tactics.

This last feature, the requirement to teach military tactics, was an obvious result of Civil War concern, but continued to serve the nation in later wars.

At the heart of the Land Grant Act of 1862 was Section 4:

“That the moneys so invested or loaned shall constitute a perpetual fund, the capital of which shall remain forever undiminished ... and the interest of which shall be inviolably appropriated, by each State which may take and claim the benefits of this act, to the endowment, support, and maintenance of at least one college where the leading object shall be without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislature of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life ...”.

The Senate passed the measure on June 11, 1862, by a vote of 32 to 7. The House concurred on June 19th with 90 in favor and 25 opposed of which 21 were from Western states. What is really important here is that this legislation came during one of this nation's darkest hours of the Civil War. It remains a remarkable example of forward looking legislation in the midst of calamity.

Now as the land grant bill made its way to the White House, President Lincoln was ready to act. As a Whig, Lincoln believed the Constitution to be far more flexible than Buchanan's rigid interpretation. Lincoln was not inclined to oppose federal measures which impacted the common people. He was a man undoubtedly far ahead of this time, but a new educational system for agriculture and the mechanic arts had never been one of his strong concerns. Nevertheless, it was part of a progressive legislative pattern and philosophy to which he gave leadership. On July 2, 1862, Lincoln signed the Land Bill into law.

Interpretations

Much has been written of the Morrill Land Grant Act and its true intent. Speaking at the Massachusetts Agricultural College in 1887, 25 years after the passage of the Act, Senator Morrill again set forth his views on the general purpose of the Morrill Act in the following words:

“The land grant colleges were founded on the idea that a higher and broader education should be placed in every State within the reach of those whose destiny assigns them to, or who may have the courage to choose industrial location where the wealth of nations is produced; where advanced civilization unfolds its comforts, and where a much larger number of the people need wider educational advantages, and impatiently await their possession... it would be a mistake to suppose it was intended that every student should become either a farmer or a mechanic, when the design comprehended not only instruction for those who may hold the plow or follow a trade, but such instruction as any person might need – with “the world all before them where to choose” – and without the exclusion of those who might prefer to adhere to the classics”.

Speaking before the Vermont Legislature in 1888, Senator Morrill said in reminiscing about the land grant acts:

“Only the interest from the land grant fund can be expended, and that must be expended, first – without excluding other scientific and classical studies – for teaching such branches of learning as are related to agriculture and the mechanic arts – the latter as absolutely as the former. Obviously not manual, but intellectual instruction was the paramount object. It was not provided that agricultural labor in the field should be practically taught, and more than the mechanical trade of a carpenter or blacksmith should be taught. Secondly, it was a liberal education that was proposed. Classical studies were not to be excluded, and, therefore, must be included. The Act of 1862 proposed a system of broad education by colleges, not limited to a superficial and dwarfed training, such as might be supplied by a foreman of a workshop or by a foreman of an experimental farm. If any would have only a school with equal scraps of labor and of instruction or something other than a

college, they would not obey the national law....

The fundamental idea was to offer an opportunity in every state for a liberal and larger education to larger numbers, not merely to those destined to sedentary professions, but to those much needing higher instruction for the world's business, for the industrial pursuits and professions of life".

Over time it has become clear both from the legislation and from statements attributed to Morrill, that at least three principles were embodied in the legislation:

- A protest against the dominance of the classics in higher education;
- A desire to develop at the college level, instruction relating to the practical realities of an agricultural and industrial society; and
- An attempt to offer those belonging to the industrial classes' the opportunity to prepare for the "*professions of life*".

The Morrill Land Grant Act in Operation

The mechanics of the 1862 land grant act were straightforward. Western states that still had public land to sell would actually select parcels of land that they could either sell immediately or hold until the prices went up. Eastern states with no federal public land remaining within their borders (which was the majority) were given scrip, which they then had to sell to assignees to prevent any state from owning land in another. Assignees could redeem the scrip for land. States were then to invest the proceeds from the sales into the "*stocks of the United States or of the states, or some other safe stocks, yielding not less than five per centum*". This fund was to remain untouched, and the income was to pay for the "*endowment, support, and maintenance of at least one college*" in each state. States had their own role to play in this, since the interest from the land grant funds was not to pay for buildings, but only for books, supplies, instruction and so on. The states themselves had to provide the land and the building, though the law did provide that as much as 10 percent of the capital could be used for the purchase of sites. Some states built from scratch, while many others invested in

existing colleges (such as New York did with Cornell, Massachusetts with MIT, New Jersey with Rutgers, and Maryland with the already established and privately funded Maryland Agricultural College. In 1864, Congress amended the act, requiring that the states that wished to participate in the program to agree to the law's terms within two years. In 1866 Congress required the participating states to establish a college within five years. A large number of the states had difficulty meeting the five percent return requirement as stipulated, and thus found various ways to make up the difference. A few (Illinois and later North Carolina and South Carolina) lost their endowments through "*defalcation or dishonesty*," and their state legislatures issued bonds to restore them.

Because the monies were made available through the 1862 act were so often insufficient to the aspirations of these emerging land grant colleges, the colleges naturally developed rather slowly. The first three states to act on the law were Iowa, Vermont, and Connecticut, in 1862. A year later 14 states had adopted the act and by 1870 thirty-seven states had instituted some kind of a program for teaching agriculture, mechanical arts and, as the act stipulated, military tactics. Nonetheless, the land grant college act might well have been perceived as a bust in its early years. Land prices were low. Total receipts on the 17.4 million acres came to a fairly meager \$7.5 million. Many Eastern states sold their scrip quickly and earned less than a dollar an acre for it (Kentucky did the worst, at fifty cents per acre). Only nine states received more than the \$1.25 per acre that the act had mandated as a minimum return. New York held its grant the longest and managed to earn a whopping \$5.82 per acre. States had little money for buildings, few qualified faculty, and not many applicants.

Morrill tried repeatedly – first in 1872 and eleven more times through 1890 – to win additional land grants or financial support for the colleges, and by 1890 he could boast that 48 colleges had been created as a result of his 1862 legislation. That year (1890) he succeeded when President Benjamin Harrison signed the second Land Grant Act into law on August 30, granting states an additional \$15,000 per year initially, and rising to \$25,000 per year. Morrill tried again in 1897 and 1898, just before his death to win additional funding. Where Morrill failed other followed. The 1887 Hatch Act added funds to support agricultural research stations; the Adams Act of 1906 and the Purnell Act of 1925 both provided for research grants at the experiment stations; a 1907 amendment to the 1890 act added another \$25,000 per year per college for salaries and operation funds (bringing each state's yearly total to \$50,000); the Smith-Lever Act of

1924 established the Cooperative Agricultural Extension Service and made federal funds available to pay part of its costs; and the Bankhead-Jones Act of 1935 added still more federal funds, an additional \$1 million to be distributed in grants of \$20,000 to each state.

The Land Grant Act and the Transformation of America

Clearly, the social and economic impact of the Morrill Act and related legislation is impossible to measure, although there are some measures that are suggestive of the impacts. Today, the largest of the land grant program is the University of California which enrolls over 150,000 students on its nine campuses. The smallest is Kentucky State University with about 3,000 students. Collectively, the nations land grant colleges and universities enroll over 3 million students and annually award about 500,000 degrees each year. This represents about one-third of all bachelor's and master's degrees, 60 percent of all doctoral degrees, and 70 percent of the nation's engineering degrees awarded annually. Since 1862, it is estimated that the land grant institutions have awarded more than 20 million degrees.

There are, of course, other measures of the impact. Above all, Morrill had hoped that the land grant colleges would benefit *“those at the bottom of the ladder who wanted to climb up, or those who have some ambition to rise in the work, but are without the means to seek far from home a higher standard of culture.”* The colleges made higher education available to women and to blacks, both of whom had traditionally been excluded from educational opportunities. The 1862 law, of course, denied its benefits to the Southern states until they reentered the Union after the war, and in the politics of Reconstruction many of the first land grant colleges in the region were for blacks. The first was Alcorn State University in Mississippi, founded in 1871. Hampton University followed in Virginia in 1872.

The 1890 act denied funds to any school *“where a distinction of race or color is made in the admission of students”* and essentially required the southern states to either open their land grant facilities to blacks or open separate institutions for them. They did the latter, of course. It can hardly be denied that the effect of the law was to entrench *“separate but equal”* as educational policy, the effects of which were made more insidious by the fact that black colleges typically received an amount equal to about 10 percent of the funds states made available for their white-only counterparts. Still, Morrill had successfully argued the

principle that education should be available to all for the greater good. Speaking in the Senate in 1876, he said, *“Having emancipated a whole race, shall it be said that there our duty ends, leaving the race as cumberers of the ground, to live or to wilt and perish, as the case may be? They are members of the American family, and their advancement concerns us all. While swiftly forgetting all they ever knew as slaves, shall they have no opportunity to learn anything as freemen?”*

Most recently, it is the Native Americans who have benefited from the land grant program. The National Agricultural Research, Extension, and Teaching Act of 1994 authorized a \$23 million endowment, to be created over a 5-year period, to support the 29 tribal colleges on Indian reservations throughout the U.S.

There were other, less immediately obvious and even unforeseeable benefits that resulted from the 1862 law. With its nonsectarian foundations, the Morrill Act helped to separate religious doctrine from higher education, particularly in the period after World War II, when huge numbers of returning servicemen swelled the rolls of land grant colleges, and helped to establish research as a core function of the American university. At the outbreak of the war, the Act's provision for military training at the land grant institutions was instrumental in meeting the demands of mobilization. This could not have been accomplished without the input from these institutions. Morrill had presumably included the provision in response to the woeful record of Union officers in the Civil War, particularly as compared to the performance of the Confederate officer corps, but it was World War II where the land grant military training program proved invaluable. When the war began, the U. S. military was very small, and it relied on about 50,000 Reserve Officer Training Corps officers from the land grant universities to train hundreds of thousands of civilians over a very short period of time. As Army chief of staff General George C. Marshall put it, *“Just what we would have done ... without these men, I do not know”*.

Perhaps even more importantly, the land grant institutions were able to respond to the G.I. Bill in providing an education to the hundreds of thousands of returning soldiers at the end of the war. Without such infrastructure, it is inconceivable that such an effort could have been engaged, or that it would find such success. For the G.I. Bill had several consequences, first and foremost, it repaid a debt to the returning servicemen for their service to the Nation, but it also allowed for a rapid acceleration of the level of education in the U. S. and at

the same time provided the educational background as the Nation moved from a war time to a peace time economy.

Justin Morrill himself could not have foreseen that the institutions he aided in establishing would in time become the preeminent system of higher education in the world. Indeed, higher education is one of the few area in which the United States enjoys a consistent and favorable lopsided balance of trade – relatively few American students travel abroad to study for degrees, while thousands come to the U.S. from virtually every nation in the world to study, most commonly at the land grant colleges and universities, especially for advanced degrees in science and engineering. In this respect, the Morrill Act still functions as its creator hoped it would, making higher education available to those who otherwise would not be able to matriculate, while broadly diffusing its benefits.

What Morrill most likely did see – indeed, the rationale that compelled him in 1862 and throughout his career – was the role that the land grant institutions would play in carrying American democracy into the next century. At one level the act accomplished that purpose by virtue of its design. The institutions it created, while rising to international prominence, have remained deeply rooted in the needs of their states and regions, as the 1862 act supposed they would be. The United States, unlike many European nations, would not have “national” universities; rather, the flexibility of the federal–state partnership permitted each state to find its own way. The act thus enabled the colleges it created to meet the changing needs of a changing country in a manner consistent with the aspirations of a free and open society.

The democratic faith that Morrill made his cause was no certain thing in 1862. As Lincoln would say at Gettysburg a little more than a year following the passage of the First Land Grant Act — it was an open question whether a nation dedicated to liberty and equality could endure the bitter strains of separatism. Beyond his role in financing the Union’s prosecution of the war, Morrill ensured the outcome of the struggle for freedom by making education the most potent weapon in the contest. Further, Morrill saw to it that the land grant college act, through the endowments it created would not be static, but rather dynamic, and carried on in perpetuity for the benefit of generations yet unborn.



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The Hatch Act of 1887

A discussion of the land grant university system can not be complete without reference to the Hatch Act of 1887. The Hatch Act of 1887 provided funds to the land grant universities to establish agricultural experiment stations, with the expressed purpose to “*promote efficient production, marketing, distribution and utilization of products of the farm as essential to the health and welfare of the people and to promote a sound prosperous agriculture and rural life*”.

It was clear by 1887 that these early college of agriculture did not place emphasis on research, rather they focused on teaching and the preservation of knowledge and traditions. Although they did some experimental work as demonstrations for students, it clearly was not the emphasis, and funds must have played a role. In general, neither the faculty nor the students were particularly interested in creating new understandings and knowledge, but focused on reinforcing the cultural traditions they served.

The first federal attempt to add a research dimension to higher education's mission – indirect as it was – came from George Washington in his 1796 presidential message to Congress, when he requested the establishment of a Board of Agriculture with one of its designated purposes being the encouragement of agricultural experimentation. This request was not surprising since George Washington's Mount Vernon estate was a veritable experimental farm, where Washington sought ways to conserve soil, diversify cropping, and use new machinery. By careful seed selection, Washington developed an improved strain of wheat; he obtained one of the first patents on seed-sowing devices; his sheep produced nearly three times as much wool as those of his neighbors; and he was among the first Americans to raise mules.

Thomas Jefferson, who served as a member of Presidents Washington's cabinet and then as the third president of the United States, had an inventive mind as well as a flair for scientific experimentation. He worked out the mathematical principles for minimizing soil resistance for an all-metal moldboard plow. He also invented a seed drill, and improvements for the threshing machine. He tested varieties of at least 32 different vegetables (as documented in his extensive notes compiled over 50 years), and practiced horizontal plowing for soil erosion control.

Essentially, there was no agricultural literature in the 18th century. Washington, Jefferson and other early visionaries created it by conducting experiments on their own farms and then by sharing the results with others, most notably via extensive correspondence. They developed new seeds, new machines, improved foundation stocks, and better way of farming. Indeed, Washington and Jefferson established a rich legacy for scientific experimentation.

In 1885, Norman J. Colman a Missouri farm magazine editor, was appointed the first United States Commissioner of Agriculture (now Secretary of Agriculture). Colman was committed to passage of legislation that would provide funding for state agricultural experiment stations. A legislative committee comprised of three land-grant university presidents worked with Commissioner Colman in these efforts, which were endorsed by Congressman William Henry Hatch of Missouri and Senator James Z. George of Mississippi, who agreed to sponsor the proposed legislation. After considerable debate and compromise, the bill known as the “*Hatch Act*” was passed on March 2, 1887. It provided \$15,000 per annum to establish agricultural experiment stations in connection with the land-grant colleges and universities established in the several States and Territories under the provisions of the Morrill Act approved July 2, 1862.... “*to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigations and experiments respecting the principles and application of agricultural science.*”

It is interesting to note and perhaps speculate on other outcomes. Since the Department of Agriculture had already been established, it is conceivable that a system of Federal agricultural research might have been expanded upon, but Congress undoubtedly knew that much of the research need in agriculture was regional and local in nature, and with the existing commitment to each of the states land grant colleges, development of the research capacity at these local state institutions just made good common sense. In addition, it is understood that local farmers were coming to these institutions with questions and seeking answers. Obviously, those closest in proximity to these emerging institutions had the advantage of some spillover, even though formal research and demonstration was not part of the formal agenda of the institutions.

The Morrill Act of 1890

The 1890 Land-Grant Institutions were created as a result of the Second Morrill Act. The First Morrill Act of 1862 authorized the establishment of a land-grant institution in each state, but given the time (1862) not every citizen was to have the opportunity to benefit. Under the conditions of legal separation of the races in the South, African-Americans were not permitted to attend the original land-grant institutions. Although the Morrill Act of 1862 authorized “separate but equal” facilities, only Mississippi and Kentucky established institutions for African-Americans under this law, and only Alcorn State University was designated a land-grant institution.

It is important to remember that prior to the Civil War, higher education for African-American students was virtually nonexistent. In fact, simply teaching African-Americans to read was considered a punishable crime in many of the southern states. The few who did receive schooling, such as Fredrick Douglass, often did so in informal and sometime hostile settings. Some were forced to teach themselves entirely. Some schools for elementary and secondary training existed, such as the Institute for the Colored Youth, a school started in the early 1830's by a group of Philadelphia Quakers. A college education was only available to a limited number of students at schools such as Berea College in Kentucky and Oberlin College in Ohio.

Between 1866 and 1890, several Southern states established normal schools to train African American teachers. Although many of these institutions were similar to the land-grant universities, the federal government was unable to gain cooperation from the southern states in the provision of land-grant support to the African-American institutions. In those years following the Civil War, with the 13th amendment's provision of the abolition of slavery and the reconstruction of the South, the land grant colleges began to emerge as a direct result of the Morrill Land Grant Act of 1862. However, few were open to African-Americans in the South. Only Alcorn State in Mississippi was created explicitly for African-Americans. Twenty-eight years after the passage of the Morrill Act of 1862, Justin Morrill—by then serving in the United States Senate—introduced the bill that was to become popularly known as the second Morrill Act. It was presented twelve times before becoming law. Because the act stated that funds should be “*equitably divided*” between white and black colleges, there was strong opposition from white Southern congressmen. Specifically, the Morrill Act of

1890 provided that “no money shall be paid out under this Act to any State or Territory for the support and maintenance of a college where a distinction of race or color is made in the admission of students, but the establishment and maintenance of such colleges separately for white and colored students shall be held to be a compliance with provisions of the Act, if the funds received in such State or Territory be equitably divided”. Many of the African-American normal schools were incorporated into this system and 16 colleges became known as “1890 Institutions”.

One exception to this historical pattern is Tuskegee University, which was created as Tuskegee Normal and Industrial Institute by an act of the Alabama legislature in 1881. It should be noted that Booker T. Washington, a freed slave from Virginia, was to have a profound impact on the higher education of African Americans and Tuskegee Institute over the next 25 years, until his death in 1912. Washington attended the Hampton Normal and Agricultural Institute in Virginia where the focus was on preparing young blacks from throughout the South to fill jobs in the skilled trades. Washington became an apprentice of Hampton’s president and quickly reached the decision to lead his own school after graduation. In 1881, he took the helm of the fledgling Tuskegee Institute and it quickly became known for its practical curriculum and focus on preparing African Americans for many agricultural and mechanical trades.

Twelve years following the establishment of Tuskegee Institute in 1881, the state granted the school its independence and incorporated a semi-private board of trustees to govern it. Thus, Tuskegee University is not technically a land-grant college, despite the fact that it was granted 25,000 acres of land by Congress in 1899. However, because Tuskegee has espoused the land-grant philosophy throughout its history, it traditionally has been associated with the African-American land-grant institutions and is generally regarded as an 1890 college, bringing the total number of 1890 colleges to 18.

Federal funds for research and extension at the 1890 schools were provided under subsequent acts, not the second Morrill Act.

The Smith-Lever Act of 1914 (and the Smith-Hughes Act of 1917)

In the late 1800s and early 1900s, many of the land-grant universities were taking their information off-campus with demonstration farms, corn clubs for boys, tomato growing and canning clubs for girls, and home management demonstrations for rural women. Two names appear as pioneers in establishing extension as the third responsibility of land-grant universities along with teaching and research. One of these two men was Seaman Knapp, a professor of agriculture and eventually President of what was to become Iowa State University. He is commonly called the “Father of the Extension Movement”. The other was Kenyon L. Butterfield, President of Massachusetts Agricultural College.

Their views however were very different. Knapp advocated “*Cooperative Farm Demonstrations*” directed by USDA through its field agents, demonstrations to be conducted by farmers themselves on their own farms. Knapp believed strongly in the axiom, “*What a man hears, he may doubt; what he sees, he may also doubt; but what he does, he cannot doubt.*” Knapp taught through a famous demonstration—Porter Farm near Terrell, Texas—70 acres, half in corn and half in cotton, using different seed varieties, fertilizers, and methods of planting and cultivation. He made \$700 more than he would have made by using conventional methods.

Butterfield promoted using dollars to support the land-grant institutions to conduct extension-type work—fairs, judging, tours, exhibits, publications, lectures, and farmer institutes. He planted the seed to fund Extension through the land-grant colleges. President Theodore Roosevelt’s Country Life Commission, in 1909, called for a national Extension Service to be organized by each land-grant institution and “*to reach every person on the land in its state with both information and inspiration.*” By 1912, Extension departments had emerged in 43 land-grant colleges.

After much debate regarding Extension’s organization with federal, state, and local cooperation, as well as its mission and its methods, the Smith-Lever Act of 1914 created the Cooperative Extension System. The Act as written provided federal support for land-grant colleges to offer educational programs to enhance

the application of useful and practical information beyond their campuses through cooperative extension efforts with states and local communities. The Act has been amended numerous times since its inception, but it initiated the tripartite activities of the colleges and remains today as a crucial part of the three-pronged effort. Its impact on citizens of the U.S. has been enormous.

While the Hatch Act of 1887 was directed toward agricultural research and the Smith-Lever Act of 1914 was directed toward agricultural extension, the Smith-Hughes Act 1917 dealt with improving agricultural education. The purpose of the Smith-Hughes Act was to provide funds to support the teaching of agriculture (which included home economics). The act stated that the purpose of vocational agriculture was to train people *“who have entered upon or who are preparing to enter upon the work of the farm.”* Matching funds from State and local sources were required. The influence of the federal government was rigid and strong. Funds could be spent on salaries of vocational teachers, but not on teachers of academic subjects. Students were subjected to the 50-25-25 rule; i.e., 50 percent time in shop work; 25 percent in closely related subjects, and 25 percent in academic course work. This rule was in effect from the 1920 to 1960. One may reasonably assume that the authorities saw programs of practical instruction so threatened by the dominant academic elite that they required such protection by Federal law. The end result, however, was to segregate academic teachers and students from vocational teachers and students and to strengthen the social alienation that early critics of these steps had feared. Some funds could be used by the universities for the training of teachers of vocational agriculture.

The 1994 Land-Grant Act

Just as the original land-grant act of 1862 and the second Morrill Act of 1890 were attempts to democratize higher education, so too was the initiative to secure land-grant status for the nation's tribal colleges. The Tribally Controlled Community College Act of 1978 stimulated development of the variety of technical two-year, four-year, and graduate schools presently located in or near tribal reservations. Their success in meeting community needs, coupled with a prevailing climate of strong self-determination, led the American Indian Higher Education Consortium (AIHEC) to approach the National Association of State Universities and Land-Grant Colleges (NASULGC) to consider the potential of a cooperative effort to secure land-grant status for their 29 colleges. Employing the same argument used during the successful campaign by the University of the District of Columbia, the Pacific Island territories, and the Virgin Islands to achieve land-grant status, the Native Americans noted that their reservation, held in trust for American Indian tribes, were the only areas under U.S. flag that had not participated in the land-grant program.

During the spring of 1993, the leadership of AIHEC and NASULGC met to discuss opportunities that the granting of land-grant status to the tribal colleges would provide the members of both organizations. At the onset of the meetings, NASULGC President C. Peter Magrath pledged full support of the effort to achieve land-grant status for the Native American-controlled colleges when he emphatically stated, "It is simply the right thing to do." Shortly thereafter, the Board of Directors of NASULGC approved a resolution "endorsing the quest by this nation's tribal colleges for federal legislation conferring land-grant status upon these colleges."

In November 1993, the AIHEC and NASULGC jointly testified before the U.S. Senate Committee on Indian Affairs in favor of land-grant status for the tribal colleges. In January 1994, Magrath created a special task force on tribal colleges and land-grant status to strengthen cooperation between the present NASULGC member schools and the tribal colleges. Task force chairman Michael P. Malone (president of Montana State University) and other NASULGC member institution presidents met with their tribal college counterparts in Kansas City, Missouri, to discuss issues of mutual interest.

In October 1994, Congress passed legislation conferring land-grant status on the

29 Native American tribal colleges as a provision of the Elementary and Secondary Reauthorization Act. The bill authorized a \$25 million endowment over a period of five years. The colleges would receive annual interest payments from this endowment. Additionally, the legislation authorized a \$1.7 million challenge grant program for higher education initiatives in agriculture and natural resources and an additional \$50,000 per school to bolster the Cooperative Extension Service of the 1862 land-grant institutions in states that have tribal colleges. The 1862 institutions are to cooperate with the tribal colleges in setting up joint agricultural extension programs focused on the needs of Native Americans.

The 29 tribal colleges were located in 12 states. Most are two-year colleges and technical schools, but three are four-year institutions and one offers a master's degree. While some of the tribal colleges may differ in scope and nature from most other NASULGC institutions, they have an outstanding record in providing educational opportunities to Native American people. Therefore, their role and mission are highly compatible with the land-grant mission of providing and promoting educational opportunities where they are needed.

The land-grant college and university movement that began so nobly in 1862 in providing 'democracy's colleges' is now in the present era demonstrating once again its ability to adapt and change to meet new educational challenges and contingencies for a new century.

Challenges Facing the Land Grant Colleges and Universities in the 21st Century

If the land grant college and universities are to recapture the level of public support they once had, particularly the college of agriculture (understand that there are a number of names and various configurations that are currently used to encompass the traditional and non-traditional activities of the colleges, i.e., College of Agriculture and Natural Resources, College of Agriculture and Life Sciences, etc.), then they must communicate more closely with their various clientele groups to ascertain the highest priorities among the many and varied public issues and needs that are thrust upon the institution, and then choose wisely.

Our land grant universities and the colleges of agriculture (always to be used in the broadest of terms) have in the past and will continue in the future to benefit society through their ability to address public issues, facilitate public discourse, provide relevant knowledge to a broad array of audiences and constituents, and increase the probability for collaborative success. This has been true in the past, and must continue in the future. However there are challenges, the greatest of which is serving an ever expanding audience and clientele base with diminishing resources. Colleges of Agriculture while once focused on the needs of an agrarian public, now face a myriad of audiences, from the rural to the inner city, making the challenge of choosing and focusing on the agenda all the more difficult. In addition, while the base support for the colleges of agriculture in the land grant system has traditionally been from the agricultural community, today, that focus has been broadened to include the environmental sciences, natural resources, life sciences, and the economic and social sciences, in addition to the traditional applied agricultural disciplines.

To achieve the continued support of the public and to remain relevant within the structure of the modern land grant university will require a constructive dialogue with the public by implementing high priority programs. Of course, there is little point of a dialogue if the outcome is preordained and unchangeable, as many citizens and clientele groups believe. This trend of waning public support and confidence can be reversed, but it will take a concerted effort and lots of with

extensive listening and responding to the concerns, in addition to a reordering of the priorities.

To respond to the public concerns and priorities, the land grant university system requires a plan of action, by which it can seek input from the public constituencies, and develop an implementation effort. This will require the following:

- **Development of a Marketing Plan:** A marketing plan will require that each land grant institution understand who the institution serves as well as communicating a message to the general public that is consistent and focuses on public mandates and issues of concern. The mixed messages that continue to emanate from college and the university administration continues to be of concern to the public. Colleges of agriculture and the land grant university leadership, in general, must state and address their priorities and stick to them.
- **Meeting and Working with Focus Groups:** To fully understand the issues facing constituents, efforts must be made to establish and listen to focus groups with representation from all public constituencies with various demographic dimensions. In order to have a full understanding of the public issues facing those who rely on the colleges of agriculture, it will require public debate with all players to determine needs and set priorities.
- **Focus on the Customer:** The land grant colleges and universities must never forget the customer. They must be ever mindful that public support and empowerment derive from those who we serve, something that has been forgotten. It is the taxpayer who pays the bills, and who deserves to have something tangible in return, not simply an ivory tower!
- **Review Trends:** It is important that we understand what the public wants and needs in terms of land grant university services — something that has been overlooked in recent years. While it is convenient for the college and university to think that they know what the public wants, without engaging the public it is difficult to know if we are on the right track. The trend has been to listen, but often to only a few, many of whom have a personal agenda.

Unfortunately, the demands of the public have outpaced the ability of the land grant institutions to respond. These institutions are known for their dedication to serving the needs of society, but as society changes and has greater and more varied demands, the land grant universities must use the opportunity to renew and increase their commitment to society by assertively reforming to better serve the public. This is never more urgent than when the nation is in crisis, especially economic crisis.

Additionally, the nation's land grant universities must realize that they have extraordinary resources at their disposal. These resources must be used for the benefit of society.

- **The Power of Knowledge and Information:** The global information age focuses on the value of knowledge. Land grant institutions, and in fact, all universities regardless of their status, are richly blessed with faculty who discover, examine, organize, preserve, advance and transmit knowledge, information and values through their core principles – Teaching, Research and Public Service.
- **The Power of Dignity: The Power of a Distinguished Faculty:** When an institution of higher learning chooses its faculty and staff, it in large measure chooses its future. For any university, the faculty are the future and must embrace the goals and mission of the institution. Few, however, fully understand the goals of the institution and focus instead on personal achievement, not the betterment of students and the community, thus forsaking the underlying principles of the land grant mission.
- **The Power of Students:** Undergraduate education constitutes the strongest influence on elected officials as well as the strongest advocate base among alumni and other supporters of higher education. To help restore the place of higher education in the hearts and minds of the public and policymakers, the land grant institutions must make it clear to all that undergraduate education will be a high priority, and provide actual enhancements, not just lip service to this endeavor. Much too often, in the changing landscape, the land grant universities have failed to adequately address the needs of students, but have focused instead on research, and grants acquisition. As a result many undergraduates feel

their education is only an afterthought of the administration and faculty.

- **The Power of a Rich Heritage:** The land grant universities across this nation have built a legacy based upon outreach and public service. This has resulted in a solid reservoir of goodwill among user and constituent groups, that, if cultivated can be used to garner support. Too often in the recent past, this heritage has been squandered. It is critical that the vast resource of public goodwill toward the land grant institutions be re-captured. This can only be accomplished by giving high priority to seeking input and keeping the public informed of the contributions, goals, needs and opportunities of the land grant colleges and universities.

It is important to remember that this system of higher education was envisioned by a visionary – Justin Smith Morrill – whose contribution through the Land Grant Act of 1862 has had monumental consequences for this nation and on the lives of countless millions of people from all walks of life. For without the nations land grant universities, many citizens who were the first in their families to go to college and receive a degree, might never have had an opportunity for a higher education without these institutions.

Morrill clearly understood that knowledge was central to the improvement of society and the welfare of the people. Land grant universities have always strived to anticipate and meet society's changing needs. The system that has evolved from the Morrill Land Grant Act of 1862 was created to meet the need for a more inclusive and responsive education system. We have achieved this goal. The need to remember this goal is as valid today as it was in 1862.

This unique American system of education – the land grant system – is without peer and remains the envy of the world. Morrill would be content to see his dream realized.

Our nation's land grant universities now find themselves at a crossroads. Each university is committed to achieving excellence as the state's primary center for research and graduate education, and as the institution of choice for undergraduate students of exceptional ability. To realize these aspirations and to fulfill its mandates, today's university systems must advance knowledge and provide superior and innovative instruction in a broad range of academic disciplines and interdisciplinary fields. Today, our land grant universities must also employ their knowledge for the benefit of the economy and culture of the

state, the region, the nation, and beyond.

Excellence is the hallmark of any great university, and this attribute is evident in many ways, including the students it recruits and the depth and breadth of their educational experiences. The university must be committed to increasing the number of exceptionally able and talented undergraduate students and to providing them with the most innovative and challenging programs. On the other hand these same universities must also be willing to gamble on students that exhibit that something extra - those “*diamonds in the rough*”, for this is part of what the land grant experience is all about. Students must have opportunities to meet regularly with the finest professors the campus has to offer, to learn in small class environments and seminars, and experience a wide range of research and creative opportunities, both as individuals and most importantly as teams. Equally as important, the university must make every effort to seek as diverse a student body as achievable. Goals must be set high and extraordinary effort made to achieve success. The cost will be high, but worth it.

Extension and Outreach

It is clear upon reading and understanding the historical background on which the land grant universities were established, that they were to be socially involved, problem-solving institution. With the eventual federal funding that established the agricultural experiment stations in 1887 and Cooperative Extension in 1914, these institutions began to establish a community based educational network to share their resources and expertise with local residents (today—stakeholders!). What resulted is a unique system of higher education and outreach that has never been duplicated. It is a unique, and noble undertaking - one that has served America well for the last 150 years. Today, that system is at a crossroads.

In the broadest of terms, the mission of the land grant university is to make the latest and best information available to the public when and where they need it. At least in a perfect world! Traditionally, researchers and scientists in the land grant university system develop new techniques in response to stakeholder needs and then disseminate this new information and practices through Cooperative Extension and resident education. But the land grant universities were originally conceived to meet the needs of the rural, largely, farm-based population that existed in the 1800's. Obviously this rural, agricultural audience has shrunk to

the point where we must ask ourselves if we are living up to the promises made when these institutions were founded? Are we serving the needs of the current population, and / or are we focused on a minority, however vital that minority may be?

One challenge that all land grant universities face is one of modernization. That is not to say that our land grant universities have not changed. They have, but are the programs that are delivered by cooperative extension relevant to all citizens, now and well into the future? That seems to be the question that all land grant universities face. The bottom line is that the land grant university system, successful as it is, needs to keep pace with the needs of the time. To remain relevant, the land grant university of the 21st century must learn to serve an increasingly urban clientele just as well as they have serve the rural audiences and communities for the last 100 years. The role of the land grant university in cities and towns should be the same as the role in rural areas—helping people solve local problems. This is the very essence of the land grant mission and these universities are well-positioned to build on existing strengths and develop new and expanded research and educational programs that address critical needs of urban residents. Through Cooperative Extension the local networks are already well established, - the university in its fullest context must be able to make use of these networks for the betterment of all citizens. Far too few land grant universities continue to fully incorporate the Cooperative Extension model of outreach into their programs.

The Future

The primary role of land grant universities has always been service to meet people's changing needs. The land grant system as we know it today has been evolving since it was created in 1862 to answer the call for a more inclusive and responsive educational system. This need is as valid today as it was in 1862, perhaps even more so, given societal needs and challenges of a far more diverse population. As it was in 1862 and 1890, education is central to the betterment of society. As we enter the 21st century the land grant universities across this nation need to heighten their passion for and commitment to the land grant idea by pledging even greater effort to an educational legacy that has impacted human destiny in remarkable ways.

The land grant system as we know it today is without peer. It is the envy and

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hope of a hungry world. America's land grant institutions - all of them the people's universities—are a marvelous enterprise that has served our nation superbly. But past performance will not secure future preeminence. In large part, the future is there for us to create, but there must be vision, focus and direction. Since land grant universities are first and foremost about people, revitalization of these institutions must begin with renewal of the people who comprise them. Those who provide the direction to the nation's land grant universities must rethink their commitment and the direction of the programs they implement. Are these programs meeting contemporary needs? The land grant system will never be better than the capabilities and commitments of those who are providing the leadership.

Land grant institutions must invest more in public perceptions. The public needs to know more about the benefits and contributions of land grant colleges and universities to our nation. The time has come for our land grant institutions to exploit the various media to increase public awareness with regard to the dividends being earned on public investments through education, research and outreach activities. The awareness must be used to increase the collective efforts of concerned citizens, business and governmental leaders and professional groups.

When Abraham Lincoln signed the Morrill Land Grant Act nearly 150 years ago during the height of the Civil War, most of our nation's citizens were farmers and / or farm workers. At that time Americans spent nearly 50% of their income on food. Today, less than two percent of our population produced enough food to feed our nation, and export more than 25% of that produced. Each farmer in the United States provides food for more than 150 people around the world. And for convenient, health, reliable, safe food, our nation's consumers spend less than 10% of their total disposable income on food — one of the best food bargains on planet earth. Most of these advances in the efficiency of production and marketing of food and fiber are attributable directly or indirectly to this nation's land grant colleges and universities.

Public perception of the land grant system is an attitude. It is a reflection of the receipts of an educational system that has served the United States exceptionally well. It is an openness to old ideals and new ideas, an eagerness to listen to the public and an enduring desire to serve students and society. It is a commitment to the support and growth of a proven system with demonstrated flexibility and a

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willingness to change that will guarantee the continued success of the nations land grant universities in the 21st century, thus again achieving the shared vision and commitment to an ideal that was transposed into legislation by Justin Smith Morrill.

As we enter the 21st century we have a mandate to further focus and revitalize the legacy of Vermont's preeminent native son who gave us through his legislation - the land grant acts of 1862 and 1890 - which provide the foundation of today's land grant universities and all that they stand for. While there is likely never to be another Justin Smith Morrill, we should aspire to be more like him in our philosophy and caring concern for the education of the poor and the privileged alike. Indeed, the land grant university provides services needed by the people in these changing times and for the betterment of society as we enter this new millennium. Perhaps it is time to not only reflect, but to make sure that today's students understand the history, wisdom and unique philosophy of this great statesman, Justin Smith Morrill. Only with a clear vision of the past, will tomorrow's land grant university leaders be able to preserve this vision of educational opportunities for all, coupled with the need to serve the public through a system of informal education experiences.

The land grant university system has a rich heritage to preserve and extend. Each generation since Senator Morrill has found the determination to preserve, build, perpetuate and improve the uniqueness of this public educational system that incorporates education, research and public service. Perhaps it is time again to re-instill these principles throughout the university.

Chronology of Federal Legislation Affecting Public Higher Education

1787 – Northwest Ordinance is passed, authorizing the sale of public land for support of education, thus establishing the land grant principle

1862 – First Morrill Act is passed and signed by President Abraham Lincoln, donating public lands to the several states, the sale of which is for *the “endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactic , to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life”*.

1862 - The Homestead Act is passed and thus provided the resource base for the initial mandated endowments to support the land grant colleges and universities in the First Morrill Act.

1887 – The Hatch Act is passed, mandating the creation of agricultural experiment stations for scientific research.

1890 – The Second Morrill Act is passed, providing further endowment for colleges. Part of this funding is to be used for institutions for black students, leading to the creation of the 17 historically black land grant colleges.

1907 – Nelson Amendment to the Morrill Acts of 1862 and 1890 is passed, providing further increased appropriations to land grant institutions.

1908 – Benefits of the Second Morrill Act and the Nelson Amendment are extended to Puerto Rico.

1914 – The Smith-Lever Act is passed, providing federal support for land grant institutions to offer educational programs to enhance the application of useful and practical information beyond their campuses through cooperative extension efforts with states and local communities.

1934 – Congress creates the National Youth Administration to enable college students to earn money by performing educationally useful tasks and to continue

their studies.

1935 – The Bankhead-Jones Act adds to the annual appropriations for land grant institutions.

1942 – The General Equivalency Diploma (GED) program and the Military Evaluations Programs for veterans who left school to serve in World War II are established.

1944 – The Servicemen's Readjustment Act (G.I. Bill of Rights) , Public Law 346, provides for the higher education of veterans.

1945 – The Bankhead-Flannagan Act furthers the development of cooperative extension work in agriculture and home economics.

1946 – Congress passes the Fulbright Act (Public Law 584) to enable Americans to study and teach abroad.

1946 – The United Nations Educational, Scientific, and cultural Organization (UNESCO) is established, which among its many other activities, provides international exchange opportunities for American scholars and administrators.

1948 – The U.S. Information and Educational Exchange Act (the Smith-Mundt Act) provides for the international exchange of teachers, students, lecturers, and other specialists.

1950 – Point Four Program in enacted by Congress (the Foreign Economic Assistance Act, subsequently called the International Cooperation Administration, then renamed the Agency for International Development, or AIS).

1950 – Congress creates the National Science Foundation (NSF).

1950 – The Land Grant Endowment Funds Bill protects federal and private endowments from unilateral federal action to divert them from the purposes for which they were granted.

1952 – Veterans' Readjustment Assistance Act (Korean G.I. Bill of Rights) is passed.

1958 – National Defense Education Act (NDFEA) provides college student

loans, graduate fellowships, and aid for the improvement in teaching of science, mathematics, and modern languages.

1960 – Land grant status for the University of Hawaii establishes a new precedent. Since there is no longer adequate federal land to donate for the creation of an endowment, the University of Hawaii is given a \$6 million endowment in lieu of land.

1961 – Report of the U.S. Commission on Civil Rights, “Equal Protection of the Laws in Public Higher Education: 1960” recommends that federal funds be disbursed “only to such publicly controlled institutions of higher education as do not discriminate on the grounds of race, color, religion or national origin”.

1963 – The Higher Education Act (HEA) of 1963 recognized federal responsibility for aid to colleges and universities in the form of grants and loans for the construction of academic facilities.

1964 – The National Defense Education Act Amendments authorized major changes to expand and strengthen the graduate fellowship program and to eliminate discriminatory institutional limitation on load-fund grants.

1965 – The Higher Education Act of 1965 is passed, funding many higher education programs, including student aid.

1965 – The Housing and Urban Development Act of 1965 establishes a maximum interest rate of three percent for the College Housing Loan Program to provide relief for students from the high cost of college attendance.

1966 – The National Defense Education Project is passed to coordinate the federal role in international education. Later this project is incorporated as Title VI of the Higher Education Act.

1967 – The District of Columbia Post Secondary Education Reorganization Act gives land grant status to Federal City College, now the University of the District of Columbia. This established a precedent for federal trust areas to participate in the land grant system

1968 – The Navajo Community College Act creates the first tribally controlled college.

CHRONOLOGY OF FEDERAL LEGISLATION

1972 – University of Guam, Northern Marianas College, the Community Colleges of American Samoa and Micronesia, and the College of the Virgin Islands secure land grant status through the education Amendments of 1972.

1978 – The Tribally Controlled community College Act stimulates the development of a variety of technical, two-year, four-year, and graduate colleges presently located on or near tribal reservations.

1979 – The U. S. Department of Education is established.

1991 – National Security Education Act (Boren Bill) is enacted to provide support for undergraduate study abroad and graduate work in foreign languages and areas studies.

1992 – President Bush signs the Higher Education Act Amendments, reauthorizing the 1965 Higher Education Act.

1993 – The National and Community Service Trust Act established a corporation to coordinate programs through which students receive minimum wage stipends and tuition benefits in return for community service.

1993 – The federal government begins “direct lending” , a program that enables colleges and universities to provide loans using federal funds directly to students , thus avoiding private lenders and streamlining the process.

1993 – The American Indian Higher Education Consortium (AIHEC), supported by NASULGC , launches a campaign to secure land grant status for 29 Native American Colleges located in 12 states and serving 16,000 students.

1994 – Land grant status is conferred on 29 Native American colleges as a provision of the Elementary and Secondary Education Reauthorization Act. The bill also authorized a \$23 million endowment for the program, to be established over a 5-year period. The colleges are to receive interest payments from the endowment each year.

2002 – The 2002 Farm Bill, section 7201 granted land grant status to the White Earth Tribal and Community College of Mahnomen, Minnesota.

The Land Grant Acts

To clearly understand the impacts and the better appreciate the dynamic public mission of today's land grant institutions, it is instructive to review the history of the federal legislations that led to their creation and to review the actual bills and subsequent ruling that impacted the interpretation of these acts. While there are many legislative acts that could be included in any discussion of the Morrill Land Grant Act, I have included only those which have had the most impact on the nation's land grant colleges and universities, beginning with the Act of 1862 – The Morrill Act.

- *Act of 1862 Donating Lands for Colleges of Agriculture and Mechanic Arts (The First Morrill Act)*
- *Homestead Act of 1862*
- *Act of 1887 Establishing Agricultural Experiment Stations (The Hatch Act)*
- *Act of 1890 Providing for the Further Endowment and Support of Colleges of Agriculture and Mechanic Arts (The Second Morrill Act)*
- *Smith-Lever Act of 1914*
- *Bankhead Jones Act of 1935*



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***Act of 1862 Donating Lands for Colleges of
Agriculture and Mechanic Arts
(The First Morrill Act)***

(Signed by President Lincoln on July 2, 1862, this act made it possible for new western states to establish colleges for their citizens. The new land-grant institutions, which emphasized agriculture and mechanic arts, opened opportunities to thousands of farmers and working people previously excluded from higher education.)

An Act Donating Public Lands to the several States and Territories which may provide Colleges for the Benefit of Agriculture and Mechanic Arts.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,(1) That there be granted to the several States, (2) for the purpose hereinafter mentioned, an amount of public land, to be apportioned to each State a quantity equal to thirty thousand acres for each senator and representative in Congress to which the States are respectively entitled by the apportionment under the census of eighteen hundred and sixty:(3) *Provided*, That no mineral lands shall be selected or purchased under the provisions of this Act.

Section 2. *And be it further enacted*, That the land aforesaid, after being surveyed, shall be apportioned to the several States in sections or subdivisions of sections, not less than one quarter of a section; and whenever there are public lands in a State subject to sale at private entry at one dollar and twenty-five cents per acre, the quantity to which said State shall be entitled shall be selected from such lands within the limits of such State, and the Secretary of the Interior is hereby directed to issue to each of the States in which there is not the quantity of public lands subject to sale at private entry at one dollar and twenty-five cents per acre, to which said State may be entitled under the provisions of this act, land scrip to the amount in acres for the deficiency of its distributive share: said scrip to be sold by said States and the proceeds thereof applied to the uses and purposes prescribed in this Act, and for no other purpose whatsoever: *Provided*, That in no case shall any State to which land scrip may thus be issued be allowed to locate the same within the limits of any other State, or of any Territory of the

United States, but their assignees may thus locate said land scrip upon any of the unappropriated lands of the United States subject to the sale at private entry at one dollar and twenty-five cents, or less, per acre: And provided, further, That not more than one million acres shall be located by such assignees in any one of the States: And provided, further, That no such location shall be made before one year from the passage of this Act.

Section 3. *And be it further enacted*, That all the expenses of management, superintendence, and taxes from date of selection of said lands, previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received there from, shall be paid by the States to which they may belong, out of the treasury of said States, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purposes hereinafter mentioned.

Section 4. That all moneys derived from the sales of lands aforesaid by the States to which lands are apportioned and from the sales of land scrip hereinbefore provided for shall be invested in bonds of the United States or of the States or some other safe bonds;(7) or the same may be invested by the States having no State bonds in any manner after the legislatures of such States shall have assented thereto and engaged that such funds shall yield a fair and reasonable rate of return, to be fixed by the State legislatures, and that the principal thereof shall forever remain unimpaired: (8) *Provided*, That the moneys so invested or loaned shall constitute a perpetual fund, the capital of which shall remain forever undiminished (except so far as may be provided in section 5 of this Act), and the interest of which shall be inviolably appropriated, by each State which may take and claim the benefit of this Act, to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes on the several pursuits and professions in life.

Section 5. *And be it further enacted*, That the grant of land and land scrip hereby authorized shall be made on the following conditions, to which, as well as to the provisions hereinbefore contained, the previous assent of the several States shall be signified by legislative acts:

First. If any portion of the fund invested, as provided by the foregoing section, or any portion of the interest thereon, shall, by any action or contingency, be diminished or lost, it shall be replaced by the State to which it belongs, so that the capital of the fund shall remain forever undiminished; and the annual interest shall be regularly applied without diminution to the purposes mentioned in the fourth section of this act, except that a sum, not exceeding ten per centum upon the amount received by any State under the provisions of this act may be expended for the purchase of lands for sites or experimental farms, whenever authorized by the respective legislatures of said States.

Second. No portion of said fund, nor the interest thereon, shall be applied, directly or indirectly, under any pretence whatever, to the purchase, erection, preservation, or repair of any building or buildings.

Third. Any State which may take and claim the benefit of the provisions of this act shall provide, within five years from the time of its acceptance as provided in subdivision seven of this section,(10) at least not less than one college, as described in the fourth section of this act, or the grant to such State shall cease; and said State shall be bound to pay the United States the amount received of any lands previously sold; and that the title to purchasers under the State shall be valid.

Fourth. An annual report shall be made regarding the progress of each college, recording any improvements and experiments made, with their cost and results, and such other matters, including State industrial and economical statistics, as may be supposed useful; one copy of which shall be transmitted by mail [free](11) by each, to all the other colleges which may be endowed under the provisions of this act, and also one copy to the Secretary of the Interior.

Fifth. When lands shall be selected from those which have been raised to double the minimum price, in consequence of railroad grants, they shall be computed to the States at the maximum price, and the number of acres proportionally diminished.

Sixth. No State while in a condition of rebellion or insurrection against the government of the United States shall be entitled to the benefit of this act.

Seventh. No State shall be entitled to the benefits of this act unless it shall express its acceptance thereof by its legislature within three years from July 23, 1866:(12) Provided, That when any Territory shall become a State and be admitted to the Union, such a new State shall be entitled to the benefits of the said act of July two, eighteen hundred and sixty-two, by expressing the acceptance therein required within three years from the date of its admission into the Union, and providing the college or colleges within five years after such acceptance, as prescribed in this act. (13)

Section 6. (Repealed later) That land scrip issued under the provisions of this act shall not be subject to location until after the first day of January, 1863.

Section 7. *And be it further enacted,* That the land officers shall received the same fees for locating land scrip issued under the provisions of this act as is now allowed for the location of military bounty land warrants under existing laws: Provided, their maximum compensation shall not be thereby increased.

Section 8. *And be it further enacted,* That the Governors of the several States to which scrip shall be issued under this act shall be required to report annually to Congress all sales made of such scrip until the whole shall be disposed of, the amount received for the same, and what appropriation has been made of the proceeds.

Act of 1866 Amending the First Morrill Act

(An act to amend the fifth section of an act entitled “An Act donating public lands to the several States and Territories which may provide colleges for the benefit of agricultural and the mechanic arts”, approved July 2, 1862 , so as to extend the time within which the provisions of said act shall be accepted and such colleges established).

Be it enacted by the Senate and House of Representatives of the United States of America in Congress Assembled, That the time in which the several States may comply with the provision of the act of July 2, 1862 , entitled, An Act donating public lands to the several States and Territories which may provide colleges for the benefit of Agriculture an the mechanic arts”, is hereby extended so that the acceptance of the benefits of the said act may be expressed within three years from the passage of this act, and the college required by the said act may be

provided within five years from the date of the filing of such acceptance with the Commissioner of the General Land Office: *Provided*, That when any territory shall become a State and be admitted into the Union such new States shall be entitled to the benefits of the said act of July 2, 1862, by expressing the acceptance therein required within three years from the date of its admission into the Union, and providing the college or colleges within five years after such acceptance, as prescribed in this act: *Provided further*, That any State which has heretofore expressed its acceptance of the act herein referred to shall have the period of five years within which to provide at least one college as described in the fourth section of said act, after the time for providing said college, according to the act of July 2, 1862, shall have expired. (Approved July 23, 1866)

Further Rulings and Opinions on the Act of July 2, 1862

- **Accounting and reports:** “Accounts should be kept by the proper officers” of all the States having grants “showing all the facts related to the sale and leasing of lands granted for agricultural colleges, and the receipt, investment, and disposition of the proceeds arising from such sales and leases; and such officers should, when called on to do so, timely report such facts to the Secretary of the Interior or permit an ascertainment of such facts through inspection and examination of their records by some officer of the government or other person designated by the Secretary of the Interior of that purpose.”

The representatives of the Office of Education or some other officer designated by the Secretary of the Interior should, through reports from the officers of each of the States, or otherwise, from time to time as the occasion may require, ascertain all facts and conditions tending to show the manner in which the funds arising from the land granted for agricultural colleges are being handled, invested, and disposed of; or furnish a full statement thereof to the Secretary of the Interior. –

Rulings approved by the Secretary of the Interior, October 11, 1923.

- In order that the Department of the Interior through the Commissioner of Education may be able to ascertain whether or not the States are complying with the provisions of the act of 1862, the institutions receiving the benefit of that act are required to submit a statement of the disbursements of the annual income received by them under said act. –

Ruling of the Secretary of the Interior, July 11, 1930.

- **Division of Funds** – “A State may by appropriate legislation divide the original” 1862 land grant “fund into two parts and provide that the interest of each part shall be available to a particular college and vest in such college, as an agency of the state, the duty of investing its particular part of the funds in bonds of the united states or of the State or some other safe bonds, the determination of the safety of which is to rest with the college.” *Ruling of the Secretary of the Interior September 15, 1935.*

- **Income and its use** – “The income” from the 1862 land grant endowment “is not a fiscal year or limited fund. It must remain forever at the disposal of the institution entitled to the benefit of the fund. Nor may it ever, be covered into the general State funds or used for general State purposes. There can be no default to the State by the institution.”

“Proceeds from rentals, sale of timber rights, water rights, and other privileges, and interest on deferred payments of purchase money partake of the same character as the income from invested funds, and must be devoted, without diminution, to the purposes” of the act.

“The only restriction placed by the Act of Congress of July 2, 1862 , upon the expenditures of the income from the sale of public lands granted for the endowment of colleges of agriculture and the mechanic arts and the investment of the purchase money is that no part of such income may be expended for the purchase, erection, preservation, or repair of any building or buildings, nor may this income be used for the purchase of land.” *Ruling of the Secretary of the Interior, May 23, 1916.*

- **Instruction for Women Students** – Instruction in the industries for women in included in instruction in agriculture and the mechanic arts. – *Ruling of the Secretary of the Interior, May 23, 1916.*
- **Military Tactics** – An agricultural college which offers a proper, substantial course in military tactics complies sufficiently with the requirements as to military tactics in the act of July 2, 1862, and the other acts, even though the students at that institution are not compelled to take that course – *Opinion of the Attorney General, June 30, 1930.*

- **Default of the Act of 1862** – The act of 1890 with the amendment of 1907 is supplementary to the act of 1862; therefore any default of the provisions of the act of 1862 renders the State liable for non certification for the annual installments of the funds appropriated by the acts of 1890 and 1907. *Ruling of the Secretary of the Interior, May 23, 1916.*

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HOMESTEAD ACT OF 1862

Act of 1862 To secure Homestead to actual Settlers on Public Domain

(The Homestead Act of 1862 was passed by the U.S. Congress. It provided for the transfer of 160 acres (65 hectares) of unoccupied public land to each homesteader on payment of a nominal fee after five years of residence; land could also be acquired after six months of residence at \$1.25 an acre. The government had previously sold land to settlers in the West for revenue purposes. As the West became politically stronger, however, pressure was increased upon Congress to guarantee free land to settlers. Several bills providing for free distribution of land were defeated in Congress; in 1860 a bill was passed in Congress but was vetoed by President Buchanan. With the ascendancy of the Republican party (which had committed itself to homestead legislation) and with the secession of the South (which had opposed free distribution of land), the Homestead Act, sponsored by Galusha A. Grow, became law. In 1976 it expired in all the states but Alaska, where it ended in 1986. The Homestead Act was to become a critical component of the legislation that enabled the success of the land grant act and the emerging land grant institutions, as without such there would not have been the resources to proceed with the endowments to the colleges, given the state of the nation at the time – immersed in a Civil War.)

An Act to secure Homestead to actual Settlers on Public Domain.

Be It enacted by the Senate and House of Representatives of the United States of America in assembled, That any person who is the head of a family, or who has arrived at the age of twenty-one years, and is a citizen of the United States, or who shall have filed his declaration intention to become such, as required by the naturalization laws of the United States, and who has never borne arms against the United States Government or given aid and comfort to its enemies, shall, from and after the first January, eighteen hundred and sixty-three, be entitled to enter one quarter section or a less quantity of unappropriated public lands, upon which said person may have filed a preemption claim, or which may, at the time the application is made, be subject to preemption at one dollar and twenty-five cents, or less, per acre; or eighty acres or less of such unappropriated lands, at two dollars and fifty cents per acre, to be located in a body, in conformity to the legal subdivision of the public lands, and after the same shall have been surveyed: Provided, That any person owning and residing on land

may, under the provisions of this act, enter other land lying contiguous to his or her said land, which shall not, with the land so already owned and occupied, exceed in the aggregate one hundred and sixty acres.

Section 2. *And be it further enacted*, That the person applying for the benefit of this act shall, upon application to the register of the land office in which he or she is about to make such entry, make affidavit before the said register or receiver that he or she is the head of a family, or is twenty-one year or more of age, or shall have performed service in the army or navy of the United States, and that he has never borne arms against the Government of the United States or given aid and comfort to its enemies, and that such application is made for his or her exclusive use and benefit, and that said entry is made for the purpose of actual settlement and cultivation, and not either directly or indirectly for the use or benefit of any other person or person whomever; and upon filing the said affidavit with register or receiver, and on payment of ten dollars, he or she shall thereupon be permitted to enter the quantity of land specified: *Provided, however*, That no certificate shall be given or patent issued therefor until the expiration of five years from the date of such entry; and if, at the expiration of such time, or at any time within two years thereafter; the person making such entry; or, if he be dead, his widow; or in case of her death, his heirs or devisee; or in case of a widow making such entry, her heirs or devisee, in case of her death; shall prove by two credible witnesses that he, she, or they have resided upon or cultivated the same for the term of five years immediately succeeding the time of filing the affidavit aforesaid, and shall make affidavit that no part of said land has been alienated, and that he has borne true allegiance to the Government of the United States; then, in such case, he, she, or they, if at that time a citizen of the United States, shall be entitled to a patent, as in other cases provided for by law; *And provided further*, That in case of the death of both father and mother, leaving an infant child or children, under twenty-one years of age, the right and fee shall ensure to the benefit of said infant child or children; and the executor, administrator or guardian may, at any time within two years after the death of the surviving parent, and in accordance with the laws of the State in which such children for the time being have their domicile, sell said land for the benefit of said infants, but for no other purpose; and the purchaser shall acquire the absolute title by the purchase, and be entitled to a patent from the United States, on payment of the office fees and sum of money herein specified.

Section 3. *And be it further enacted*, That the register of the land office shall

note all such applications on the tract books and plats of his office, and keep a register of all such entries, and make return thereof to the General Land Office, together with the proof upon which they have been founded.

Section 4. *And be it further enacted*, That no lands acquired under the provisions of this act shall in any event become liable to the satisfaction of any debt of debts contracted prior to the issuing of the patent therefor.

Section 5. *And be it further enacted*, That if, at any time after the filing of the affidavit, as required in the second section of this act, and before the expiration of the five years aforesaid, it shall be proven, after due notice to the settler, to the satisfaction of the register of the land office, that the person having filed such affidavit shall have actually changed his or her residence or abandoned the said land for more than six months at any time, then and in that event the land so entered shall revert to the government.

Section 6. *And be it further enacted*, That no individual shall be permitted to acquire title to more than one quarter section under the provision of this act; and that the Commissioner of the General Land Office is hereby required to prepare and issue such rules and regulations, consistent with this act, as shall be necessary and proper to carry its provision into effect; and that the registers and receivers of the several land offices shall be entitled to receive the same compensation for any lands entered under the provision of this act that they are now entitled to receive when the same quantity of land is entered with money, one half to be paid by the person making the application at the time of so doing, and the other half on the issue of the certificate by the person to whom it may be issued; but this shall not be construed to enlarge the maximum of compensation now prescribed by law for any register or receiver; *Provided*, That nothing contained in this act shall be so construed as to impair or interfere in any manner whatever with existing preemption rights. *And provided, further*, That all persons who may have filed their applications for a preemption right prior to the passage of this act, shall be entitled to all privileges of this act: *Provided, further*, That no person who has served, or may hereafter serve, for a period of not less than fourteen days in the army or navy of the United States, either regular or volunteer, under the laws thereof, during the existence of an actual war, domestic or foreign, shall be deprived of the benefits of this act on account of not having attained the age of twenty-one years.

Section 7. *And be it further enacted*, That the fifth section of the act entitled "An act in addition to an act more effectually to provide for the punishment of certain crimes against the United States, and for other purposes," approved the third of March, in the year eighteen hundred and fifty-seven, shall extend to all oaths, affirmations, and affidavits, required or authorized by this act.

Section 8. *And be it further enacted*, That nothing in this act shall be so construed as to prevent any person who has availed him or herself of the benefits of the first section of this act, from paying the minimum price, or the price to which the same may have graduated, for the quantity of land so entered at any time before the expiration of the five years, and obtaining a patent therefore from the government, as in other cases provided by law, on making proof of settlement and cultivation as provided by existing laws granting preemption rights

Approved, May 20, 1862.

Act of 1887 Establishing Agricultural Experiment Stations

The Hatch Act

(The Hatch Act of 1887 authorized federal grant fund for direct payment to each state that would establish an agricultural experiment station in connection with the Land Grant College or university established under the provision of the Morrill /land grant act of 1862 and of all its supplementary acts.

In 1955 the Hatch Act of 1887 was amended to bring about consolidation of several federal laws relating to the appropriation of federal grant funds to the support of agricultural experiment station in the states, Alaska, Hawaii and Puerto Rico. With this amendment, the Adams Act of 1906, and the Purnell Act of 1925, as well as the Bankhead-Jones Act of 1935, and the 1945 amendment to the Bankhead-Jones Act as the latter two laws applied to agricultural experiment stations were repealed.)

Chap. 314. -- AN ACT to establish agricultural experiment stations in connection with the colleges established in several States under the provisions of an act approved July second, eighteen hundred and sixty-two, and of the acts supplementary thereto

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Section 1. It is the policy of Congress to continue the agricultural research at State agricultural experiment stations which has been encouraged and supported by the Hatch Act of 1887, the Adams Act of 1906, the Purnell Act of 1925, the Bankhead-Jones Act of 1935, and title I, section 9, of that Act as added by the Act of August 14, 1946, and Acts amendatory and supplementary thereto, and to promote the efficiency of such research by a codification and simplification of such laws. As used in this Act the terms "State" or "States" are defined to include the several States, including the District of Columbia,(3) Alaska, Hawaii, Puerto Rico, Guam and the Virgin Islands.(4) As used in this Act, the term "State agricultural experiment station" means a department which shall have been established, under the direction of the college or university or agricultural

departments of the college or university in each State in accordance with an Act approved July 2, 1862 (12 Stat.503), entitled "An Act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts";(5) or such other substantially equivalent arrangements as any State shall determine.

Section 2. It is further the policy of the Congress to promote the efficient production, marketing, distribution, and utilization of products of the farm as essential to the health and welfare of our peoples and to promote a sound and prosperous agriculture and rural life as indispensable to the maintenance of maximum employment and national prosperity and security. It is also the intent of Congress to assure agriculture a position in research equal to that of industry, which will aid in maintaining an equitable balance between agriculture and other segments of our economy. It shall be the object and duty of the State agricultural experiment stations through the expenditure of the appropriations hereinafter authorized to conduct original and other researches, investigations, and experiments bearing directly on and contributing to the establishment and maintenance of a permanent and effective agricultural industry of the United States, including researches basic to the problems of agriculture in its broadest aspects, and such investigations as have for their purpose and development and improvement of the rural home and rural life and the maximum contribution by agriculture to the welfare of the consumer, as may be deemed advisable, having due regard to the varying conditions and needs of the respective states.

Section 3. (a) There are hereby authorized to be appropriated for the purposes of this Act such sums as Congress may from time to time determine to be necessary.

(b) (1) Out of such sums each State shall be entitled to receive annually a sum of money equal to and subject to the same requirement as to use for marketing research projects as the sums received from Federal appropriations for State agricultural experiment stations for the fiscal year 1955, except the amounts heretofore made available from the fund known as the "Regional research fund, Office of Experiment Stations" shall continue to be available for support of cooperative regional projects as defined in subsection 3(c)(3), and the said fund shall be designated "Regional research fund, State agricultural experiment stations", and the Secretary of Agriculture shall be entitled to receive annually for the administration of this Act, a sum not less than that available for

this purpose for the fiscal year ending June 30, 1955: Provided, That if the appropriations hereunder available for distribution in any fiscal year are less than those for the fiscal year 1955 the allotment to each State and the amounts for Federal administration and the regional research fund shall be reduced in proportion to the amount of such reduction.

(2) There is authorized to be appropriated for the fiscal year ending June 30, 1973, and for each fiscal year thereafter, for payment to the Virgin Islands and Guam, \$100,000 each, which sums shall be in addition to the sums appropriated for several States of the United States and Puerto Rico under the provisions of this section. The amount paid by the Federal Government to the Virgin Islands and Guam pursuant to this paragraph shall not exceed during any fiscal year, except the fiscal years ending June 30, 1971, and June 30, 1972, when such amount may be used to pay the total cost of providing services pursuant to this Act, the amount available and budgeted for expenditure by the Virgin Islands and Guam for the purposes of this Act.

(c) Any sums made available by the Congress in addition to those provided for in subsection (b) hereof for the State agricultural experiment station work shall be distributed as follows:

1. Twenty per centum shall be allotted equally to each State;
2. Not less than 52 per centum of such sums shall be allotted to each State, as follows: One-half in an amount which bears the same ratio to the total amount to be allotted as the rural population of the State bears to the total rural population of all the States as determined by the last preceding decennial census current at the time each such additional sum is first appropriated; and one-half in an amount which bears the same ratio to the total amount to be allotted as the farm population of all the States as determined by the last preceding decennial census current at the time such additional sum is first appropriated;
3. Not more than 25 per centum shall be allotted to the States for cooperative research in which two or more State agricultural experiment stations are cooperating to solve problems that concern the agriculture of more than one State. The funds available for such purposes, together with funds available pursuant to subsection (b) hereof for like purpose shall be designated as the "Regional research fund, State agricultural experiment

stations", and shall be used only for such cooperative regional projects as are recommended by a committee of nine persons elected by and representing the directors of the State agricultural experiment stations, and approved by the Secretary of Agriculture. The necessary travel expenses of the committee of nine persons in performance of their duties may be paid from the fund established by this paragraph.

4. (Repealed)(9)

5. Three per centum shall be available to the Secretary of Agriculture for administration of this Act. These administrative funds may be used for transportation of scientists who are not officers or employees of the United States to research meetings convened for the purpose of assessing research opportunities or research planning.(10)

(d) Of any amount in excess of \$90,000 available under this Act for allotment to any State, exclusive of the regional research fund, State agricultural experiment stations, no allotment and no payments thereof shall be made in excess of the amount which the State makes available out of its own funds for research for the establishment and maintenance of facilities necessary for the prosecution of such research: And provided further, That if any State fails to make available for such research purposes for any fiscal year a sum equal to the amount in excess of \$90,000 to which it may be entitled for such year, the remainder of such amount shall be withheld by the Secretary of Agriculture.

(e) "Administration" as used in this section shall include participation in planning and coordinating cooperative regional research as defined in subsection 3(c)3.

(f) In making payments to States, the Secretary of Agriculture is authorized to adjust any such payment to the nearest dollar.

Section 4. Moneys appropriated pursuant to this Act shall also be available, in addition to meeting expenses for research and investigations conducted under the authority of section 2, for printing and disseminating the results of such research, retirement of employees subject to the provisions of an Act approved March 4,

1940 (54 Stat.39), administrative planning and direction, and for the purchase and rental of land and construction, acquisition, alteration, or repair of buildings necessary for conducting research. The State agricultural experiment stations are authorized to plan and conduct any research authorized under section 2 of this Act in cooperation with each other and such other agencies and individuals as may contribute to the solution of the agricultural problems involved, and moneys appropriated pursuant to this Act shall be available for paying the necessary expenses of planning, coordinating, and conducting such cooperative research.

Section 5. Sums available for allotment to the States under the terms of this Act, excluding the regional research fund authorized by subsection 3(c)3, shall be paid to each State agricultural experiment station in equal quarterly payments beginning on the first day of October of each fiscal year upon vouchers approved by the Secretary of Agriculture. Each such station authorized to receive allotted funds shall have a chief administrative officer known as a director, and a treasurer or other officer appointed by the governing board of the station. Such treasurer or other officer shall receive and account for all funds allotted to the State under the provisions of this Act and shall report, with the approval of the director to the Secretary of Agriculture on or before the first day of December of each year a detailed statement of the amount received under provisions of this Act during the preceding fiscal year, and of its disbursement on schedules prescribed by the Secretary of Agriculture. If any portion of the allotted moneys received by the authorized receiving officer of any State agricultural experiment station shall by any action of contingency be diminished, lost, or misapplied, it shall be replaced by the State concerned and until so replaced no subsequent appropriation shall be allotted or paid to such State.

Section 6. Bulletins, reports, periodicals, reprints or articles, and other publications necessary for the dissemination of results of the researches and experiments, including lists of publications available for distribution by the experiment stations, shall be transmitted in the mails of the United States under penalty indicia: Provided, however, That each publication shall bear such indicia as are prescribed by the Postmaster General may from time to time prescribe. Such publications may be mailed from the principal place of business of the station or from an established subunit of said station.

Section 7. The Secretary of Agriculture is hereby charged with the responsibility for the proper administration of this Act, and is authorized and directed to

prescribe such rules and regulations as may be necessary to carry out its provisions. It shall be the duty of the Secretary to furnish such advice and assistance as will best promote the purposes of this Act, including participation in coordination of research initiated under this Act by the State agricultural experiment stations, from time to time to indicate such lines of inquiry as to him seem most important, and to encourage and assist in the establishment and maintenance of cooperation by and between the several State agricultural experiment stations, and between the stations and the United States Department of Agriculture.

On or before the first day of October in each year after the passage of this Act, the Secretary of Agriculture shall ascertain as to each State whether it is entitled to receive its share of the annual appropriations for agricultural experiment stations under this Act and the amount which thereupon each is entitled, respectively, to receive.

Whenever it shall appear to the Secretary of Agriculture from the annual statement of receipts and expenditures of funds by any State agricultural experiment station that any portion of the preceding annual appropriation allotted to the station under this Act remains unexpended, such amount shall be deducted from the next succeeding annual allotment to the State concerned.

If the Secretary of Agriculture shall withhold from any State any portion of the appropriations available for allotment, the facts and reasons therefor shall be reported to the President and the amount involved shall be kept separate in the Treasury until the close of the next Congress. If the next Congress shall not direct such sum to be paid, it shall be carried to surplus.

Section 8. Nothing in this Act shall be construed to impair or modify the legal relation existing between any of the colleges or universities under whose direction State agricultural experiment stations have been established and the government of the States in which they are respectively located. States having agricultural experiment stations separate from such colleges or universities and established by law, shall be authorized to apply such benefits to research at stations so established by such States: Provided, That in any State in which more than one such college, university, or agricultural experiment station has been established the appropriations made pursuant to this Act for such State shall be divided between such institutions as the legislature of such State shall direct.

Section 9. The Congress may at any time, amend, suspend, or repeal any or all of the provisions of this Act.

Act of March 2, 1887;(1) ch. 314,24 stat.440,7 U.S.C.361a et seq.

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Act of 1890 Providing for the Further Endowment and Support of Colleges of Agriculture and Mechanic Arts

The Second Morrill Act

(An act to apply a portion of the proceeds of the public lands to the more complete endowment and support of the Black colleges for the benefit of agriculture and mechanic arts established under the provisions of an Act of Congress approved July 1862.)

An Act to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts established under the provisions of an act of Congress approved July second, eighteen hundred and sixty-two.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be any hereby is, annually appropriated, out of any money in the Treasury not otherwise appropriated, arising from the sales of public lands; to be paid as hereinafter provided to each State and Territory for the more complete endowment and maintenance of colleges for the benefit of agriculture and mechanic arts now established or which may be hereafter established, in accordance with an act of Congress approved July second, eighteen hundred and sixty-two, the sum of fifteen thousand dollars for the year ending June thirtieth, eighteen hundred and ninety, and an annual increase of the amount of such appropriation thereafter for ten years by an additional sum of one thousand dollars over the preceding year, and the annual amount to be paid thereafter to each State and Territory shall be fifty thousand dollars to be applied only to instruction in agriculture and mechanic arts, the English language and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction: Provided, That said colleges may use a portion of this money for providing courses for the special preparation of instructors for teaching elements of agriculture and the mechanic arts:(1) Provided,(2) That no money shall be paid out under this act to any State or Territory for the support and maintenance of a college where a distinction of race or color is made in the admission of students, but the establishment and

maintenance of such colleges separately for white and colored students shall be held to be a compliance with the provisions of this act if the funds received in such State or Territory be equitably divided as hereinafter set forth: Provided, That in any State in which there has been one college established in pursuance of the act of July second, eighteen hundred and sixty-two, and also in which an educational institution of like character has been established, or may be hereafter established, and is now aided by such State from its own revenue, for the education of colored students in agriculture and the mechanic arts, however named or styled, or whether or not it has received money heretofore under the act to which this act is an amendment, the legislature of such State may propose and report to the Secretary of Education(3)a just and equitable division of the fund to be received under this act between one college for white students and one institution for colored students established as aforesaid which shall be divided into two parts and paid accordingly, and thereupon such institution for colored students shall be entitled to the benefits of this act and subject to its provisions, as much as it would have been if it had been included under the act of eighteen hundred and sixty-two, and the fulfillment of the foregoing provisions shall be taken as a compliance with the provision in reference to separate colleges for white and colored students.

Section 2. That the sums hereby appropriated to the States and Territories for the further endowment and support of colleges shall be annually paid on or before the thirty-first day of October of each year, by the Secretary of the Treasury of the United States, upon the warrant of the Secretary of Education, out of the Treasury of the United States, to the State or Territorial treasurer, or to such officer as shall be designated by the laws of such State or Territory to receive the same, who shall, upon the order of the trustees of the college, or the institution for colored students, immediately pay over said sums to the treasurers of the respective colleges or other institutions entitled to receive the same, and such treasurers shall be required to report the Secretary of Agriculture and to the Secretary of Education, on or before the day of December of each year a detailed statement of the amount so received and of its disbursement. The grants of moneys authorized by this act are made subject to the legislative assent of the several States and Territories to the proposed of said grants: Provided, That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of legislature meeting next after the passage of this act shall be made upon the assent of the

governor thereof, duly certified to the Secretary of the Treasury.

Section 3. That if any portion of the moneys received by the designated officer of the State or Territory for the further and more complete endowment, support, and maintenance of colleges, or of institutions for colored students, as provided in this act, shall be any action or contingency, be diminished or lost, or be misapplied, it shall be replaced by the State or Territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such State or Territory; and no portion of said moneys shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation, or repair of any building or buildings. An annual report by the president of each said colleges shall be made to the Secretary of Agriculture, as well as to the Secretary of Education, regarding the condition and progress of each college, including statistical information in relation to its receipts and expenditures, its library, the number of its students and professors, and also as to any improvements and experiments made under the direction of any experiment stations attached to said colleges, with their cost and results, and such other industrial and economical statistics as may be regarded as useful, one copy of which shall be transmitted by mail free to all other colleges further endowed under this act.

Section 4. That on or before the first day of October in each year, after the passage of this act, the Secretary of Education shall ascertain and certify to the Secretary of Treasury as to each State and Territory whether it is entitled to receive its share of the annual appropriation for colleges, or of institutions for colored students, under this act, and the amount which thereupon each is entitled, respectively, to receive. If the Secretary of Education shall withhold a certificate from any State or Territory of its appropriation the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separate in the Treasury until the close of the next Congress, in order that the State or Territory may, if it should so desire, appeal to Congress for the determination of the Secretary of Education. If the next Congress shall not direct such sum to be paid it shall be covered into the Treasury. And the Secretary of Health, Education and Welfare is hereby charged with the proper administration of this law.(7)

Section 5. There is authorized to be appropriated annually for payment to the Virgin Islands and Guam the amount they would receive under this Act if they

were States. Sums appropriated under this section shall be treated in the same manner and be subject to the same provisions of law, as would be the case if they had been appropriated by the first sentence of this Act.

Section 6. Congress may at any time amend, suspend, or repeal any or all of the provisions of this act.

Approved August 30, 1890

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Smith-Lever Act of 1914

(Established in 1914, Cooperative Extension was designed as a partnership of the U.S. Department of Agriculture and the land-grant universities, which were authorized by the Federal Morrill Acts of 1862 and 1890. Legislation in the various States has enabled local governments or organized groups in the Nation's counties to become a third legal partner in this education endeavor. The Congressional charge to Cooperative Extension through the Smith-Lever Act of 1914 is far ranging. Today, this educational system includes professionals in each of America's 1862 land-grant universities (in the 50 States, Puerto Rico, the Virgin Islands, Guam, Northern Marianas, American Samoa, Micronesia, and the District of Columbia) and at Tuskegee University and sixteen 1890 land-grant universities. The provisions of the Act, in effect as of November 28, 1990, are shown below.)

Section 1. In order to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture, home economics, and rural energy, and to encourage the application same, there may be continued or inaugurated in connection with the college or the colleges in each State, Territory, or possession, now receiving, or which may hereafter receive, the benefits of the Act of Congress approved July second, eighteen hundred and sixty-two, entitled "An Act donating public lands to several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," and of the Act of Congress approved August thirtieth, eighteen hundred and ninety, agricultural extension work which shall be carried on in cooperation with the United States Department of Agriculture: Provided, That in any State, Territory, or possession in which two or more such colleges have been or hereafter may be established, the appropriations hereinafter made to such State, Territory, or possession shall be administered by such college or colleges as the legislature of such State, Territory, or possession may direct.

Section 2. Cooperative agricultural extension work shall consist of the development of practical applications of research knowledge and giving of instruction and practical demonstrations of existing or improved practices or technologies in agriculture, home economics, and rural energy, and subjects relating thereto to persons not attending or resident in said colleges in the several communities, and imparting information on said subjects through demonstrations, publications, and otherwise and for the necessary printing and distribution of information in connection with the foregoing; and this work shall be carried on in such manner as may be mutually agreed upon by the Secretary

of Agriculture and the State agricultural college or colleges or Territory or possession receiving the benefits of this Act.

Section 3. There are hereby authorized to be appropriated for the purposes of this Act such sums as Congress may from time to time determine to be necessary.

(b)(1) Out of such sums, each State and the Federal Extension Service shall be entitled to receive annually a sum of money equal to the sums available from the Federal cooperative extension funds for the fiscal year 1962, and subject to the same requirements as to furnishing of equivalent sums by the State, except that amount heretofore made available to the Secretary for allotment on the basis of special needs shall continue available for use on the same basis.

(b)(2) There is authorized to be appropriated for the fiscal year ending June 30, 1971, and for each fiscal year thereafter, for payment to the Virgin Islands, Guam, and the Northern Mariana Islands, \$100,000 each, which sums shall be in addition to the sums appropriated for the several States of the United States and Puerto Rico under the provisions of this section. The amount paid by the Federal Government to the Virgin Islands and Guam pursuant to this paragraph shall not exceed during any fiscal year, except the fiscal years ending June 30, 1971, and June 30, 1972, when such amount may be used to pay the total cost of providing services pursuant to this Act, the amount available and budgeted for expenditure by the Virgin Islands and Guam for the purposes of this Act.

(c) Any sums made available by the Congress for further development of cooperative extension work in addition to those referred to in subsection (b) hereof shall be distributed as follows:

1. Four per centum of the sum so appropriated for each fiscal year shall be allotted to the Federal Extension Service for administrative, technical, and other services, and for coordinating the extension work of the Department and the several States, Territories, and possessions.
2. Of the remainder so appropriated for each fiscal year 20 per centum shall be paid to the several States in equal proportions, 40 per centum shall be paid to the several States in the proportion

that the rural population of each bears to the total rural population of the States as determined by the census, and the balance shall be paid to the several States in the proportion that the farm population of each bears to the total farm population of the several States as determined by the census:

Provided, That payments out of the additional appropriations for further development of extension work authorized herein may be made subject to the making available of such sums of public funds by the States from non-Federal funds for the maintenance of cooperative agricultural extension work provided for in this Act, as may be provided by the Congress at the time such additional appropriations are made: Provided further, That any appropriation made hereunder shall be allotted in the first and succeeding years on the basis of the decennial census current at the time such appropriation is first made, and as to any increase, on the basis of decennial census current at the time such increase is first appropriated.

(d) The Federal Extension Service shall receive such additional amounts as Congress shall determine for administration, technical, and other services and for coordinating the extension work of the Department and the several States, Territories, and possessions.

(e) Insofar as the provisions of subsections (b) and (c) of this section, which require or permit Congress to require matching of Federal Funds, apply to the Virgin Islands of the United States and Guam, such provisions shall be deemed to have been satisfied, for the fiscal years ending September 30, 1978, and September 30, 1979, only, if the amounts budgeted and available for expenditure by the Virgin Islands of the United States and Guam in such years equal the amounts budgeted and available for expenditure by the Virgin Islands of the United States and Guam in the fiscal year ending September 30, 1977.

(f)(1) The Secretary of Agriculture may conduct educational, instructional, demonstration, and publication distribution programs through the Federal Extension Service and enter into cooperative agreements with private nonprofit and profit organizations and

individuals to share the cost of such programs through contributions from private sources as provided in this subsection.

(f)(2) The Secretary may receive contributions under this subsection from private sources for the purposes described in paragraph (1) and provide matching funds in an amount not greater than 50 percent of such contributions.

Section 4. On or about the first day of October in each year after the passage of this Act, the Secretary of Agriculture shall ascertain as to each State whether it is entitled to receive its share of the annual appropriation for cooperative agricultural extension work under this Act and the amount which it is entitled to receive. Before the funds herein provided shall become available to any college for any fiscal year, plans for the work to be carried on under this Act shall be submitted by the proper officials of each college and approved by the Secretary of Agriculture. The Secretary shall ensure that each college seeking to receive funds under this Act has in place appropriate guidelines, as determined by the Secretary, to minimize actual or potential conflicts of interest among employees of such colleges whose salaries are funded in whole or in part with such funds. Such sums shall be paid in equal quarterly payments in or about October, January, April and July of each year to the treasurer or other officer of the State duly authorized by the laws of the State to receive the same, and such officer shall be required to report to the Secretary of Agriculture on or about the first day of April of each year, a detailed statement of the amount so received during the previous fiscal year and its disbursement, on forms prescribed by the Secretary of Agriculture.

Section 5. If any portion of the moneys received by the designated officer of any State for the support and maintenance of cooperative agricultural extension work, as provided in this Act, shall by any action or contingency be diminished or lost or be misapplied, it shall be replaced by said State, and until so replaced no subsequent appropriation shall be apportioned or paid to State. No portion of said moneys shall be applied, directly or indirectly, to the purchase, erection, preservation, or repair of any building or buildings, or purchase or rental of land, or in college-course teaching, lectures in college, or any other purpose not specified in this Act. It shall be the duty of said colleges, annually, on or about the first day of January, to make the Governor of the State in which it is located a full and detailed report of its operations in extension work as defined in this act

including a detailed statement of receipts and expenditures from all sources for this purpose, a copy of which report shall be sent to the Secretary of Agriculture.

Section 6. If the Secretary of Agriculture finds that a State is not entitled to receive its share of the annual appropriation, the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separate in the Treasury until the expiration of the Congress next succeeding a session of the legislature of the State from which funds have been withheld in order that the State may, if it should so desire, appeal to Congress from the determination of the Secretary of Agriculture. If the next Congress shall not direct such sum to be paid, it shall be covered into the Treasury.

Section 7. Repealed. (Dealt with an annual report to Congress.)

Section 8. The Congress finds that there exists special circumstances in certain areas which cause such areas to be at a disadvantage insofar as agricultural development is concerned, which circumstances include the following:

- (1) There is concentration of farm families on farms either too small or too unproductive or both;
- (2) such farm operators because of limited productivity are unable to make adjustments and investments required to establish profitable operations;
- (3) the productive capacity of the existing farm unit does not permit profitable employment of available labor;
- (4) because of limited resources, many of these farm families are not able to make full use of current extension programs designed for families operating economic units nor are extension facilities adequate to provide the assistance needed to produce desirable results.

(b) In order to further the purposes of section 2 in such areas and to encourage complementary development essential to the welfare of such areas, there are hereby authorized to be appropriated such sums as the Congress from time to time shall determine to be necessary for payments to the States on the basis of special needs in such areas as determined by the Secretary of Agriculture.

(c) In determining that the area has a special need, the Secretary shall find that it has a substantial number of disadvantaged farms or farm families for one or more of the reasons heretofore enumerated. The Secretary shall make provisions for assistance to be extended to include one or more of the following.

(1) Intensive on-the-farm educational assistance to the farm family in appraising and resolving its problems;

(2) assistance and counseling to local groups in appraising resources for capability of improvement in agriculture or introduction of industry designed to supplement farm income;

(3) cooperation with other agencies and groups in furnishing all possible information as to existing employment opportunities, particularly to farm families having underemployed workers; and

(4) in cases where the farm family, after analysis of its opportunities and existing resources, finds it advisable to seek a new farming venture, the providing of information, advice, and counsel in connection with making such change.

(d) No more than 10 per centum of the sums available under this section shall be allotted to any one State. The Secretary shall use project proposals and plans of work submitted by the State Extension directors as a basis for determining the allocation of funds appropriated pursuant to this section.

(e) Sums appropriated pursuant to this section shall be in addition to, and not in substitution for, appropriations otherwise available under this Act. The amounts authorized to be appropriated pursuant to this section shall not exceed a sum in any year equal to 10 per centum of sums otherwise appropriated pursuant to this Act.

Section 9. The Secretary of Agriculture is authorized to make such rules and regulations as may be necessary for carrying out the provisions of this Act.

Section 10. The term "State" means the States of the Union, Puerto Rico, the Virgin Islands, Guam, and the Northern Mariana Islands.

Bankhead-Jones Act of 1935

(An act that added to the annual appropriations for land grant institutions. This extended the scope of research conducted under the Hatch Act and provided for the future development of Cooperative Extension activities and increased the endowments and support for the 1862 and 1890 colleges.)

Section 22.

(1) In order to provide for the more complete endowment and support of the colleges in the several States, Puerto Rico, the Virgin Islands, and Guam, (2) entitled to the benefits of Act entitled "An Act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2, 1862, as amended and supplemented (7 U.S.C. 301-328), there are hereby authorized to be appropriated annually, out of any money in the Treasury not otherwise appropriated, the following amounts:(3)

(a) For the first fiscal year beginning after the date of enactment of this Act and for each fiscal year thereafter, \$8,100,000; and

(b) For the first fiscal year beginning after the date of enactment of this Act and for each fiscal year thereafter, \$4,360,000. The sums appropriated in pursuance of paragraph (a) shall be paid annually to the several States, Puerto Rico, the Virgin Islands and Guam in equal shares. The sums appropriated in pursuance of paragraph (b) shall be in addition to sums appropriated in pursuance of paragraph (a) and shall be allotted and paid annually to each of the several States, Puerto Rico, the Virgin Islands, and Guam in the proportion to which the total population of each State, Puerto Rico, the Virgin Islands and Guam bears to the total population of all the States, Puerto Rico, the Virgin Islands and Guam as determined by the last preceding decennial census. Sums appropriated in pursuance of this section shall be in addition to sums appropriated or authorized under such Act of July 2, 1862, as amended and supplemented and shall be applied only for the purposes of the colleges defined in such Act, as amended and supplemented. The provisions of law applicable to the use and payment of sums under the Act entitled "An Act to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and

the mechanic arts established under the provisions of an Act of Congress approved July 2, 1862," approved August 30, 1890, as amended and supplemented, shall apply to the use and payment of sums appropriated in pursuance of this section.

Act of June 29, 1935, ch. 338, 49 Stat. 436, 7 U.S.C. 427 et seq.

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The Land Grant Institutions

- *The 1862 Land Grant Colleges and Universities—
USDA-CSREES*
- *The 1890 Land Grant Colleges and Universities—
USDA-CSREES*
- *The 1994 Land Grant Colleges and Universities—
USDA-CSREES*



United States Department of Agriculture
Cooperative State Research, Education, and Extension Service

1862 Land-Grant Colleges and Universities





United States Department of Agriculture
Cooperative State Research, Education, and Extension Service

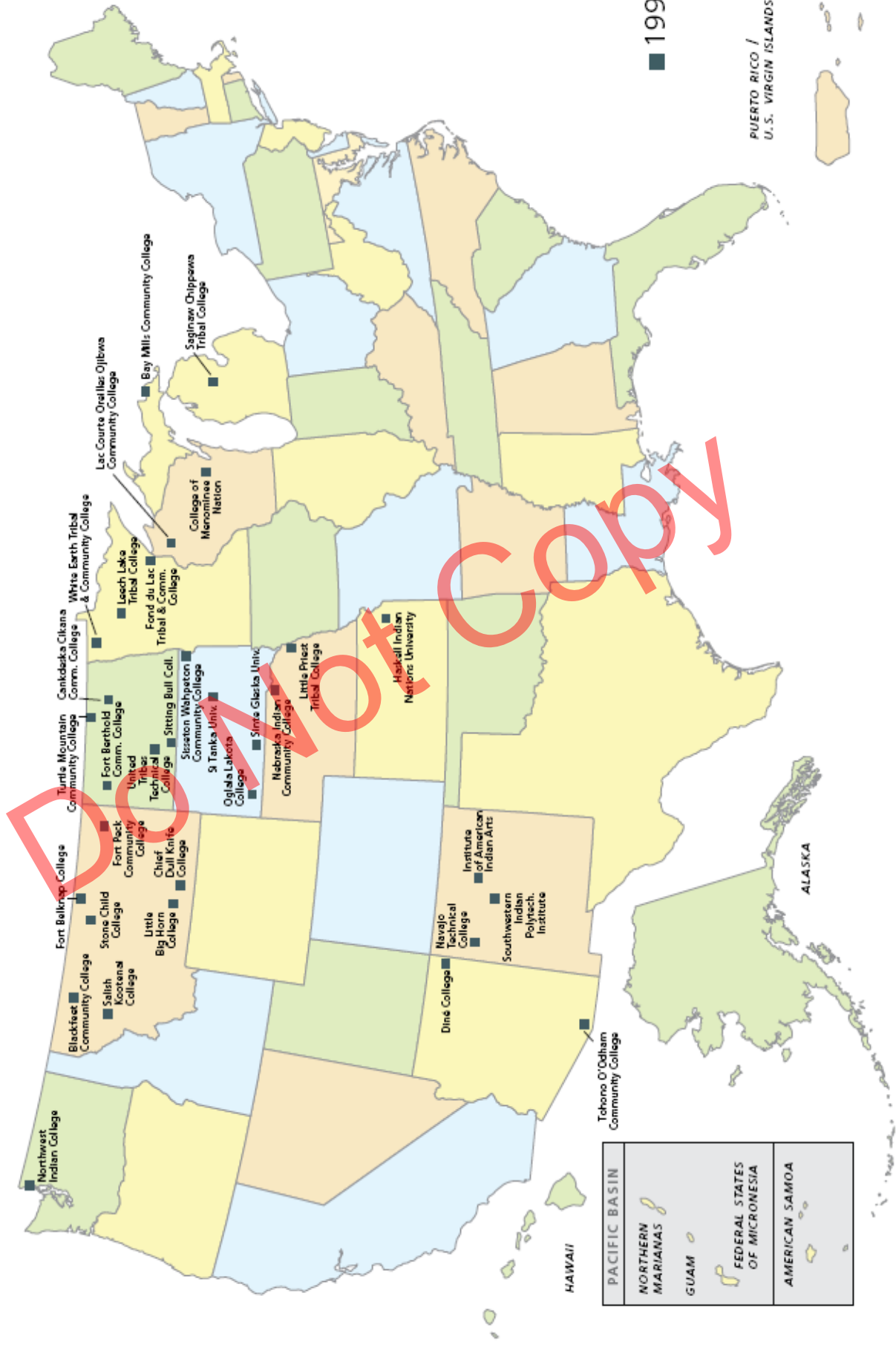
1890 Land-Grant Colleges and Universities





United States Department of Agriculture
Cooperative State Research, Education, and Extension Service

1994 Land-Grant Colleges and Universities



Readings

I have attempted to provide several papers that present strong cases that demonstrate the impact and continuing need for the land grant concept and future. Each author is distinguished in their own right and all have served a careers in the land grant systems, as faculty and administrators.

Adapting Justin Morrill's Vision to a New Century: The Imperative of Change for Land-Grant Universities, by Martin Jischke, President of Purdue University. Presented at the 2005 NASULGC meeting.

The Hatch Act of 1887: Legacy, Challenges and Opportunities, by William Delauder, President Emeritus, Delaware State University at the 2006 NASULGC meeting.

Winners and Losers: Formula versus Competitive Funding of Agricultural Research, by Wallace E. Huffman, George Norton, Greg Traxler, George Frisvold, and Jeremy Foltz. *(This paper is included as the authors make a strong case for the continuation and increase in formula funding. This paper is a synopsis of a number of earlier papers by the senior author along with other partners that demonstrated the value of formula funding, in the face of efforts to roll these funds into competitive portfolios)*

A Drift Toward Elitism by the People's Universities, by Michael V. Martin, President of New Mexico State University *(Dr. Martin is strong proponent of returning to the original mandate set forth in the Morrill Act of 1862 and sets forth his arguments in a Chronicle of Higher Education paper, published in 2005)*

Where are Land –Grant Colleges Headed?, by Henry Fribourg *(A personal account of the directions along with concerns for the future of the land grant movement)*



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Adapting Justin Morrill's Vision to a New Century: The Imperative of Change for Land-Grant Universities¹

Martin C. Jischke, President,

Purdue University

It is a great honor to be given the opportunity to present this Justin Smith Morrill lecture. I know and admire many of the distinguished educators who have given this lecture in previous years. It is a special honor to be asked to join them in talking about the great land-grant college tradition we are carrying forward today.

I have spent 45 years in higher education: first as a student, next as a faculty member and now as a university president. Half of that time has been in land-grant universities, including MIT, the University of Missouri, Iowa State and now Purdue. I have led three land-grant universities, and I have spoken often and proudly about Justin Smith Morrill and his vision for higher education. I have talked about the power of his ideas and the potential of his vision for many, many years. But for me, Morrill's dream of opening the doors of higher education to the American people is more than ideas, vision and speeches.

As the proud son of a clerk, the grandson of a farmer and the first person in my family to earn a college degree, I have lived Justin Morrill's dream of education, opportunity and, I hope, service. To me Justin Morrill is one of America's great heroes whose impact on our democracy and way of life has been quite profound for now 142 years.

The Morrill Land Grant Act was a very powerful, indeed revolutionary, set of new and distinctive ideas that first challenged and then changed the entire concept of higher education in our nation. In the early 19th century, universities were modeled after European institutions that existed to educate the male leisure class and government and religious leaders along with members of the professions.

¹Presented at the National Association of State Universities and Land-Grant Colleges Annual Meeting, November 14, 2004, San Diego, CA

The Morrill Act was about creating, through our national government, an entirely American kind of university. This was a concept for higher education that was deeply rooted in the American democratic ideal that opportunity should be available to everyone and that education was the vehicle for that opportunity.

Justin Morrill, who had no formal education beyond secondary school, believed education could provide people access to the American dream. A congressman who later became a U.S. senator, Morrill had some very, very big ideas.

First, he believed that land-grant universities should and could provide both liberal and practical education and training. In a speech to his home state Vermont Legislature in 1888, Morrill explained: "The fundamental idea was to offer an opportunity in every state for a liberal and larger education to larger numbers, not merely to those destined to sedentary professions, but to those needing higher instruction for the world's business, for the industrial pursuits and professions of life."

Second, he believed that over time these institutions would evolve a research agenda. He believed that agenda would not only be basic and focused on understanding the world, but also that it would be practical and, in particular, bring science and discovery to America's farms.

Third, and perhaps the most radical idea in the land-grant vision, was the notion that these institutions should extend themselves and be engaged in outreach and become the natural partners of America in the 19th century.

These were all bold new ideas, and it took courage and persistence to accomplish them. As with all visionaries with an agenda for change, Morrill found that his ideas were not initially embraced by everyone.

His first proposal struggled through Congress in 1858 and 1859. It then was vetoed by President Buchanan, a fact Justin Morrill neither forgot nor forgave. In June of 1862, while promising to deliver a speech without the "pepper and spice of party or sectional politics," Congressman Morrill nonetheless noted: "Among other sins which (former) President Buchanan now has leisure to repent 'is his veto . . .' of the land grant bill."

Morrill persevered, and, in 1862, persuaded another bold American leader, Abraham Lincoln, to sign the act that now bears Morrill's name. In the year of

its passage, 1862, Morrill said of the land-grant act: "It is a measure that should have been initiated at least a quarter-century ago. And if it had been, "our taxable resources would now have been far greater than they are, agriculture might long ere this have felt its influence, (and) the statistics of the country might have been more abundant and valuable."

This is a man who understood at the very onset the full and far-reaching implications of this fundamental change in American higher education. But he wasn't merely changing education. He planned to use education to change people and ultimately a nation. The richness and full flowering of Morrill's land-grant vision took nearly half a century to develop and it is still growing today.

It was not the Morrill Act of 1862 alone that brought sweeping change to the American educational landscape. The transformation also included: The Hatch Act of 1887 creating the agricultural experimentation stations; the Second Morrill Act of 1890, which led to creation of 17 historically black land-grant colleges; and the Smith-Lever Act of 1914, which created cooperative extension. Ultimately in 1994, 29 Native American tribal colleges gained land-grant status.

All of this in the land-grant chronology was very much a forward-looking and outward-looking agenda, an agenda for America. It was more than an agenda for higher education. It was an agenda for the country. I believe it was fundamentally an agenda for our emerging democracy. Like all great plans, it was noble, inspiring and yet, at the same time, pragmatic. It was designed very much for the America of 1862, a largely rural country with agriculture at the center of its economy.

The focus on agriculture and its underlying sciences — home economics, and veterinary medicine — was very much responsive to the America that Morrill saw changing around him. It was initially very much a partnership between the federal government and the states, but later also the counties of those states through cooperative extension. The impact of all this has been utterly profound. History has proven Morrill quite accurate in his vision.

Today, there are 105 land-grant institutions. Land-grant universities enroll about 3 million students and produce about a half a million graduates every year. Land-grant universities spend more than \$13 billion each year for teaching, research and public service. During the history of land-grant institutions, 20 million degrees have been awarded. Land-grant institutions award one-third of

all U.S. bachelor's degrees, one-third of all master's degrees, and 60 percent of all Ph.D.s. Land-grant institutions award 70 percent of all engineering degrees.

Land-grant universities have always been among the leaders in inclusion. They were among the first to advance educational opportunities for women and minorities. If Justin Morrill returned today, he would be justifiably proud of not only the land-grant higher education system that he created, but the impact it has had on our nation and, indeed, the world.

But as he would marvel at all that has been accomplished, I believe at the same time Justin Morrill would also be concerned about his land-grant universities and their role in 21st century America. In the 142 years since President Lincoln signed the Morrill Act, our nation has changed dramatically, and our entire system of higher education has changed with it.

First — America at the start of the 21st century is quite different from the America of 1862 when the land-grant concept was designed. In 1862, the population of the United States was about 31 million. Today, it is approaching 300 million. In 1862, 60 percent of all jobs were directly connected to agriculture. Today, that number is less than 2 percent. In 1860, 80 percent of the U.S. population was rural. Today, nearly 80 percent live in urban areas. America today is an urbanized country. And this urbanized nation has changing needs. In 1862, the least educated of Americans lived in rural areas. Today, the least educated are often found in our urban centers.

Second — agriculture itself has changed dramatically since the mid-19th century. One hundred fifty years ago, we needed 60 percent of the population on farms to feed the nation. Those farmers were able to get all the assistance they needed through university schools of agriculture. Today, the food system is no longer just production agriculture but includes engineering, management, marketing, nutrition as well as science including modern biology. And today, with barely 2 percent of the population engaged in farming, we are producing more food than ever before.

America enjoys the most abundant, safest, relatively cheapest food supply in the world, in no small measure because of the impact of these land-grant universities. At the same time, U.S. Census figures show a drop of nearly 350,000 farms since 1978. With this drop in the rural agricultural constituency comes an attendant drop in political influence.

The face of farming is also changing. For example, the role of women has changed dramatically. Farming was virtually 100 percent male in 1862. In a U.S. Department of Agriculture-Penn State University survey of farm women in 2001, 81 percent of the women said they were actively involved in the farm; 10 percent said they were the principal farm operator; nearly 33 percent said they were involved as a business manager or helper. The sophistication of the large-scale producers who produce the majority of America's crops today means that the expertise they need and regularly access is no longer county-based or even state-based. The large-scale producers either develop their own research capacity or go to the best people in the country.

Off-farm income has also become a key to survival for the vast majority of farmers, which means that non-agricultural economic development is absolutely pivotal to today's rural counties.

Research suggests that the price support programs of the federal government have not been altogether effective in fostering rural economic development. They certainly have helped keep food prices down, but they don't foster the growth of the broader rural economy. The issues of rural America today go beyond agriculture. They include economic development, the environment, health care, a growing diversity and poverty. And the U.S. Department of Agriculture is an increasingly smaller piece of federal support for rural development. Other agencies of the federal government, including, for example, the Department of Commerce, are taking on a larger and more important role.

To serve these rural communities, land-grant universities must partner with a wider range of federal agencies including the National Science Foundation, the Department of Commerce, the National Institutes of Health, and the Environmental Protection Agency, among others. For example, the manufacturing extension program is not housed in Agriculture; it is housed in the Department of Commerce.

Agricultural enrollments today are less than 10 percent of land-grant universities. Agriculture and the issues surrounding agriculture remain central to us, as they should. But it is a different kind of agriculture that requires a much broader range of university capacities. For modern agriculture to prosper, access to the entire University is needed not simply to the assets in agriculture, veterinary medicine and home economics. To serve modern agriculture well, we must bring

in the capacities of engineering, technology, pharmacy, nursing and health sciences. We have to bring in modern management programs. And more generally, the liberal arts and sciences have to be embraced.

Science is changing agriculture. And the ability to understand and serve the world markets for agriculture requires the liberal arts. At the dawn of the 21st century, it takes a whole university to support a prosperous agricultural system.

Third — land-grant universities themselves have changed and are now part of a much more complex system of higher education, one that is quite different from the system Justin Morrill nurtured through the last half of the 19th century. There has been an emergence of non land-grant public universities. Community colleges and vocational technical institutions have emerged as part of a system of higher education that now enrolls 16 million students. Barely 20 percent of these students are in land-grant universities.

America has more than 4,000 institutions of higher education. And the programs that were originally at the heart of the land-grant curriculum — agriculture, veterinary medicine, home economics — today constitute a relatively small fraction of the total enrollment of these institutions. The land-grant agenda of access, practical and liberal education, basic and applied research, along with outreach, extension and engagement, is now clearly shared with many other institutions. As a result, the centrality of our land-grant universities to the vital issues facing contemporary society is less clear and unique than it was 100, 50 or even 25 years ago.

These issues include economic development, K-12 education, health care, community renewal, homeland security and the challenge of poverty, especially its impact on children. Virtually every university in the nation today is addressing some or all of these issues and promoting their ability to be a key player in the progress of their state.

Fourth — funding of public universities is very different today from what it was in the 1860s when the land-grant model was conceived. The contribution to our budgets that come from the original land-grant model is minuscule. Tuition has become a much larger fraction of our budgets. Throughout the nation for many years, state support as a percentage of our total general fund has been in decline. As the cost of higher education continues to rise and states find themselves with limited revenue and no taste for tax increases, we can expect to see this trend

continue in the years ahead.

And fifth — generally, the American society, including in particular our economy, is taking on a regional structure rather than a municipal or county-based structure. While this regionalization is taking place, land-grant extension remains a county-based system. In addition, there is growing evidence that the political support that land-grant universities have historically enjoyed is increasingly fragile.

Facing nearly a billion-dollar budget deficit last fall, Michigan Governor Jennifer Granholm included in a list of possible areas for cuts the elimination or drastic reduction of funding for Michigan State University Extension and 15 agricultural experiment stations. This summer in my home state of Indiana, there was public discussion about cuts in support for cooperative extension in the state capital — Indianapolis/Marion County. One morning, the Marion Extension Office received a phone call from the County Auditor's Office informing them that a proposal would be presented at the City/County Council meeting that night to rescind 25 percent of their total 2004 funding effective immediately and to eliminate funding for Cooperative Extension in the 2005 budget. In the end, through a show of public support, funding was fully restored for 2004 and about 75 percent of the 2005 budget was restored. But this is a proposal that never would have been even suggested 25 or 50 years ago.

Both Republicans and Democrats at different times have proposed zeroing out extension budgets. What this says to me is that the historic support that we have enjoyed for this aspect of our land-grant mission is eroding. And support at the federal level for cooperative extension has, in real terms, been declining for many, many years. All of this is a national wake-up call. And it is time for us to respond.

Morrill's vision from the 19th century, powerful as it has been, must be adapted, reinvigorated and reconceptualized for the 21st century. It is an imperative for change, and to me the choices are clear. If we continue business as usual, we will certainly see this continuing slippage in our support and importance. We can continue the old land-grant model of 1862, which I believe has been marginalized, and live with the inevitable conclusion of the trends we have seen for many years. Or we can envision a broader, bolder agenda an agenda for our time, and that is what I am proposing today.

I believe the idea of the engaged university is very powerful, but it has to be reconceptualized in a more modern way. The narrow traditional agenda of land-grant universities is not sufficient to realize Morrill's vision in the 21st century. The world is changing and we must change with it. And we don't have the 50 years that Morrill's vision had to fully flesh out. The world is changing much faster today and we must move with it.

I believe there are seven areas on which we must focus as we fashion a contemporary land-grant mission for a new century.

First — we need to see the land-grant mission of the 21st century as embracing all sectors of society, including, but not only, agriculture. While agriculture and rural America should remain a priority for land-grant universities, especially those in agriculturally intensive states, we must embrace a larger agenda if our universities are to realize our full potential in higher education and in society. Land-grant universities cannot be synonymous with agriculture if they are to serve contemporary America and contemporary American agriculture, and if American agriculture is to grow and prosper.

We need to recognize that the issues of rural America, while involving agriculture, go well beyond agriculture. Land-grant universities must be distinctive because of their excellence in learning, discovery and engagement, their commitment to access and opportunity, and their commitment to civic-minded engagement with the most important issues facing society — not because they teach specific disciplines. Today's cutting-edge educational programs and research opportunities have become more and more interdisciplinary. Traditional organizations and disciplines within the university must find new means of collaboration and cooperation to address the complexities and challenges of our time.

Second — we need to broaden the extension service and outreach missions beyond agriculture, veterinary medicine and consumer and family sciences to include the entire university and organize this mission as a university-wide activity. Every academic unit at the university should have a share of the engagement agenda. We must develop a more flexible and adaptable engagement organizational structure in order to capture the emerging regional and multi-state character of many activities. Not all important issues can be addressed on a county basis.

Third — we must adapt new language to capture these new ideas so that the change is evident and transparent both internally and externally. I personally like the language of engagement rather than extension. It is more mutual, more respective of partners. It is less directive, less unilateral. We must find new language to recapture the public's imagination about our connectedness to them.

Fourth — we need to connect student learning to the engagement mission to foster a distinctive land-grant form of education to reinforce the public purposes of our universities and to justify the use of general fund dollars to support the broader engagement agenda.

Fifth — we need a broadened research agenda that is more interdisciplinary and problem-focused. We need a broader, problem-oriented interdisciplinary research capacity to complement the disciplinary strengths we have. In particular, to serve our historic constituencies, we have to bring the capacities of the entire university's research infrastructure to bear on the issues of the American food system and the challenges facing rural America.

Sixth — we need to change our model for financing engagement to include general fund support, increased fees for service programming, and private fund raising. Like the rest of the modern research university, the engagement organization must become more entrepreneurial, more market-driven with leveraged funding, so-called soft funding, and become less dependent on the formula-driven funds based on traditional government financing.

Seventh — we must reconceptualize the relationship of the federal government to land-grant universities to include engagement and research funding in other departments of government such as Commerce, the Environmental Protection Agency and the National Institutes of Health. A broader engagement agenda requires a broader range of partners. The Department of Agriculture is too slender a reed upon which to build our future. It should be only one of several strategic federal partners.

All of this is about change. Change can be seen as a threat or an opportunity. There are those who respond to change in the wind by trying to hunker down, preserve what is and keep from being blown over. They fear change. And there are those who welcome change and see it as the means of opening new possibilities and potentials. Change produces opportunity.

Justin Morrill was a leader for change 142 years ago. And he foresaw the need for change in the future. Concluding a speech on his land-grant act from the floor of the House on June 6, 1862, Morrill said: "I have faith in the sagacity of the people to profit by the experience of the world, and that they will mold these institutions in a form . . . as will secure permanent usefulness and enduring honor to the whole country."

Let us hope that we can be worthy of his legacy and have his courage, and boldness, and tenacity to mold our institutions to serve our entire nation usefully and honorably in the 21st century and beyond.

Do Not Copy

The Hatch Act of 1887: Legacy, Challenges and Opportunities

William DeLaulder¹

Thank you so much for the warmth of your welcome. I appreciate all the efforts of all the organizers that made it possible for me to be here. It is a distinct privilege and a very great honor for me to deliver the 2005 William Henry Hatch Memorial Lecture. It is a special honor because of the long list of distinguished Americans who have preceded me on this platform.

In a thirty-two year career in higher education spent equally between two great 1890 land-grant universities, North Carolina Agricultural and Technical State University and Delaware State University, I have had the privilege to experience and to learn about the unique and essential role that our land-grant universities play in improving the quality of life within these United States of America. These are truly engaged universities.

One of the things that America does better than any other country in the world is produce an abundance of safe and nutritious food and fiber. Most of the credit for this must go to the hard work and ingenuity of the American farmer.

But this success would not have been possible without the supporting research and cooperative extension work of our land-grant colleges and universities.

In 1987, John Patrick Jordan, former administrator of the Cooperative Research Service, observed that “research is the fuel for this dynamic industry we call agriculture.” Our farmers have used this fuel efficiently to collectively develop the most productive agriculture industry in the history of humankind.

One of the more tangible benefits of this agriculture industry is that average Americans spend less of their income on food than their counterparts across the world.

¹President Emeritus, Delaware State University, Dover De. Presented at the National Association of State Universities and Land-Grant Colleges (NASULGC) Annual Meeting, November 14, 2005, Washington, DC.

Through their teaching and research, our state universities and land-grant colleges have educated many individuals, both Americans and international scholars who have been some of the leaders of the world. In agriculture, a good indicator of this success is documented by the fact that, according to the President of the World Food Prize, fifteen of the past 24 recipients of the World Food Prize have been educated at our land-grant universities.

The World Food Prize is awarded to the individual or individuals who has or have made the greatest contribution to the advancement of the science of feeding people.

This prosperity and these accomplishments are due in large measure to the forward thinking and unyielding determination of Congressman William H. Hatch of Missouri.

After several years of debate and the introduction of various versions of an experiment station bill, Congressman Hatch, then chair of the House Agriculture Committee, introduced legislation to provide funding for the states and territories to establish Agriculture Experiment Stations.

Signed on March 2, 1887, The Hatch Act was the first of a series of legislations that provided land-grant universities with the financial resources needed to develop programs in agricultural research.

Under the provisions of the Act, each state or U.S. territory was funded to establish an agricultural experiment station in connection with the college or colleges established under the provisions of the First Morrill Act of 1862 or in the words of the Hatch Act, “of the acts supplementary thereto.” I will return to the latter point.

As Congressman Hatch had envisioned, these experiment stations formed unique partnerships between the states and the federal government and were expected to engage in basic and applied research that bears on and benefits the agricultural industry of the United States.

However, the initial funding for experiment stations was inadequate to fulfill the expectations of the Hatch Act. As a consequence, several supplementary pieces of legislation followed to increase the funding of agricultural experiment stations.

They were: (1) The Adams Act of 1906, (2) The Purnell Act of 1925, (3) The Bankhead-Jones Act of 1935, and (4) title I, section 9 of the 1945 amendment to the Bankhead-Jones Act. The Purnell Act not only increased funding but also expanded the scope of research to include economic and sociological investigations to improve rural homes and rural life.

The Bankhead-Jones Act established formula funding and required the state to provide matching dollars for research. In 1955, the Hatch Act of 1887 was amended to consolidate all previous laws that provided federal-grant funds for the operation of agricultural experiment stations.

I also remind you that the origins of NASULGC evolved from an earlier association formed specifically to coordinate the activities of the newly created experiment stations.

After the passage of the Hatch Act, the Association of American Agricultural Colleges and Experiment Stations was formed in October 1887.

This organization experienced several name changes, broadened its membership and scope, and finally in 1965 settled on its current name, the National Association of State Universities and Land-Grant Colleges.

I have been a student of the history of the land-grant system, both because of its unique and essential system for the continued prosperity and vitality of this country and because of my passion for issues of equity and parity.

The current system has elements of both. The more research that I conduct on the history of land-grant, the more I discover new information and gain insight to the complexities of it past and purpose.

To illustrate this point, I will share with you an event told to me by Dr. Ulysses Washington, one of Delaware State University 's former agricultural research directors. Dr. Washington recalls a situation that occurred in 1960 when the late Dr. Luna I. Mishoe assumed the presidency of then Delaware State College.

Dr. Mishoe attended his first land-grant meeting and much of the discussion centered on agricultural experiment stations. Dr. Mishoe was a bit uneasy because he did not know where the Delaware State College experiment station was located.

Dr. Mishoe immediately called the campus and spoke with the head of the agricultural department. To his chagrin, he learned that Delaware State College did not have an experiment station.

Thus, Dr. Mishoe was introduced to one of the inequities that existed within the land-grant system. The fact of the matter is that most 1890 land-grant universities never received funding to establish an agricultural experiment station either under the Hatch Act or subsequent, supplementary acts or via State funding. I am aware of three exceptions, though I must admit that the record is unclear and somewhat ambiguous on this point.

To be sure, one of our problems is that we do not have a comprehensive and well-documented history of the 1890 land-grant universities. As best I have been able to determine, the three exceptions are:

- (1) Tuskegee University in 1897 received funding from the state of Alabama to establish an experiment station. This was a testament to the research and extension work of George Washington Carver, one of our nation's great scientists and inventors.
- (2) Prairie View A&M University established a branch experiment station to the Texas A&M University experiment station in 1947. And
- (3) a branch experiment station to the Mississippi State experiment station was established at Alcorn State University around 1971 and was later designated as an autonomous station.

Nevertheless, the original language of the Hatch Act of 1887 or the law permitted the establishment of agricultural experiment stations at land-grant institutions established after 1862. The Hatch Act contains an important proviso that reads: "Provided, That in any State or Territory in which two such colleges have been or may be so established the appropriation hereinafter made to such State or Territory, shall be equally divided between such colleges unless the legislature of such State or Territory shall otherwise direct."

My interpretation and understanding of this act is that the States, in accordance with federal law, could have established experiment stations at the 1890 colleges, but chose not to do so.

It took more than 75 years before the 1890 institutions received federal funding

for agricultural research and extension. The initial research funding came as a result of Public Law 89-106 that was passed in 1967.

The initial formula funding for research and extension began in 1972. State matching was not required until FY 2000. One hundred percent State matching is not required until FY 2007.

This delay in funding significantly hindered the development of the research and extension programs of the 1890 land-grant institutions. I believe that one of the dire consequences of this deficiency was the fact that Black farmers in the south did not fully benefit from the expertise and assistance that could have been provided if these institutions had been properly funded.

One of the appalling and shameful American tragedies has been and continues to be the demise of the Black farmer. For example, in 1910, there were 218,972 Black farms in the United States, constituting about 15 million acres of farmland. By 1969, Black land ownership had declined to about 6 million acres. Today, it is estimated that there are fewer than 8,000 Black farmers.

Sadly, the decline in the Black farmer has occurred at three times the rate of white farmers. The land-grant system, the respective States, and U.S. Department of Agriculture all bear some responsibility for allowing this to happen.

It should also be pointed out that the 1890 land-grant universities tend to be much smaller in size and less endowed than the average 1862 land-grant universities. I do not believe this has happened by choice, but rather as a result of meager support for many decades, both by the federal government and the respective states, that limited growth and development.

As we look toward the future, two of the major challenges of land-grant colleges and universities are:

- (1) the increased tension between formula research funding and competitive research grant funding and
- (2) the call for increased accountability and relevance of formula funded research.

With regard to the first challenge, it is interesting to note the series of reports by

the National Research Council (NRC) of the National Academy of Sciences (NAS). The series of reports began in 1972 and has been critical of the state of agricultural research and has advocated funding increases for competitive grants. In an NAS report published twenty-eight years later, the USDA was urged to make competitive grants a higher priority.

In these series of reports, NAS believed increased funding would ultimately engender more high risk research with potentials for long-term payoffs, attract scientists outside of the traditional agricultural disciplines and encourage multidisciplinary research.

Competitive funding for agricultural research at USDA was first authorized by Congress in 1977. It was greatly expanded in FY 1991 when Congress initiated the National Research Initiative (NRI).

In a 2002 report on publicly funded agricultural research, the NRC concluded that a major challenge existed in serving and meeting the needs of agricultural producers, both the large commercial producers and the smaller producers, including limited resource producers and producers of niche commodities. The NRC report raised the question: "Is it (agricultural research) equally accessible to all users and whether it is targeted to the full range of users and citizens groups?"

That assessment also recommended that a need exists for better accountability to the public. The report endorsed the idea of public participation in order to meet the needs of stakeholders. You will recall that a major theme of the Reports of the Kellogg Commission on the Future of State and Land-Grant Universities was engagement with stakeholders in setting the research and outreach agendas.

In 2003, an NRC Committee on Opportunities in Agriculture recommended that USDA refocus its research budget to reflect changing public values and needs. The report also encouraged the USDA to shift its emphasis from increasing food and fiber production to frontier issues such as the impact of globalization, diet and health, food safety, environmentally sound farming alternatives, and the quality of life in rural communities.

Finally, the NRC report advocated that more multidisciplinary research is needed to address many of these issues, especially involving biophysical and socioeconomic disciplines.

Several of the recommendations of the various NRC reports, especially the need for more accountability, the encouragement for more interdisciplinary research, and the need to engage stakeholders in setting the research agenda, are consistent with the themes in the reports of the Kellogg Commission on the future of the State and Land-Grant Universities.

The Kellogg Commission Report titled, “Returning to Our Roots,” recommended that institutional leaders find new ways of encouraging interdisciplinary research, teaching, and learning as part of the engagement agenda. The Report noted that most of today's technical and scientific problems, and social challenges will require cross-disciplinary collaboration and scholarship.

In the Kellogg Commission Report “The Engaged Institution,” the Commission provided seven guiding principles to define an engaged institution. Two of them are particularly interesting for this discussion. They are (1) responsiveness and (2) respect for partners. The first principle advises us to ask the question: Are we listening to the communities, regions, and states we serve? The second principle demands us to answer the question: Do we respect the skills and capacities of our partners in collaborative projects?

I believe that an engaged university will be more responsive and accountable to its constituents.

I learned an impressive, pertinent and excellent example of the successful involvement of stakeholders in setting the research agenda during my participation in the World Food Prize activities in Des Moines, Iowa . In an article in the October 12 edition of *The Des Moines Register* , the 2005 recipient of the World Food Prize, Dr. Modadugu V. Gupta, explained how he used a bottom-up approach to adapt fish-farming techniques to the abilities and customs of farmers in India, Bangladesh, Laos, and Thailand.

Dr. Gupta talked with the farmers in these countries, then developed the technology to meet the needs of the people who would use it. The result was high yielding fish-farming systems in those respective countries.

The bottom line was Dr. Gupta listened and responded to the stakeholders.

The two challenges I have suggested will not go away unless we change our

approach to address them. If we do not, then we can expect support for formula funding, in particular, will continue to erode and cease to exist. And this is where we have a unique opportunity.

I believe that, properly utilized, formula funded and competitively funded research are both needed and should complement each other.

Formula funded research provides more of an opportunity to conduct applied and basic research that is relevant to the particular state or region. Competitive research grants provide an opportunity to conduct more cutting edge research that will provide long-term benefits.

We have an opportunity to change the perception that much of the formula funded research is irrelevant to the needs of their respective communities and states and that it lacks accountability. I believe that in the case of formula funded research, we must rethink our research agendas.

First, we must engage our stakeholders – small and large producers, limited resource farmers, people living in rural communities, and local, county, and state officials – to ascertain the needs as perceived by these constituents.

Second, we must establish research priorities consistent with the needs identified by our stakeholders.

Third, we must seek either partnerships or collaborations, when appropriate, to address the identified problems. The use of partnerships to attack problems will minimize unnecessary duplication of efforts and lead to a better utilization of resources to solve problems of mutual interest.

I especially believe that we should have more collaboration between the 1862 and 1890 universities that reside within the same state. This will only work if these collaborations are characterized by genuine mutual respect between the partners and a feeling by both that the partnership is mutually beneficial.

These partnerships have been minimal in the past, in part, because of mistrust, and in part, because the two partners were not viewed as equals. In my opinion, it is in our mutual self-interest to make these partnerships work for the mutual benefit of both partners.

I also believe that there should be more collaboration between 1890 universities

and between 1862 universities as a whole, especially in addressing problems of mutual interest.

And, with respect to collaborations within the university, we must not restrict ourselves to disciplines within the College of Agriculture, but rather should consider the entire university and involve the disciplines such as social sciences, natural sciences, business or management and those that contribute to solving a particular problem.

Fourth, we must keep our publics informed about our progress and do so in a way that is easily understood.

I believe that this engagement approach will lead to improved research, more relevant research, better use of resources, and better accountability to our publics.

In summary, the Hatch Act of 1887 has a rich legacy; it has contributed to the development of the world's best agricultural research enterprise and to our land-grant colleges and universities. Our land-grant universities have contributed to the development of the world's most productive agriculture industry.

This has served us well in the past, but as we look toward the future, we face new challenges that offer new opportunities. To paraphrase the words of the Sixth Report of the Kellogg Commission on the Future of State and Land-Grant Universities: we must renew the covenant between our institutions and the public to again be “the publics universities” and to engage in activities to serve the common good.

Thank you.

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Land Grant University Missions—Why Bother Now?

Francille M. Firebaugh¹

Thank you for the honor of asking me to give the William Henry Hatch Memorial Lecture for 2002, and my special thanks to those of you who nominated and supported me. I had a shocking realization as I worked on the presentation—I really have been associated with land grant universities for the daunting time of almost half a century! When I add my childhood, from first grade onward, when my father served as a county extension agent, my association with the land grant concept goes back a long way indeed.

I've seen land grant universities change from a concentration on agriculture, home economics, rural life, and in some cases, engineering, to a more comprehensive focus. In my own area, now human ecology/human sciences, I have seen an increased focus on social-economic, family, health and nutrition policy. And, along with everyone else at a research university, I have seen an explosion of the biological and physical sciences, with some diminution and, even denigration of mission-oriented research. The sophistication of research methodologies, instrumentation and analyses in science is breathtaking, as the upcoming workshop on nanoscale science and engineering for agriculture and food systems will demonstrate. Developments in science, but also changes in the economy, in demographics, in technology, in national security and in major societal needs compel us to reconsider the appropriate sphere and scope of land-grant activities in the 21st century.

The accelerating pace of change conjures up the tale of the 19th century British evolutionist, Thomas Henry Huxley, who realized he might be late to deliver his lecture. Huxley jumped into a cab, crying, "Top speed." The cabman urged his horse to go at its fastest pace. Suddenly Huxley stuck his head out the window, and called out, "I say, do you know where I want to go?" Above the rapid hoof beats came the response: "No, your honor, but I'm driving as fast as I can."

¹Professor Emeritus, Michigan State University, East Lansing, MI. Presented at the National Association of State Universities and Land-Grant Colleges (NASULGC) Annual Meeting, November 10, 2002, Chicago, IL

Now, as then, a destination is imperative. This is the case for land grant universities, especially when things are moving so quickly. I believe we must continually reassess the missions of land grant universities and how they are interpreted in order to preserve the best aspects of the current enterprise, while effectively directing resources toward future needs.

A number of pragmatic considerations motivate us to “bother” to do so now. First, the public no longer understands or appreciates the civic mission of the land grant universities. Many people today have not heard the term “land grant” used to describe a university in their state (Christenson, Dillman, Warner, Salant, 1995), and many do not know what a “land grant university” means. Harry Boyte, University of Minnesota, warns that: “Without a historical grounding, a sense that public universities were once ... far more engaged in partnerships with the public, it is difficult to imagine a renewed public mission” (Boyte, 2000).

Second, across the country, many states are allocating flat or declining budgetary support for land grant universities, particularly to their extension and research missions. Last year, federal support from Hatch and Smith-Lever funds was less in constant dollars than in 1990. (NASULGC, 2002). The National Research Initiative was essentially the same for FY 2000, 2001 and 2002. By contrast, between 1990 and 2001, NIH’s funding of academic R&D had an estimated annual growth rate of 4.9 percent in constant 1996 dollars. For research in land grant universities, NSF and NASA experienced the next highest rates of annual growth: 4.2 and 3.1 percent respectively. (Science and Engineering Indicators).

Third, the diversity of institutions under the “land-grant umbrella” presents opportunities for collaboration, and also substantial challenges. The (59) institutions designated by the 1862 Morrill Act and the (17) historically black institutions assigned land grant status in 1890 are joined by the 1994 expansion of the land grant designation to 29 Tribal Colleges. The National Research Council recommended bridging programs among all land grant institutions, such as student exchanges and internships (National Research Council, 1996). Despite this and other calls to focus on inter-institution collaboration (Martin 2001), we still fall short of substantive and sustained relationships built on the strengths of each institution. Finally, in the view of many, land grant universities should be more accessible to a wide range of students and more relevant to contemporary society.

Recognizing these challenges, several national studies have “bothered” with the mission and role of the modern land grant university. The Kellogg Commission on the Future of State and Land-grant Universities, “Renewing the Covenant,”

envision an encompassing role for them: “We commit our institutions to wide-ranging examinations of our civic and democratic purposes through curricula and extracurricular activities, socially engaged scholarship, civic partnerships, and community-based learning and research” (Kellogg, 2000). The Commission’s work continues to stimulate interest in and commitment to the revitalization of the partnership between the federal government and land grant institutions.

The Task Force on Building a Science Roadmap for Agriculture endorses much of the current research agenda, maintenance research to “protect past gains,” increased basic research, and finally, new investments doubling the broadly defined agricultural research budget (NASULGC, 2001). Complementing the work of national commissions are special reviews of the contemporary meaning of the land grant mission undertaken by individual universities, including the University of Minnesota, Pennsylvania State University, Ohio State, and Cornell. Let me tell you a bit about our efforts at Cornell, where a comprehensive review is drawing to a close.

Most of you are aware that Cornell is both a private research university and the land grant university for the State of New York. Even though only four of Cornell’s schools operate as contract colleges for the State of New York, all of its academic units fall within the purview of the land grant mission. (By no means do all the faculty consider that to be the case!).

Mindful of this mission, and under the leadership of a Presidential Oversight Commission, five Cornell faculty and staff panels have focused on outreach. The panels were asked to make recommendations for the university for the future, not only in the colleges that receive core funding from the state and federal government for land grant activities, but also in engineering, in technology transfer and in K-12 education. Themes from the final reports of the panels coalesced around the need to:

- enhance the role, recognition, and status of the land grant mission throughout the university;
- strengthen the ties between research, undergraduate and graduate teaching and outreach;
- increase public accessibility to Cornell’s resources and set priorities to serve the public interest;
- develop effective partnerships for outreach;

- strengthen entrepreneurship and relations with industry; and,
seek new sources and strategies of funding for outreach.

Our emphasis on outreach and extension was in no way meant to minimize the fullness of the mission of land grant universities--the conduct of basic and applied research for the public interest; the diffusion of scientific and practical knowledge through cooperative extension systems and other outreach mechanisms; and the offering of broad curricula with a blend of liberal and practical education that is accessible to students (Peters, 1988).

I will turn now to each of these land grant university missions. First is the conduct of basic and applied research for the public interest. This requires recognition that scientific and societal issues are incredibly complex in nature and call for collaboration across departments, disciplines, colleges and centers.

Fortunately, the raw materials for basic and applied research on many of these issues are already at hand. Land grant institutions, especially those that are also research universities, have a breadth of content, a depth in disciplines and a commitment extending from basic research to a range of practical concerns. We have the fundamental resources. As an example, life scientists at Cornell seek methodologies for rapid DNA sequence detection, the computational and statistical tools to manage and analyze the data, to link sequence to function in the cell, in the organism and in the environment. Faculty from some 45 departments are working collaboratively in the several areas of the new life sciences initiative—the faculty comes from the Colleges of Agriculture and Life Sciences, Veterinary Medicine, Human Ecology, Engineering, as well as from Arts and Sciences.

We do not have a parallel focus on a social science-based issue, probably because there is no social science equivalent of genomics and as a nation we have not assigned the necessary major funding for massive research efforts. But examples of research with a social-science base exist in many of our universities across departments and fields in economic and community development, workforce and workplace concerns, health issues such as prevention of disease, obesity, and disability, the study of violence, including child abuse, and in the built environment and natural resources. These and many other complex issues cry out for clear identification, analyses, and applied research to serve the public interest.

Simply conducting research -- even if it combines basic and applied work and cuts across disciplines -- does not ensure that it will be used to solve real

problems. For many issues, those who need the research results must also feel some ownership of them. Land grant universities were conceived as “people’s universities” that, as Scott Peters and Karen Lehman note, not only work for ordinary people, but also with them by involving them as full participants in shaping and conducting serious educational work” (Peters and Lehman, 2002). They call for “direct engagement with people and their context-bound problems and goals.”

A connection between ordinary people and the research from which they can potentially benefit not only creates a civic understanding of the land grant mission, but also provides meaning and authority to public scholarship. The strength of the concept of public scholarship is dramatically illustrated in international settings. The development of the System of Rice Intensification (SRI), which involves farmer skill, experimentation and learning, rather than promotion and adoption of a fixed technology, is quintessentially “public scholarship” (Uphoff et al., 2002). The SRI recognizes the varied conditions under which rice is grown, emphasizes new learning from farmers, and incorporates scientific research.

Alan Leshner, CEO of the American Association for the Advancement of Science, made the same point in a Science editorial prompted by the World Summit on Sustainable Development held last August. He notes the importance of the rice genome for enhancing the grain, but added, “... unless explicit efforts are undertaken to ensure that these advances are translated and transferred to the developing world, and made workable in local contexts, knowledge of the rice genome will principally benefit the rich” (Leshner, 2002). Translation, transferring, and making workable have been—and must be—at the heart of land grant universities.

I submit that land-grant universities can and are obligated to contribute to solutions of pressing problems, building on their comparative advantages such as the public service tradition, effective outreach infrastructure, broad and continuous experience in basic and applied research, and a history of practical and effective education of the citizenry.

My view of the land grant universities of this century is a system of both public scholarship and scholar-scientist driven research. The latter aims to add to the storehouse of knowledge, often with only indirect ties to the public mission. But the eventual public benefit of such fundamental knowledge can be extraordinary. For example, Patrick Stover, a faculty member in Nutritional Sciences at Cornell, uses molecular-genetic techniques to study folate metabolism. This fundamental research has broad implications for preventing neural tube defects -

- and delivering healthy babies. Today the public often seeks a role in scholar-scientist driven research. In research with potential implications for health and involvement of human subjects, public advisory groups are more common and outreach may be required.

The second aspect of the land grant mission, “diffusion of scientific and practical knowledge through cooperative extension systems and other outreach mechanisms,” promotes the public good. Cooperative extension programs are structured systems which reflect a corporate and purposeful university commitment to outreach (Bonnen 1998). They help distinguish land grant universities from other higher education institutions. As Harold Enarson, president emeritus of The Ohio State University, has said: “It was the deepest article of faith that the university would not only generate new knowledge but would also apply that knowledge to real-life problems. This is what is distinctive in the land-grant concept” (Enarson, 1989).

Cooperative extension, created by the Smith-Lever Act of 1914, initially brought together the university and farmers, families and communities. As the number of farmers has declined and other conditions have changed, the public has supported the use of more cooperative extension funds for natural resources and the environment, 4-H and youth development and family development and management (Christenson, et al., 38).

Cooperative extension still provides an “on-going platform with dedicated resources” (Peters and Lehman, 2002). Important programming continues to be successfully deployed through extension. But over time, issues and problems have arisen that lie outside the strengths, staffing, funding, and the county-based system of cooperative extension. As a result, new methods and intermediaries may be needed to better link land grant universities with contemporary issues and concerns.

The Center for Cooperative Research and Extension Services for Schools at UC Davis has found ways to link the land-grant university to K-12 education. The Center organizes university faculty, education extension specialists, graduate students and K through 12 educators “in cooperatively designing and conducting education research, curriculum, and professional development projects.” (<http://www.education.Ucdavis.edu/cress/short.html>)

Unfortunately, in these tight economic times, we are unlikely to see an outpouring of state, federal or county tax dollars to increase the core support of extension or outreach. In many states, the prospect for funding initiatives such as the UC Davis Center is also dim. We will need to continue re-direction of

existing resources, increase reliance on grants and contracts for special programs, have more fee-for-service programs, and develop new partnerships in disseminating knowledge. Such partnering is already happening. In New York City, the New Farmer Development Project is offered by Cornell Cooperative Extension. Cornell Extension works with Greenmarket of the City University of New York and the NYS Department of Agriculture and Markets to offer a series of 15 training sessions for experienced farmers, predominantly from Latin America, who lack the business expertise needed for successful farming. Graduates of the program are employed in cooperative growing settings, as apprentices with area farmers, and some are self-employed as independent farmers (CUCE-NYC. 2002).

Some outreach activities previously “owned” by cooperative extension have long since migrated to other educational systems, such as community colleges, or to business and industry. I do not believe that the 1862 land grants should “shuck off” more applied program areas. We should instead develop stronger, mutually supportive and sustainable working relationships with community and technology colleges, the 1890 and 1994 institutions, and business and industry.

Sustainability of programming is increasingly an issue in extension and outreach as the dependence on grants and contracts for program innovation becomes the norm. Core funding from Smith-Lever, state and local sources for extension has been an extraordinary strength in sustaining programs. One could also make the case that the core funding has allowed continuation of programs after their effective life span. We must shepherd those funds to maximum advantage.

The information revolution that occurred through developments in science and technology puts a premium on the dissemination of knowledge. The means of dissemination have evolved more rapidly than has a sense of what to communicate and to whom. We’ve experienced a revolution in knowledge production, in the usefulness of the information, and the means to disseminate it. Now we must consider who is responsible for dissemination.

Libraries, by undertaking partnerships with extension, can link land-grant universities to new constituencies. The undigested, unrefined, and often untested information available on the internet makes the benefit of extension partnerships with libraries obvious in dissemination of information and knowledge, since both cooperative extension and libraries have a long history of a commitment to accurate information.

With the current emphasis on the linkages between research and extension and education, the collaborative effort on the Agriculture Network Information

Center Initiative (AgNIC) (library members--NAL, Wisconsin, Arizona, Cornell, Penn State) is remarkable in providing Internet access to authoritative agricultural information. The network partners with cooperative extension and many other entities and groups.

Progress on shared electronic databases in all areas of research, extension, and resident instruction through USDA has been slow. I am pleased that by the first of the year, the prototype for the Research, Extension, Education Information System (REEIS) will go live on the Internet, leading to one solution or one stop for the users.

The third aspect of the land grant university mission is the commitment to offer broad curricula with a blend of liberal and practical education. The breadth of academic content at land grant universities enables a wide range of course offerings and choices. Land grant universities must also contribute to the development of civic responsibility in students. Colby et al (2000) observe that 1) institutional intention is important in fostering civic responsibility; 2) both curricular and extracurricular offerings can be structured to enhance moral and civic learning; and 3) active involvement of students in dealing with moral and civic issues is essential to their becoming a part of an educated and engaged citizenry.

Providing research and outreach experiences to students is even more important today. Undergraduates not only learn a great deal by being closely involved with research and outreach, but they are also introduced to what the field is really like. They often make substantive contributions to the programs (Service: 1634).

Having the teaching award presented this morning is a powerful statement of the importance of our responsibilities to students.

The fourth part of the mission of land grant universities is to be accessible to students -- and this important component contributes to the reason for bothering with the mission today. "Accessibility" was originally described as promoting the liberal and practical education of the industrial classes in the several pursuits and professions of life. Today's goals for accessibility include making undergraduate education and outreach available to students who are diverse socio-economically, ethnically, racially, and chronologically.

Today's technology can help promote a liberal and practical education for that widely diverse universe of students. New meaning surrounds the concept of accessibility, whether the education is degree-based on campus, a mixture of on-campus and distance learning for credit, or life-long learning through continuing

education, again, offered on campus or electronically, and through access to the university library and its data bases.

I emphatically believe it is essential to regularly consider the expression of the land grant university missions in light of the needs of society, advances in science and technology, and university capabilities.

I close with a photograph of a new pedestrian overpass in Ithaca across State Rte. 13—near Buttermilk Falls State Park—a site familiar to some of you here. The bridge was built to connect to trails on either side—yet, you can see that the bridge is fenced off at the end—actually, it is fenced off at the other end just like this. The foot trails that were to be linked at the bridge have yet to be completed. In the bucolic park-area setting, the unusable bridge (painted blue in honor of Buttermilk Falls?) reminds me of one possible fate of land grant universities. Many people do not know where we came from (the ramp at the creation of the concept is missing) and many land grant universities have an uncertainty about the future—the connection at the other end of the bridge is either weak or missing. I believe we must bother now about the expression of land grant university missions so we can ramp up both ends of a strong land grant university bridge that leads to access to higher education, to research conducted for the advancement of knowledge and to practical research and extension for the public good of increasingly diverse populations.

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Winners and Losers: Formula versus Competitive Funding of Agricultural Research

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State Agricultural Experiment Stations (SAES's) were established with federal formula funding by the Hatch Act of 1887. In 1955, the Hatch Act was amended and a number

of subsequent formula funding programs were consolidated under the USDA Cooperative States Research Service (CSRS), which today is known as the Cooperative Research, Education and Extension Service (CSREES). Currently, all of the Hatch funds and a small amount of other formula funds go to SAES's. In 1977, CSRS established its first competitive research grant program. However, this program remained quite small until 1990, when it was re-named the National Research Initiative (NRI) Competitive Grants Program with a much larger funding authorization. Currently, the SAES's account for 60% of U.S. public agricultural research, with 7% of SAES's funding obtained from Hatch funds and 2.3% from NRI Grant funds (Huffman & Evenson, 2006b, pp. 107, 117-118). Hence, the SAES system has become relatively diversified in its funding sources after starting with only Hatch funding.

The characteristics of these funding sources are quite different from a SAES perspective.

- Formula funds are allocated among the states by a legislated formula, the choices of projects and scientists to support are made locally, oversight is local, and funding is recurring.
- Grant or NRI funds are allocated to proposals submitted to programs with identified priority areas; only a small share of submitted proposals are usually funded; the process consumes many resources relative to grant funds awarded, and there is no guarantee of success or continuation of funding after the initial grant period.

The composition of these funds has changed substantially over time. From 1980 to 2003, the USDA-administered federal formula funds declined by 57% or \$124 million (2,000 dollars; Huffman & Evenson, 2006a). Over this time period, NRI appropriations increased by \$120 million, but less than 40% of NRI funds go to the SAES's. The remainder goes to non-SAES units, especially those in non-land grant universities. Hence, CSREES funding of SAES's has fallen dramatically over the past 25 years. Other changes in SAES's' funding have also occurred since 1980. They include an 88% increase in grants and contracts from non-USDA federal agencies, a 51% increase in contract, grant, and cooperative agreement funding from USDA agencies other than CSREES, and a 100% increase in Congressional earmarks or special grants for research.

Prospects are that the funding composition will continue to change. In the Fiscal 2007 Budget of the United States, President George W. Bush proposed further reductions and eventually elimination of federal formula funding for agricultural research, while replacing these funds with a new competitive grants program for State Agricultural Experiment Stations with perhaps a regional focus. The proposal seems likely to be rejected by Congress, but new proposals to redirect federal formula funds seems likely to resurface in the future. This raises questions of who wins and who loses from such a policy change.

This article examines who wins and loses from a change in the composition of federal funding. We explore the implications by examining

- Differences in who sets the research agenda,
- Implications for priorities in long- and short-term research,
- Capacity to respond to local needs,
- Cost efficiency of distributing funds,
- Distributional effects across the states and regions,
- Payoff to society, and
- Sustainability of future funding.

Who sets the research agenda?

A major issue across alternative research funding mechanisms is who sets the research agenda. With federal formula funds, the research agenda is set by the states, either by the scientists, the SAES directors, or a combination of the two. With a national competitive grant program, the research agenda is set by CSREES, which uses input from the National Agricultural Research, Extension, Education, and Economics (NAREEE) Advisory Board and other advisory groups (Board on Agriculture and Natural Resources,

2001, pp. 86-89). The current CSREES grant agenda tends to take a national perspective, but is also subject to political influence from various lobbying groups, as well as fads in research and public administration. Because crop and livestock production is sensitive to local and regional geo-climatic and economic conditions, many important agricultural research problems are local or regional and not national in nature. If formula funds are eliminated or dramatically reduced, SAES directors in small heterogeneous states

might find it difficult to undertake sufficient local agricultural research to meet local needs. Research and extension faculty would spend a greater proportion of their state funded time writing proposals for federal grants and conducting research on grants based on Federal priorities, with a smaller share of their time addressing state-level research needs. Some experiment stations would also risk losing matching state funds, the amounts of which are tied to the amount of federal formula funds to be received. Hence, there is more at stake than just federal formula funds for agricultural research. Therefore, the influence of national, and perhaps regional, research interests would likely increase at the expense of the influence of local farmers, consumers, and agri-business firms.

How would changes affect the willingness of scientists to undertake longer-term research objectives?

Federal formula and state funding provide secure funding to scientists across a broad set of disciplines related to agriculture for undertaking projects that require sustained multi-year efforts before major objectives and large payoffs can be obtained. Examples of research that took decades to complete, but that generated very high payoffs, include the discovery of hybrid corn (Huffman & Evenson, 2006b, pp. 159-161) and of tillage systems that conserve soil and provide

outstanding crop yields. Uncertainty about when and if scientists will obtain competitive grant funding, coupled with typically shorter-run priorities in grant funding, reduces opportunities for long-term pursuits and shifts research efforts toward shorter-term projects with more predictable outcomes (Huffman & Just, 2000). A larger federal competitive grants program might have the advantage of leveraging state and federal formula SAES funding to focus on medium-term national needs. This focus, however, comes at the cost of reduced opportunities for long-term research. Also, for some states a significant reduction in formula funds might erode their overall capacity to undertake agricultural research. This would mean closing campus and outlying research facilities and research farms. Under the proposed changes in science policy, SAES's would lose flexibility to pursue long-term agricultural research objectives, while agricultural research with medium-term national or possibly regional objectives would gain.

Would changes affect the capacity of states to meet local and regional needs or to respond quickly to crises?

Examples of research efforts generating high-payoffs for locally-important crops include developing

- cultivation methods and new varieties of wild rice in Minnesota,
- blueberry cultivars with improved taste and yield in Maine, Michigan, and Vermont,
- wastewater management research in Maryland and North Carolina, and
- improved procedures for combating a new wheat rust in Kansas.

These types of projects are disadvantaged when research funds are allocated by national or regional competitive grant programs, either because these programs are cumbersome and time-consuming to organize, or because they cater to national or regional, and not local, research needs. Also, once scientists have been awarded a large, multi-year competitive grant to undertake a particular line of research, their effort is “locked-in,” and they are unable to redirect their efforts to important, new, and emerging local and regional issues. Hence, local research interests would lose and national research interests would gain.

What is the relative cost of distributing the two types of funding?

Compared to external competitive grants programs, formula funding has low administrative costs. Federal formula funds are distributed to the states by a fixed formula: part is allocated equally to all states, part is allocated to states according to their share of the farm and rural populations, and part is allocated for multi-state research (Huffman & Evenson, 2006b, pp. 23-25). Allocation of these funds to individual research projects and scientists is under the control of the local SAES administration and is subject to local, but minimal national political pressure. Historically, SAES Directors have built ties to local clientele groups to help prioritize state research needs and have then integrated this information with the research capacity of their local scientists to allocate the total research budget. SAES administrators have generally required a small amount of proposal writing and evaluating, preferring that their scientists dedicate their efforts to conducting research and publishing discoveries. These administrators have a variety

of tools for setting incentives for scientists, including repeat contracting and annual evaluations for salary increments. In contrast, competitive programs significantly increase the amount of scientists' time allocated to proposal writing, assisting with peer review of research proposals, and peer-panel decisions on which proposals to fund. In fact, a new layer of CSREES bureaucracy has been added to coordinate and administer the NRI and other national competitive grant programs. Costs imposed on scientists of competitive grant research are not funded by the NRI or by most other external competitive grant programs. At the current NRI research proposal funding rates of 5-12%, large amounts of resources are being consumed per dollar of research grant funding reaching scientists from this program (Huffman & Just, 1999a). In addition, while federal formula research funds do not pay indirect costs to recipient institutions, the NRI permits indirect costs equal to 25% of project direct costs. Additionally, the Bush Administration's grant program proposal suggests full funding of indirect costs, which would raise the current indirect cost rate on the NRI to an estimated 45-55% of direct project costs and use this higher indirect cost rate on the new grant program for the SAES². Although land grant universities vary in how they use the revenue from indirect costs, it is common for central administration to take 50% or more of these funds and for the remainder to be split between the college and department of the recipient principal investigators. It is unusual for the principal investigator(s) of an

externally funded project to receive part of the revenue from indirect costs. Indirect costs are primarily an accounting concept and not an economic concept, and a university's indirect cost rate for federal grants is a negotiated rate between the institution and the Office of Management and Budget (May & Sarson, 1999). Hence, the new Bush policy would significantly increase the amount of scientists' efforts allocated to proposal writing and evaluating and the share of CSREES research funds allocated to university indirect costs³. Central university administrators would in general win, but the SAES system would in general be losers. If non-land grant universities were eligible for new CSREES grant funds, then scientists and administrators outside the SAES system would be gainers at the expense of the SAES system. In fact, unless the pool of competitive grant funds is increased dramatically, the actual funds reaching SAES scientists will decrease.

Which states would be likely to gain or lose?

Competitive grant funding tends to favor institutions that have a large research infrastructure supporting research proposal writing and administration. In 1990, all but 11 SAES units received more than 90% of their CSRS-administered funds from federal formula funds and just 10% from competitive grants. Experiment Stations with larger shares from competitive grants included Massachusetts, New York, Florida, Michigan, Wisconsin, Arizona, California, and Oregon. In 2004 these same states, plus Maryland, Rhode Island, Kansas, Iowa, Illinois, Indiana, and Texas, were the leaders. The states that remain heavily dependent on formula funds are the ones likely to be the most disadvantaged by a shift toward increased funding through competitive grant programs.

²Indirect cost revenue goes to pay for university administration, research facilities (infrastructure), and utilities to laboratories, which are not easily attributable to individual projects, and hence not permitted

under project direct costs.

³It is a data-intensive and time-consuming process for universities to document and defend their request for an indirect cost rate to the Office of Management and Budget (May & Sarson, 1999).

They are New Hampshire, New Jersey, W. Virginia, Georgia, Louisiana, Minnesota, Mississippi, Tennessee, South Dakota, Alaska, and Hawaii. The other 24 states would be small losers. (Figure 1). In general, states where the SAES is part of a mid- to large size land grant university outside of the South-Southeast would be winners and others would be losers, including states with a small agricultural sector. If the new grant program were regional in nature, this would provide a more equitable distribution of the research funds across regions, but it would sacrifice much of the potential gains from high scholarship.

Would society gain or lose?

Under the Hatch Act, federal formula funds are allocated for research across problems in agriculture, marketing, forestry, home economics, and rural and community development, which are researched from the perspective of several disciplines. Washington administrators sometimes suggest that this is too broad— topics or disciplines— or not adequately targeted on important national issues, reducing its overall impact. In addition, a claim is sometimes made that this research is not subject to rigorous research methods, and that projects are reviewed infrequently. But scientists working on these projects must publish in scholarly outlets in order to prosper professionally. Thus, the expectations set by their colleagues and university administrators are a critical factor affecting scientists' efforts in research and other activities. As evidence that public agricultural research is productive, Huffman and Evenson (2006a) found that the social rate of return to public agricultural research remains high—about a 50% real rate of return. However, they also found that shifting federal formula to competitive grant programs would lower its impact and rate of return. In a related study, Huffman and Evenson (2006b, pp. 276-278) found that from this type of fund reallocation only California, Oregon, and Wisconsin would likely benefit from increased research productivity, while the other 45 contiguous states would likely see a decline in productivity. Hence, a case can be made for increasing federal formula funding. The production process for scientific discoveries contains uncertainty. Scientific efforts result in a continuum of output from no discovery to a revolutionary discovery. Furthermore, unanticipated discoveries sometimes occur. Hence, the social payoff or value of any research project is initially unknown. The uncertainty to stakeholders in scientific discovery can be reduced by research administrators choosing to undertake a portfolio of diverse projects with diverse incentives for discovery (Huffman & Just, 2000). This implies that more than expected returns are at

issue. With a variety of research funding mechanisms, such as federal formula and competitive funding, it is possible for some scientists to be working with strong incentives for discovery and others with weaker incentives. Simultaneously, some can work on long-term goals and yet others on short-term or intermediate goals. Hence, a case can be made for larger competitive grant funding for selective national or perhaps regional priorities.

Moreover, a diversified portfolio of projects and funding mechanisms decreases society's discovery risk.⁴

How would changes affect the sustainability of research funding?

If fewer dollars were allocated across the land grant system for formula funding, for example by eliminating formula funds to small SAES's, those dollars could be used to increase the research funds available for competitive grant programs. In this scenario, the country might not "need" more than 20 Colleges of Agriculture and AES's, and perhaps could get by with even fewer. However, dramatically reducing the number of states receiving federal agricultural research funds would greatly change the political economy of federal agricultural research funding. One prospect is that, over time, the currently strong Congressional support for formula funds would wither and total CSREES appropriations for competitively funded agricultural research would decline. State matching funds would also decline. Another possibility is that the excluded land grant universities would pursue Congressionally earmarked research funds or "special grants" on a grander scale (National Research Council, 2003, pp. 71-72; Huffman & Evenson, 2006b, pp. 116-117; Law & Tonon, 2006). Hence, a few states would win in the short run, but all might lose in the long run. There are also strong implications for complementary university instruction and public outreach (extension) programs of altering the nature of the complementary research support from formula funds.

⁴The analogy to wealth management based on a criteria containing expected return and risk trade-offs is intended.

Conclusions

Some will win and some will lose with changes in the size and relative amount of CSREES-administered formula and competitive grant funding for agricultural research. We conclude that a further reduction or elimination of federal formula funding of agricultural research will significantly impact,

- Future research priorities and the research agenda,
- The composition of short- versus long-term research,
- The mix of national versus local needs research,
- The transactions costs of undertaking research,
- The distribution of research funds across the states,
- The distribution of research benefits across states,
- The rate of return that society earns from its research investments,
- The discovery risk faced by society, and
- The sustainability of future research funding.

Although recent research has shown that the social rate of return to public agricultural research would decline as the competitive grant share rises, we believe that the very considerable risks associated with future discoveries in agricultural research will be best diversified by maintaining a portfolio of CSREES administered formula and competitive grants funding in the future. Moreover, a case can be made for continuing and possibly increasing federal formula funding because of their high payoff and at the same time expanding competitive grant funding to address selective high priority national or perhaps regional needs.

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Figure 1. States likely to gain or lose from a CSREES increase of competitive grant funding and decrease in formula funding.



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A Drift Toward Elitism by the People's Universities

Michael V. Martin¹

Many land grant universities, mine among them, face a dilemma today as they try to retain their commitment to be accessible “people’s university” while being driven by forces, both internal and external, to become increasingly selective in admissions.

The land grant tradition was forged in America’s Jacksonian age, the era of the common man, to serve what would soon be called the “industrial classes” that did not have access to higher education. For roughly 120 years following the Morrill Act of 1862, land grants were largely true to their mandate and focused on providing educational value for ordinary people. Through their teaching, research, and outreach services, they played a significant role in advancing social justice, enhancing economic development and therefore in securing American democracy.

But to many observers, myself included, fear that in recent decades land grant institutions have drifted toward a more elitist approach to recruiting and admitting students. In so doing, they are becoming more like filters than ladders.

The drift toward recruiting a more selective student body is, of course, not unique to land grants. Statistics indicate that the country’s top colleges are not serving socio-economically disadvantaged students well. The drift, however, raises particularly vexing concerns for the land grants. If the institutions specifically created to serve the common student do not do so, who will?

Land grant intuitions and other pubic colleges face unique pressures. In states like New Mexico, out politic leaders are increasingly concerned about our retention and graduation rates. Statistical evidence suggests that the simplest way

¹*President, New Mexico State University. Reprinted from the Chronicle of Higher Education, 2005. Volume 51 (25): 25.*

to increase those rates is to recruit white, middle-class to upper-middle class students from suburban areas. But that runs counter to our mandate and to society's needs.

Further, the costs of meeting the needs of an academically and socio-economically diverse student body are high and rising. Offering transitional or remedial programs in areas like mathematics and English are effective in small classes and personalized programs, stretches already tight budgets. In New Mexico, where the most recent census data show a population that is 42 percent Hispanic and 10 percent American Indian, we face a special challenge of welcoming, transitioning, and advancing students who are not typically well prepared for higher education. Then to, teaching and particularly advising students from diverse backgrounds takes time and effort on the part of the faculty members, some of whom would rather spend their time on research, graduate-level teaching or other professional ventures.

If state legislatures do not provide sufficient funds to meet those special challenges, universities will seek to lower costs by being more selective. Faculty members, pressured to publish as well as to teach and advise, will themselves be more selective in the students they choose to devote the most time to. And so the trend away from the land grant mandate will continue.

But one could certainly make the case that the measure of a college's quality should not be where its students start, but rather, how far on an educational journey it takes them. That is, a college may best be judged based on the educational value it adds.

That is where land grant and other public institutions need to remember their roots. With all due respect to our elite sister institutions, I would contend that taking an A high-school student and turning out an A college graduate is less challenging, and perhaps less important, than taking in a C high-school student and turning out a B+ graduate. And that matters for the nature of our democratic society.

The country today needs, as much as it did when land grant institutions were founded, a system that provides high quality, accessible and inclusive higher education. That need is clear and unambiguous in places like New Mexico, with

its rapid growing of minority populations. We face the prospect of creating a large underclass with limited capabilities to contribute to economic, social and cultural development – a class that will add much more in costs to society than in benefits. While many factors lead us down that path, our search for selectivity and status contribute. Moreover, simple arithmetic tells us that there are not enough “top 20 percent” students to go around. Universities now wastefully compete to attract those elite students, often ending up subsidizing the education of those who need subsidies least.

What should be done? First and foremost, we land grants should reaffirm our mandate and commitment to be the “people’s universities” in a 21st century context. That can and should include forging new partnerships with community colleges, and creating new programs that bridge the transitional gap for under prepared admittees. It may mean offering well-designed, five-year bachelor’s degrees that blend traditional course work with remedial work during the first two years. To publicly articulate and celebrate the value-added nature of our educational contributions, we should enlist our national organizations in developing better measures of the educational distance our students travel, rather than only final outcomes.

In the final analysis, we should embrace diversity and create academic institutions that will attract and serve students who would not otherwise have access to higher education. A good place to start is by rethinking how we have been changing our criteria for admissions. And we must foster a new cadre of admissions professionals who can identify, attract, and assist students who come from across the spectrum of educational and socio-economic backgrounds.



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Where are Land –Grant Colleges Headed?

Henry Fribourg¹

On 4 Nov. 2004, I was asked to be the featured speaker at the fall initiation banquet of Gamma Sigma Delta, The Honor Society of Agriculture, Tennessee chapter. I was honored to have been asked, and congratulated all the new initiates and award winners, pleased that their achievements had been recognized. I proceeded to talk about “Where are land grant colleges headed?”, a topic on which I had done some reflection and had earlier published a short opinion piece in the *Chronicle of Higher Education*. Several of the attendees felt that my views should be read by students, faculty members, and administrators alike, to form the basis for lively discussions nationwide. It is to facilitate wider dissemination of this material that I write this Forum article.

Sixteen years ago I had four heart bypasses. After I recovered, I decided that life was too short to equivocate, for whatever pretext, and that when reason, logic, and facts led me to a conclusion, I would neither hide it nor sugarcoat it. I have communicated enough to know you can connect with readers by telling a joke; it is a tried and true formula. But this article is not a normal article for a normal time. Today, this is a serious moment in our history, and I want to connect with the seriousness of this moment.

Each one of us bears a burden to assure that future generations are shaped as completely, as objectively, and as humanely as has been done to us by the institutions we have known. I am worried that we may be allowing the university we hold so dear to be reshaped, remolded, and recast in ways that are alien to the characteristics of institutions of higher education we have known and loved. American institutions of higher education are the great beneficiaries of centuries of intellectual development at European universities that forged the notion that free and untrammelled inquiry, in an environment featuring the snug harbor of academic freedom, is clearly in the public interest.

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Land-Grant Colleges: A Uniquely American Concept

One of the greatest innovative ideas that the USA ever had was the land-grant college concept. The original Morrill Act was passed by Congress and signed by President Lincoln on 2 July 1862, with the aim to open institutions of higher *education* to the sons and daughters of shopkeepers, artisans, and farmers. The grant of western lands made possible the flowering of the idea. Later, a public commitment to *research* directed to the needs of farmers was added to the land-grant university in the Hatch Act of 2 Mar. 1887. It provided for a permanent appropriation to each state each year for the purpose of establishing an agricultural experiment station. The third function, *extension*, was given shape and funding by the Smith-Lever Act of 1914. The three functions, long viewed as co-equal in the land-grant university, proved to be a remarkable response of government and of the academic community to the needs of the rapidly developing agricultural and industrial sectors of America.

By the early years of the 20th century, strengthened programs in natural and physical sciences bolstered training in agriculture and engineering, and scientific principles were applied to teaching and research in agriculture. The land grant colleges were the foundation on which modern agricultural productivity and efficiency were able to rise and flourish. In the middle of the 19th century, one farmer could, with some difficulty, feed his immediate family; 150 years later, one farmer, supported by capital investments and a developed societal infrastructure, could feed another 150 persons. Thus, the USA could provide food for many other people in the world. Another example: 80 years ago, 2 billion bushels of corn were produced on 90 million acres; 75 years later, four-and-a-half times as much corn was produced on 20 million fewer acres. There is no other industry that can claim that kind of increase in productivity over such a time period, and this was due in no small measure to the efforts of land-grant colleges.

Other countries, immersed in different cultures than the USA, have tried, with great difficulty, to adopt this concept. During my career, I have observed or participated in agricultural education and research on five continents other than North America. I am convinced that, along with the Constitution of the United States and its Bill of Rights, with their guarantee of religious tolerance and of the rule of the majority while safeguarding the rights of all minority groups, the land-grant concept was one of the main reasons that our country became such a

great nation and world power in the 20th century. The land-grant colleges helped to foster a prosperous agriculture to under gird the entire economy. Although many countries have tried to emulate the concept, very few have succeeded, preferring to conduct agricultural investigations in research institutes, in isolation from teaching responsibilities housed in ministries of education, and separate from extension activities located in departments of agriculture and deemed unworthy of attention by “real” scholars.

Balance Needed among Research, Teaching, and Extension Functions

For several decades, the three functions were viewed as equal in importance. In recent times, however, the pendulum has swung away to an emphasis on research. Not only that but, because of the pleas of some vocal advocates during the last 25 or so years, increased support has accrued to so-called “basic” research at the expense of applied research. A greater balance should be restored among the functions. This can be accomplished, and *must* be accomplished, if we are to expect the kind of generous public support the land-grant university has traditionally enjoyed. A land-grant university has multiple constituencies to please—students, peers in the respective disciplines, users of extension information, farm producers, the agricultural industry, and taxpayers. If we slight any one of the groups, we will pay a price. At this time, we are paying less attention to students, to users of extension information, and to taxpayers, and more to worrying about whether we are impressing the disciplinary peers who establish the pecking order of institutions, and to solicit grants. It is clear that governmental support is at risk—the land-grant university needs to demonstrate that it cares about and *is responsive to* the needs and wants of people and their real-world problems. That is an integral part of the land-grant mission.

The unfortunate by-product of the efficient and prosperous U.S. agriculture has been an estrangement of the increasingly urban population from the source of its daily bread, to the extent that many children nowadays believe that milk comes from a carton rather than from the udder of a cow or a goat. This has been accompanied by the abdication by the U.S. Department of Agriculture of its traditional role of oversight of Hatch appropriations, tolerated by an uncaring Congress. Another consequence has been the spectacular decline in rural population, ensuring that there will be fewer students of agriculture in the future and fewer representatives to advocate its needs. I imagine that many of us here

do not come from a rural background. Do we really have at heart the betterment of agriculture in Tennessee or the USA?

Politicians and other prominent citizens often reflect, and sometimes amplify, the ignorance of their constituents. Consequently, during the last 50 years, there has been a steady and rapidly accelerating decrease in government support of agricultural research, teaching, and extension, which have thus become victims of their success. This is particularly true of the federal support, which for many years was regularly appropriated on the basis of a formula based on the size of a state and of its agricultural economy and population. The assurance of a steady yearly financial resource made it possible for investigators to plan and carry out long-term important research projects that did not necessarily enjoy the fleeting acclaim of the day, for example, those dealing with the management of perennial crops that did not have vocal advocates but are essential mainstays of an environmentally responsible resource husbandry. The decreasing federal support has led to land-grant colleges being supported mainly by state tax revenues. These are increasingly scarce, partially because of federally mandated spending on welfare and health programs, renewed emphasis on funding K-12 schools, and a burgeoning prison population. Some states also benefit disproportionately from pork barrel projects, for example, Senator Bond's Missouri's Biotech Center, Senator Russell's Research Center in Georgia, or Tennessee Governor McWherter's aborted swine research lab in a state with hardly any hogs. Most states, including ours, will need to reevaluate whether agricultural colleges devoted exclusively to instruction are justified or needed in the future in view of decreasing enrollments and resources.

Administrators traditionally were responsible for gathering support for land-grant colleges. Now, the onus for obtaining financial resources has been shifted to the investigators. I well remember a speech I heard from a newly appointed administrator a few years ago in which this executive stated "since previous administrators of this institution have been unsuccessful in maintaining public support at an adequate level, we shall now insist that each one of you obtain the support necessary to maintain your programs! and those of you who do not get such outside support will be encouraged to seek employment elsewhere." In other words, since this official was not going to do the traditional job demanded of that position, the administered would now have to do it.

Restoring the Mission of Land-Grant Colleges

Land-grant college administrators campaigned for many years for the de-emphasis of the formula allocation and its replacement by competitive programs. Superficially, this seemed appropriate: reward impartially chosen merit and embrace the competitive American spirit. In practice, this eliminated long-term research planning by individual investigators and de-emphasized long-term resource management, since budgets were available for only 1 or 2 years at a time. A self-perpetuating system of grant evaluation was created also, whereby former colleagues and graduates of “prestigious” institutions ensured that most support was awarded to those they knew, to the exclusion for the most part of those not in the network. In retrospect, therefore, the advocacy of a competitive grant system was the beginning of the death knell for the majority of the smaller, medium-sized, and 1890 land-grant colleges. These institutions felt they should continue their traditional mission of applying science for the betterment of agriculture and the public in their area, state, or region, and did not have the resources to do that at the same time as they added a fundamental basic research mission. Thus, in the last couple of decades, many medium-sized or smaller agricultural land grant institutions began falling back in their capability to compete on the national and international scientific scenes. This trend has accelerated because of limited resources and the confusion brought on by the swift advance of many scientific breakthroughs that often are beyond the understanding of the tax-paying public. Most people are unaware of the slow and costly development work needed to turn scientific advances into everyday applications. This is often purposely complicated by investigators or their administrators who make outlandish claims for the marvels that their particular science can accomplish, in the hope of garnering additional glory, power or resources, such as claiming wonders from investigations at the frontier of basic research when in fact the potential good that humanity may garner from their discovery is many years in the future and will require the efforts of many other investigators to adapt their breakthrough to reality.

It is clear that only a few land-grant institutions—those which, for historical reasons or because they are located in a relatively rich state—can devote a substantial-enough portion of their resources to create the kind of teams of scientists needed to delve into the nature of DNA or RNA bioengineering. Such research is extremely expensive and demands the undivided attention of large numbers of investigators working together toward a common goal. It is highly

unlikely that the land-grant institutions that are lagging by several years into these fields, as most of them are (like Tennessee), can possibly obtain large enough infusions of resources to catch up with the handful of universities that are recognized as leaders in these fields. This is not to say that biotechnology cannot provide an excellent and powerful tool as an adjunct to successful existing programs, for example, those in crop or animal improvement where the identification of protein or gene constituents for specific traits may permit rapid advances toward the solution of identifiable problems. The attempts by administrations to force an about-face in many land-grant colleges, thereby forcibly pushing faculty members to change the approaches in which they are competent and have been successful, are doomed to failure because such reversals are difficult and take considerable time. How can the five colleges (University of Arizona, Purdue University, University of Nebraska,

Ohio State University, and Texas A&M University) that stated in 2000 that part of their mission was to become the premier agricultural college in the USA all achieve this exalted status? As one of the early observers of the trend, Edward Schuh asserted in 1986: "The land-grant universities have lost their way." In this quest, existing programs, resources, and personnel, even in recognizably successful programs, have been and are being sacrificed without regard to their merit or future value. Related disciplines that developed as joint efforts for over a century are being split apart arbitrarily to satisfy political intrigues. Infusions of well-trained beginners to replace personnel experienced in traditional agricultural sciences will result in traditional disciplines being abandoned. At the same time, emerging sciences will be covered by inexperienced persons who have little commitment to the betterment of agriculture and rural life in the region of their employment through the use of science to solve practical problems.

We need a substantial reorientation of effort, not to downgrade theoretical research, but to lift up a model of excellence in terms of a comprehensive approach to evaluating and rewarding all program dimensions, ranging from theoretical research to mission-oriented research to extension and to teaching. Anything less is intellectually dishonest and a betrayal of the great land-grant tradition. To give lip service to the importance of all three functions but to recognize only a portion of one is intellectually hypocritical.

As professional agricultural investigators have searched for the "almighty

dollar,” they have been forced to bend the mission of research, teaching, and extension for the public good to compete successfully for grants, thereby having to pander to the short-term objectives of granting agencies rather than being guided by the long-term needs of agriculture and its participants. University groups that used to be aggregates of scholars toiling for the public welfare have become individualistic and narrowly focused technicians who ingratiate themselves to grantors. Individual teachers and investigators have conveniently forgotten the fact that “few human beings will admit to servitude” even though, as Titus Lucretius Carus first recognized almost 2000 years ago “whose bread I eat, his song I sing.”

Administrators have often confused the adoption and use of seductive new tools as progress, rather than subjugating these powerful techniques to the needs of the overall mission for the public good and the long-term needs of agriculture and its producers. They have gone so far as to abandon nationally and internationally recognized programs when these disciplines did not qualify in one of the hallowed categories. Consequently, for instance, when a biomolecular breakthrough may occur in a few years there will be very few, if any, scientists capable of adapting the new technique or material to the exigencies of the real world. The applied scientists who could have done that will long have been retired or fired, and the extension services who could help producers or practicing professionals apply the discovery will have been savaged. What a shame!

Unless we speak up, reverse the trend, and convince legislators and policy-makers that the current trends will be disastrous in the long run, the great experiment of the U.S. land-grant concept of interconnected research, teaching, and extension for the public good—so successful in the past—will become nothing more than a fond memory for those who recognize its greatness. Returning to my worries, my greatest concern is that the land-grant university is on a trajectory that will dramatically narrow its traditional constituency to the point of invisibility. That would be a tragic legacy to leave future generations, for it may well be that future generations will lack the willing partner that has helped our generation to understand and cope with that change. As one of our greatest presidents, Abraham Lincoln, said in his Annual Message to Congress in December 1862, in a slightly different context but one that can be stretched to apply here, “The occasion is piled high with difficulty, and we must rise with the occasion.... Fellow citizens, we cannot escape history.... We—even we here—

hold the power, and bear the responsibility.” I charge *each one of you* to take this matter to heart.

What Should We Do About It?

I invite you—the students who are soon to face lifetime decisions, and the faculty who helped them learn to think—I invite you to ponder and reflect on the following statements or questions:

- Who is our constituency? Is it students, the public that pays our salaries, rural and urban users of extension information, farm producers, some private-sector firms, future generations who benefit from the great body of transmitted knowledge? Or is it a relatively small group of peers in the discipline, a few oligarchs on a Board of Trustees who have little knowledge or interest in agriculture, some self-serving bureaucrats, or private sector firms whose primary interest lies in the bottom line?
- Those of you who have tenure, I urge you to remember that tenure was invented and is cherished to protect you when you express unpopular opinions. Remember with Mark Twain (1904) that, “whenever you find you are on the side of the majority, it is time to pause and reflect.” Remember that when a paternalistic authoritarian administrator stands firm behind a poor, unanalyzed decision, that is *not* noble, and it is worthy of your questioning. Do not accept irrational discourse or decisions that are made under the guise of greater efficiency or political expediency.
- It is critically important that the singular pursuit of excellence, on the basis of only one of the three traditional functions of a land-grant university, be appropriately tempered by attention to extension and teaching as co-equal functions, as well as applied research. As we scrounge for grants, are we losing the concept of the land-grant university?
- Land-grant universities should foster and promote widely a brisk dialogue on the land-grant mission and tradition in the rapidly changing environment of the 21st century. To ensure that this will occur, you *each* must communicate with your federal and state representatives, senators, and officials, and with the general and the agricultural public, and their

specialized associations. It will require great vigilance in the future to assure that we continue our combined three-fold mission for the public good, rather than for the gratification of boards of directors of industry and foundations, of entrenched bureaucrats, or of ambitious administrators.

Finally, as a last word from a young-minded old geezer to the newer generations, from someone who had to compensate for not being as smart or knowledgeable as many others, I say that the motto “labor omnia vincit” (hard work conquers all obstacles) has helped me a lot throughout my career, and you also may find it useful. For those of you who may wish to look into the topics of this letter in greater depth, I include some suggested readings.

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