1984

Ut prosim, the balance of liberal and useful education in the American land-grant university: a case study of Virginia Tech

Deborah M. DiCroce

College of William & Mary - School of Education

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The College of William and Mary in Virginia

Ed.D. 1984

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UT PROSIM—THE BALANCE OF LIBERAL
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LAND-GRANT UNIVERSITY: A CASE STUDY
OF VIRGINIA TECH

A Dissertation
Presented to
The Faculty of the School of Education
The College of William and Mary in Virginia

In Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

by
Deborah M. DiCroce
April 1984
UT PROSIM—THE BALANCE OF LIBERAL AND USEFUL EDUCATION IN THE AMERICAN LAND-GRANT UNIVERSITY: A CASE STUDY OF VIRGINIA TECH

by

Deborah M. DiCroce

Approved April 1984 by

William E. Garland, Jr. D.A.

Mary Ann D. Sagaris, Ed.D.

John R. Thelin, Ph.D.
Chairman of Doctoral Committee
To

Quirino and Margaret DiCroce
my parents

con affetto e gratitudine
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Deborah M. DiCroce
Chesapeake, Virginia
6 April 1984
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"... I thence
Invoke thy aid to my advent'rous Song,
That with no middle flight intends to soar
Above th' Aonian Mount, while it pursues
Things unattempted yet in Prose or Rhyme.
And chiefly Thou 0 Spirit, that dost prefer
Before all Temples th' upright heart and pure,
Instruct me, for thou Know'st; Thou from the first
Was present, and with mighty wings outspread
Dove-like satst brooding on the vast Abyss
And mad'st it pregnant: What in me is dark
Illumine, what is low raise and support;
That to the height of this great Argument
I may assert Eternal Providence,
And justify the ways of god to men."

---Paradise Lost

"Few things that can happen to a nation are
more important than the invention of a new
form of . . . verse."

---T. S. Eliot
CHAPTER I

INTRODUCTION

Purpose of the Study

Clearly, since the founding of Harvard in 1636 and particularly since the gradual rise of the comprehensive university in the mid-to-late 1800's, American higher education has been in the midst of evolution. The curriculum has become increasingly career-oriented, pragmatic, and vocational. Not surprisingly, with this evolution has come a peculiar problem for the comprehensive university—namely, how best to incorporate such new fields as agriculture, forestry, engineering, and applied science into the traditions of the learned professions and the liberal arts.

Put another way, the problem has become one of "obligation"—to borrow from Allan Nevins—and one of "morale and will"—to borrow from George Callcott. According to Nevins, "One of the more difficult obligations of the comprehensive university has been the creation of an atmosphere, a tradition, a sense of the past which might play as important a part in the education of sensitive students as to any other influence." For Nevins, then, a university must reconcile somehow its vocational swing with
its history, or "sustained attention to cultural values." 2

To Callcott, the university must develop pride and the will to become absolutely first-class. It must swell of "morale." 3  Callcott defines such morale as

... an institution's belief in itself, its self-image, its pride. It is more than the self-esteem of a good salary and professional recognition. It resides more deeply in the confidence that one is pouring one's professional career into something that is worthwhile and just, serving a cause larger than one's self. 4

For Callcott, then, a university must reconcile somehow its immediate response to societal change with a visionary transcendence of self. For both Nevins and Callcott, the comprehensive American university must retain a sense of tradition and at the same time respond to a sense of the future. Thus, the evolutionary problem for the comprehensive American university has become largely one of reconciliation of old—the liberal—and new—the useful.

In 1862, the land-grant college—with its emphasis on "agricultural and mechanical arts" without excluding "other scientific and classical studies" and including "military tactics"—provided an important structure for an accommodation—possibly a reconciliation—of liberal and useful education. However, even within this structure, the relationship between what is useful and what is liberal is subject to changing balance. The question, of course, remains: "Why?" More specifically, the question becomes: "What is the relation of the liberal arts and the
professional curricula in the evolution of the comprehensive American university?" It is the purpose of this research endeavor to identify this relation by examining the evolution of the agricultural and mechanical arts at a significant land-grant case--Virginia Polytechnic Institute and State University.

Problem Statement: Its Significance

"Purity of motive and single-mindedness of purpose have never been characteristic of American colleges.... There has never been a golden age of learning for learning's sake," write Jencks and Riesman. "The question has always been how an institution mixed the academic with the vocational not whether it did so." An even cursory glance at the history of American higher education suggests that the ingredients--namely, the liberal and useful--have indeed remained fixed while their mix--the balance--has been changing. The result has been a constant altering of this balance of useful and liberal education in American higher education in general and the American state university in particular. This study sets out to re-examine this balance--or mix--attempting to discover both how it occurs and how it ought to occur, especially in the distinctively American institution of the land-grant university.

The land-grant university is an historically important and distinctively American solution to this question of balance. In seeking to combine the useful and the
theoretical—the arts and the professions—in a democratic society, it tells a story which began in the 1870's with the appearance of new institutions and picked up threads of "mixing" problems from preceding decades and centuries and continues to be told in the 1980's with constantly evolving post land-grant institutions with their own brand of "mixing" problems.

First, it is necessary to offer a brief review of these mixing problems the land-grant institutions inherited from previous American institutional structures. During the pre-revolutionary days of America, one finds in the colonial colleges a settled situation. The collegial purpose—the education of a responsible elite—was limited, yet understood; thus, the balance—or tension—steadied—or loosened—to support this purpose. Colonial colleges had basically a classical curriculum, complete with the trivium and quadrivium, but with a heavy emphasis on the trivium, particularly logic. Colonial colleges had a classical method of instruction, complete with lecture, recitation, and disputation. Colonial colleges had a classical collegiate way, classical academic rituals, and classical degrees. In short, colonial colleges set out to "train" their future clergymen and civil servants, their future scholars and sophistcates—and that was that; thus, their liberal—a classical curriculum and its paraphernalia—became the means for their useful—a responsible elite. The
balance appeared steady; the tension, loose.

After the revolution, however, numerous events and changes—political, social, and economic—rendered incomplete such confidence and clarity of institutional purpose, and with such renderings the balance and tension were altered. In the late eighteenth and early nineteenth centuries, one finds a number of experiments and impulses toward expanding the scope of higher education. There were, for example, several attempts by men such as Fenno (1778), Rush (1787), and Washington to establish a national university. There were state attempts to take-over existing private institutions as well as state establishments of new state universities. There were reformers such as Ticknor (Harvard), Marsh (Vermont), Abbott (Amherst), and Lindsley (Nashville) who saw a need for a more practical curriculum geared more to the United States' growth in material and political power. There were schools being founded or modified to meet ever-increasing militaristic needs (West Point, 1802) and scientific needs (Rensselaer, 1824; Lawrence Scientific School at Harvard, 1847). During this same time span, one also found indifference, failure, limited success, and popular demand for secular colleges. Thus, the liberally steady balance and loose tension of the colonial college and its clear purpose gave way to a fluctuating balance and tightening tension of institutional purpose.
With the inception of the land-grant institution of the late nineteenth century came a remarkable structure in which to approach this age-old problem of tension and balance. In both appreciation and detraction, there has generally been a lack of definite understanding of the main elements in the impelling and motivating idea which gives distinction to this type of higher education. Much work remains to be done in the history of the movement—particularly of origins. And, as always in controverted issues, motives and influences are not subject to exact determination. But, it would appear that the cardinal principles in the idea as it was formulated and as it has grown and developed in action may be indicated with essential accuracy and realism.

Legally and ideologically, the organic act of 1862, as it has been interpreted and supplemented to meet changing conditions, provides the most authoritative and revealing statement. The so-called Morrill Act was the culmination of the evolving idea to that stage and the point of departure for the "new education" of the new industrialized nation. In this body of principles, written and unwritten, one has then the magna charta of this type of higher education—the standard for judging compliances and progression of the movement in general and individual institutions in particular.

First and foremost, the act committed the expanding and consolidating nation to mass higher education.
Historically, the provision marked the extension of the public elementary and secondary school systems to the collegiate realm. It thus brought the nearest approach to Jefferson's education pyramid in the state realm but with much broader apex than he had visioned. The conforming state universities, dominated largely by the old tradition in aim and subject matter, had never made such an appeal. Here indeed was "democracy's college," to borrow from Earl Ross—in design and aspiration. The opportunity was clearly open to all aspiring young people who found existing institutions and courses of study unavailable or unacceptable.

The initial grant provided public land or land scrip to each state on a basis directly correlated to the number of senators and representatives that each state had under the apportionment of 1860 for a specific aim. The proceeds from the sale of the land or scrip invested in United States or other safe stocks yielding at least five percent must constitute a permanent 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 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 the several pursuits and professions of life.

The land-grant college sought to bring education en rapport with life, its business, society, and politics—a
daring endeavor in a time of transition and disruption. To accomplish this feat, technical training was to be combined with general.

The type of education proposed thus did not involve a narrowing but a broadening of content, not a taking away but an adding to subject matter, with the appropriate methodology. General education—the sciences and humanities—was given accepted recognition; the applied sciences, as then existing, were accorded a preferred emphasis to ensure that they were included.

At the same time, collegiate status on a liberal basis was a safeguard against a narrow vocationalism. The terms "pursuits and professions of life" opened the colleges to all existing and future areas of training that were found to be appropriate. Nothing of social utility or significance was to be academically common or unclean. The movement gave standing to the sciences and their applications. At the same time, it made definite contributions, especially in training for citizenship, to the modern enrichment and balanced functioning of the humanities.

In short, the land-grant institution introduced a new string of adjustment, a different scale of measurement to this age-old question of balance and tension between the academic and vocational in higher education. It offered, in effect, a remarkable institutional structure in which to approach this American ideal. As Frederick Rudolph so
graphically notes:

Higher education in the United States after the Civil War was transformed by more than one agency of innovation, but surely none came closer to representing fundamental developments in American social and intellectual life than did the land-grant college movement. "State College" would come to have as homely and honest a ring about it as any of the numerous institutions identified with agrarian America. State Fair. Fourth of July picnic. Church Social. Saturday night in town. None of these came any closer than "state college" in evolving an appreciation of wholesome rural values—clean, hard-working, honest young men and women, determined to live good lives in a good world, gone down or up to the state college, there to broaden their horizons and to perfect their ingrained common sense.

In the state colleges Americans would create institutions intended, in part, to sustain an agrarian past. . . . "State College" also became synonymous with opportunity, which was a synonym for America itself. . . . For the land-grant college contained within itself not only a romantic regard for the farm but a hardheaded regard for the factory, for the city. And, it therefore achieved, as perhaps no other institution, a symbolic value for a democratic society.

The yeoman farmer and the self-made man are two versions of the same fundamental American myth: the myth of self-reliant free men achieving self-respect and security among equals. The land-grant college served both; it sustained the yeomen, it liberated the farm boy; . . . it kept its focus on the practical and allowed others to concern themselves with the theoretical; . . . it became in America the temple of applied science. . . . In the end, the land-grant college incorporated in its rationale the Jacksonian temper; it became the common school on a higher level; . . . it brought the government, both federal and state, firmly into the support of higher education.9

Thus, while the land-grant college is not a clear and final solution to the problem of mix, it is a new structure in which to pick up the debate of academic versus vocational
training and trace the changing balances and degrees of tensions within the institution.

Problem Statement: The Case Study

In the context of useful and liberal education within the land-grant college structure, Virginia Polytechnic Institute and State University is a significant case study. First, it is a charter member of land-grant institutions, but perhaps less known than most others. Second, it is overlooked and understudied in general and within its land-grant context in particular. Third, it has changed from an agricultural/mechanical diploma-granting, land-grant college of 132 into a post land-grant university of over 22,000—a classic state university in general, a major comprehensive university in the Commonwealth of Virginia in particular. Finally, it has demonstrated a growing concern over the tension between the "practical, here-and-now considerations of professional or vocational competence and certification, accountability, utility, and relevance" and a "liberal 'core' program of study that will enrich the education of each, regardless of his professional goals or inclinations."10

From its founding in 1872 to its present-day operations in 1983, Virginia Tech, the popular contemporary name, has always had service to its society at the heart of its reason for being.11 The university was founded as both an offshoot of Preston and Olin Institute and the signing into law of
the Morrill Land-Grant Act. Preston and Olin Institute was a Methodist "seminary of learning" originally opened in Blacksburg in 1851 as Olin and Preston Institute, then closed in 1859, and reopened as Preston and Olin Institute in 1869. The school identified as its purpose "the instruction of youth in the various branches of science and literature, and useful arts, and the learned and foreign languages." The Morrill Act provided that each state would be appointed 30,000 acres of public land, without mineral deposits, for each senator and representative in Congress, according to the representation based on the 1860 census. The income from the sale of these lands was to be used to establish at least one college in each state in which the major objective would be the teaching of agricultural and mechanical arts. Scientific and classical studies were also to be part of the curriculum, and it was required that military tactics be taught. Through a struggle from 1865-1871 by practically every existing educational institution in Virginia to win a share of the benefits of the land-grant proceeds, a speech by Virginia's Gov. F. H. Pierpont on the need for a "polytechnic school" in the state, and a petitioning of the Virginia state legislature in 1872 by the trustees of the Methodist "seminary of learning," Preston and Olin Institute became Virginia's land-grant college.

From here, the saga of this land-grant college's
changing balances and degrees of tension can be told by an even cursory tracing of its legal names. The 1872 founding name was Virginia Agricultural and Mechanical College. The name was changed by the legislature to Virginia Agricultural and Mechanical College and Polytechnic Institute, effective 1896. The legal name was changed to Virginia Polytechnic Institute, effective 1944. The present legal name, Virginia Polytechnic Institute and State University, became effective in 1970. With each name change came an unwaiving allegiance to meeting the needs of the society and constituency it serves (reflected in the motto it adopted in 1896, Ut Prosim, Latin for "That I May Serve"). With each change came a gradual evolving of a small land-grant college into a large post land-grant modern university.

Perhaps most significantly, however, are the university's recent moments of questioning, of examining where this 1862 Morrill Act brainchild, this post land-grant university has come and where it should go—with specific regard to the relationship of practical, professional, and vocational considerations to its mission and the liberal, general, and "core" elements of its programs. During the 1980-81 academic year, the president appointed a faculty committee of thirteen to study Virginia Tech's integration of the liberal arts and professional curricula. After two years of study, the committee submitted a final report on liberal education and the professions at Virginia Tech to
the faculty.

The report called for "a sweeping transformation of the practice of liberal education in one of America's major land-grant institutions." It acknowledged an almost "unavoidable" tendency toward "fragmentation, parochialism, and narrowness" within its programs of study. It defined as its primary concern "that the University present clear, consistent, and well-thought-through guideposts and expectations to all undergraduates with respect to a liberal 'core' program of study that will enrich the education of each, whatever his professional goals or inclinations." It borrowed from Copeland in calling upon the university community "to grapple with 'connections' among 'multiple realities.'" In short, it recommended a "university wide Liberal Education Curriculum which will give the same force, coherence, and purpose to liberal education and the pursuit of critical intellectual skills that core curricula in the colleges afford for special education and the pursuit of professional skills."

While modifications have since been made to the letter of that faculty report, they have been in the spirit of the report. Despite inevitable practical obstacles—primarily of a budgetary nature—Virginia Tech is presently putting the finishing touches on the University Core Curriculum to be implemented in Fall 1985. Well with the spirit of that
faculty report some two-and-a-half years ago, the core promises to give a university coherence and focus to the education of each Virginia Tech student regardless of his area of specialization.

Thus, higher learning and how it relates to useful work is once again a subject of active interest nationally. At American institutions seemingly everywhere where a new vocationism is on the rise, the liberal arts and how they mesh with professional curricula is of growing concern. Virginia Tech, with its motto, ut prosim; Virginia Tech, a one-time "seminary of learning" turned land-grant college turned post land-grant university; Virginia Tech, in its attempting to "grapple with connections among multiple realities" presents itself as both a representation of this concern and interest and a pioneer for future directions and developments. As such, it is more than a suitable case for responding to the research question posed at the onset of this chapter: "What is the relation of the liberal arts and the professional curricula in the evolution of the comprehensive American university?"

Hypotheses

One "answer" to the research question posed is provided by the "model" advanced by Earl Cheit in The Useful Arts and the Liberal Tradition. According to Cheit, the schools for such new fields as agriculture, engineering, forestry, and business started out as peripheral, second-class
citizens—satellites around the core of the established "arts and sciences." Over time (1900-1970), he contends, the "new profession" schools grew—rather unobtrusively—in size, support, research activities, and stature within the university structure. Thus, he concludes, by the 1970's, they ceased merely to be peripheral satellites and became full citizens with the historic core.

Hypothetically, then, Cheit's model provides an explanation for the evolving relationship of the useful and liberal within the comprehensive American university. Since Cheit's model was built on data collected from land-grant institutions which were flagships and/or research-oriented universities, testing of this hypothesis from a fresh perspective—a perspective different from Cheit's—seems necessary. More specifically, this research endeavor tests Cheit's model by putting forth the following sub-hypotheses about Virginia Tech's evolving relationship of liberal and useful within its College of Agriculture and Life Sciences and its College of Engineering.

In spite of the explicit intent of the Morrill Act to emphasize "agriculture and mechanical arts," land-grant course work was initially clothed in classical content having little to do with the actual needs of American agriculture and industry. Slowly, the curricula came to reflect a dual purpose, meeting both the scientific and practical needs of its constituencies.
Similarly, the instruction within the land-grant programs began with elements of classical education, gradually moving to incorporate a methodology suited to fit the "useful" subject matter.

The faculty also evolved from classically trained, technically unaware, status-lacking teachers to expertly trained, research-oriented, influential professors.

Finally, with the inception of professional organizations and the support of practitioners, the land-grant programs gained in stature through a cultivated dimension of public service.

Definitions of Terms

Liberal Arts. The liberal arts are an ideal rooted in Greek education and engaged in a primarily moral enterprise that attempts to bind together theory with practice, the ideal with the real, and the freedom of the individual with the good of the state. In a twentieth-century American university setting, they are those courses of a student's curriculum which move toward acquisition of common basic skills and cultivation of an informed awareness of the nature of human existence. They have five basic components: the humanities and arts, the social sciences, the natural sciences, mathematics, and composition.

Humanities and Arts. The humanities and arts are that component of the liberal arts which brings the student to the realization that there is much more to the human spirit
and the human intellect than can ever be explained or reduced to constituent parts by scientific analysis. The humanities include philosophy, music (history and appreciation), theatre and drama (history and appreciation), language and literature, history, and interdisciplinary variations of all. The arts include the particular sense data (be they perceptions of paintings, buildings, pieces of sculpture, films, photographs, symphonies, foods, or other elements of experience) that hold the potential for enlarging the students' own capabilities to create, to renew, or to refine experience.

Social Sciences. The social sciences are that component of the liberal arts that offers students the opportunity for the development of self-consciousness, the capacity to move outside their own social milieu and see self and society from the scientific point of view. The social sciences include psychology, sociology, economics, political science, government, and interdisciplinary variations of all.

Natural Sciences. The natural sciences are that component of the liberal arts that emphasizes the dispassionate, analytical, reductionist habits of mind which aid students in becoming more critical, more observant, more perceptive, and more discriminating in pursuit of answers to questions or solutions to problems of any kind. The basic natural sciences include biology, chemistry, physics,
geology, astronomy, and zoology.

Mathematics. Mathematics is that component of the liberal arts that exposes the student to the power and beauty of pure reason as formalized and organized in the mathematics disciplines.

Composition. Composition is that component of the liberal arts that develops the student's facility in the organization and expression of one's thought in writing as well as in appreciation of the correct and precise usage of one's native tongue.

Profession. A profession is a specialized division of labor that is intellectual in its nature, acquired over a prolonged period of education, practical as opposed to theoretical or academic, colleague-oriented rather than client-oriented with the practitioner less concerned about the laymen's opinions and more concerned about those of his fellow practitioners, and service-based on objective needs of the client with the practitioner seeing himself as providing for the good of society.18

Professional Education. Though many areas today claim professional standing and university-situated certification, for purposes of this study professional education consists of instruction in the original four professions (theology, law, medicine, and education) and their spin-offs and related fields (e.g., nursing, dentistry, pharmacy, optometry, public health, hospital administration, physical
therapy, and occupational therapy) as well as the "new" professions (agriculture, engineering, business administration, architecture, criminology, librarianship, social welfare, home economics, and journalism) and their spin-offs (forestry, veterinary medicine, and landscape architecture--environmental design).

Limitations and Delimitations

The study will treat primarily the whole of the liberal arts curriculum of the students, only occasionally specifying component parts.

The study will be limited to on-campus programs within the College of Agriculture and Life Sciences and the College of Engineering.

The study will be terminated prior to the full implementation of the University Core Curriculum.

While recognizing the evolved two-fold "mission" of the College of Arts and Sciences--as both a professional entity unto itself and a support service for other colleges--the study will not examine the relationship of the liberal arts and professional curricula within the College of Arts and Sciences; programs/courses/activities of this college will be treated primarily as possible "support" to the colleges and their programs slated for study.

In cursory fashion, the study will examine the evolution of the College of Arts and Sciences, especially as a professional entity--but only in the context of its impact
upon the university's evolution as a whole.

The study will not determine nor evaluate the preparation and training provided by the primary two colleges and their individual programs.

**Assumptions**

**The First Assumption.** The need for professionals who are both professionally or vocationally competent and liberally possessive of basic critical intellectual skills and habits of mind will increase, rather than decrease, with the projected growth of high technology.

**The Second Assumption.** Virginia Tech, with its land-grant roots and post land-grant evolutions, is typical of the American modern university and where it is headed.

**The Third Assumption.** Liberal arts programs have suffered significant declines in enrollments while career-oriented programs have enjoyed significant increases. Those enrollments patterns will continue.

**The Fourth Assumption.** Study in the liberal arts is both essential and useful to a university-educated person.
Notes to Chapter I


2Ibid.


4Ibid., pp. xi-xii.


6Ibid.

7Earle D. Ross, Democracy's College: The Land-Grant Movement in the Formative Stage (Ames, Iowa: The Iowa State College Press, 1942).

8Ibid., pp. 46-47.


11This and subsequent references to the history of VPI&SU are taken from the two house histories of the institution:


12Jenkins Mikell Robertson, Historical Data Book, p. 6.

13Report of the Committee on Liberal Education and the Professions to the Faculty, p. 10.

14Ibid., p. 1.
15 Ibid., pp. 6-7.

16 Ibid., p. 5.


CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The Review of Related Literature for this Virginia Tech case study of the relationship of liberal and useful education is a departure from the norm. A traditional literature review demands an analysis of those few studies most directly related in form and function to the study proposed, probing both their similarities and their differences to what is proposed. However, the Virginia Tech case study does not lend itself to this review approach. The problem is that there are no previous studies which treat the relationship of useful and liberal education within the concrete structure of a particular institution. Rather, the previous studies present philosophical bits and theoretical pieces of the relationship, often paraphrasing each other and always seemingly echoing the classical Greeks and their renderings of the educated man as a man of action and intellect. The problem is compounded by the fact that these fragmented bits and pieces are essential parts of the whole in general and to an understanding of the relationship proposed for study in particular. In short, the existing literature at best establishes a strong critical background
against which to conduct the Virginia Tech case study. In light of these unusual circumstances, the Review of Related Literature to follow is framed by six questions and of necessity gives a thorough analysis of each constituent element of the liberal and useful relationship.

The six questions which frame the literature review are as follows:

1. What are the liberal arts?

2. What are the humanities? Have they in fact undergone a metamorphosis of their own—redefining themselves or being redefined throughout the ages?

3. What constitutes professional curricula?

4. What is this alleged emphasis on practicality, utility? Is this "new vocationalism" which has allegedly surfaced in American higher education real or illusory?

5. Is there a battle between the liberal arts and professional curricula forming? And, if so, is it indeed worth fighting? Is there in fact a relationship between the liberal and the useful in American higher education?

6. How has the land-grant idea fared thus far in the battle and with the relationship?

The Liberal Arts Defined

Turning to the first question posed—"What are the liberal arts?"—one is struck with its deceptive simplicity. For, although the question is structurally short and simple, the answer is philosophically long and complicated. Indeed, the term itself suggests the complexity.

The various expressions "liberal arts," "liberal disciplines," "liberal studies," and their contemporary
counterpart, "liberal education," have historical referents more numerous than even their names imply. According to Levine, the liberal arts among the Romans were a form of the Greek *enkuklios paideia*, which consisted of instruction in the basic literacy skills—both verbal and quantitative. The liberal arts of the Middle Ages consisted of the split between the *trivium* (grammar, rhetoric, and logic) and the *quadrivium* (arithmetic, geometry, astronomy, and music). However, as Schachner notes, it was the *trivium*—particularly logic—that dominated scholarly inquiry throughout the Middle Ages. Liberal studies as they emerged during the Renaissance were the secular component of an education that seriously attempted to link learning with conduct in the effort to create a virtuous and noble man. Throughout the history of education, there also have been those who regarded the liberal arts as a fixed, immutable body of knowledge, subject to neither question nor criticism.

In twentieth-century America, liberal education is often used to refer to that part of one's studies that lies outside the chosen area of vocational or academic specialization. More affirmatively, it sometimes refers to the curricular component that introduces students to a common cultural heritage and the seminal creations of civilization. Still others depict liberal education as an "antiquated remnant from an elitist society that provides
cultural refinement and little else.\textsuperscript{5} Most recently, it has been identified as a "process" through which the "whole person" is developed, and also as a type of cognitive immersion in fundamental ways of knowing and in advanced intellectual reasoning skills.\textsuperscript{6} Thus, regardless of the alterations in name and emphasis, the liberal arts ideal has remained a tenacious and potent force in higher education.

This "ideal" of a liberal education, if not its etymological root, was captured by the Greeks in two concepts: \textit{paideia} and \textit{aretè}. According to Drew, \textit{paideia} meant education, or more broadly culture, and in practice it was inextricably linked to \textit{aretè}, the ability to live one's life well, and the knowledge of what it is to be human.\textsuperscript{7} The Greeks earnestly sought an answer to the question, "What type of \textit{paideia} leads to \textit{aretè}?" Their answer took the form of what is today referred to as liberal education.

According to Jaeger, within the relatively short history of ancient Greece, the ultimate aim of education developed from an ideal of man as the mentally courageous and physically fit warrior, to the responsible citizen immersed in the civic affairs and artistic creations of society, to the reflective individual engaged in \textit{endaimonia}, the rational contemplation of the highest ideas and ideals.\textsuperscript{8} \textit{Aretè}, the strived-for ideal in Greek society, was far from impractical, since it involved all three aims of this ideal. \textit{Endaimonia}, the highest form of \textit{aretè} as conceived by
Aristotle, was never meant to supplant the other forms of arete but rather to illuminate their role and significance within a broader context. It was considered the highest and most uniquely human art of thinking, the most noble use of leisure. Perhaps, Lewis Mumford expressed the point most effectively as he addresses the twentieth-century time and situation:

In fact, without leisure, our expansion in industry would be almost meaningless; for we need a plenitude of time if we are to select and assimilate all the genuine goods that modern man now commands. Schola means leisure; and leisure makes possible the school. The promise of a life economy is to provide schooling for the fullest kind of human growth—-not for the further expansion of the machine.

In the very act of seeking aretē, the Greeks created a culture that became an educative force.

In an article dealing with the Greek ideals of liberal education, Murchland writes, "The endless quest for definitions and intellectual clarity was not empty verbalizing or mere intellectual gamesmanship. It was based on their belief that practice and theory were interdependent, two aspects of a unified moral activity." Liberal education, then, was metaphysically grounded in this unique conception of an education that is culture and not simply about culture or the transmission of culture and knowledge. Furthermore, education for aretē was a moral activity; it was not moral in a narrow religious context but rather in the sense that there was something vital at stake,
an idea or situation that demanded free choice and
commitment along with a concomitant willingness to bear
grave risks. And ultimately for the ancient Greeks, the
very life and health of each individual and society as a
whole was at stake. Within such an intense context, then,
the Socratic maxim "know thyself" was, fundamentally, a
personal and moral inquiry but not a private one. This
blend of personal excellence with the public good was
dramatically embodied in arete. To know one's self was to
know what it is to be a human being.

This brief sketch, of course, offers an understanding
of liberal education at odds with those who have
characterized such education as highly theoretical and
esoteric, elitist, or even frivolous. Certainly, it is true
that if there has been any form of education that has
treasured the pursuit of knowledge for its own sake, it has
been liberal education; but rarely, if ever, have its great
advocates claimed knowledge as an end in itself, as the
ultimate aim of education. Murchland identifies this
"ivory-tower" interpretation as a fairly recent phenomenon
and in reference to liberal education writes, "Pure reason
has no place in this tradition for there is no use of reason
that does not have some emotive base and some moral payoff.
This conviction was the cornerstone of Greek and medieval
philosophers of education."11

Almost all contemporary proponents of liberal education
have sought to nullify the vision of liberal education as impractical, usually through emphasizing the sustaining link between a democratic society and its educational structures (e.g., Drew, Harvard Committee, Hutchins, and Van Doren) and through advocating the role of liberal education in developing a fully human individual (e.g., Chickering, McGrath, and Murchland). At some point, many proponents refer to the Greek example and attempt to show its relevance for contemporary American society and the individual.

In summary—in answer to the first question posed, "What are the liberal arts?"—the liberal arts are an ideal rooted in Greek education and engaged in a primarily moral enterprise that attempts to bind together theory with practice, the ideal with the real, and the freedom of the individual with the good of the State. In their Greek form, they are not frills cluttering university degree programs. Nor are they opposed to this increasing interest in vocationalism. Rather, they are a part of what is essential to this age and can, if true to their Greek roots, enhance the quality of life this age promises.

The Humanities Defined

The second question posed as a frame to this literature review consists of two parts: First, "What are the humanities?" and second, "Have they, in fact, undergone a metamorphosis of their own—redefining themselves or being redefined throughout the ages?" The former really cannot be
answered adequately without an awareness of the latter.

The "humanities" are a twentieth-century invention, and the term has never had a clear meaning. Bloomfield says it was in the 1920's that the word came to indicate "disciplines like " literature, art, languages, philosophy, "and to some extent history." Several writers on what one called the "sudden dramatic revival" of the humanities after 1920 (these writers never point out when they flourished before) are impressed by the absence of precise definition: "A cursory examination of the subject," writes Ralph B. Perry in 1938, "revealed the fact that the term 'humanities' had no fixed meaning." A 1940 study of The Revival of the Humanities in American Education by Patricia Beesley notes "the absence of fixed formulae" in connection with the term; the humanities "are not to be easily catalogued by reference to any one concept of humanism." The term, when it refers to anything specific, usually applies to various subjects, although some point out that the term does not nor should not denote subjects.

Though "humanities" never developed fixed meaning, from the beginning it has almost invariably been used within one persistent context, with four constant parts. First is the relation to the scientific. The very perception of the humanities is apparently possible only with respect to the scientific. Beesley attributes the rise of the term to efforts "to denote a field comparable in breadth to the
Social Sciences and the Natural Sciences. Bloomfield says "the awareness of their distinctiveness" was created by the rise of behaviorism and the social sciences; "they came into existence as a separate branch of learning to defend themselves against another branch." The sudden growth of humanities courses in the colleges was for Beesley an attempt "to complement or balance the broad courses in Social Sciences and Natural Sciences which sprang up immediately after the first World War as outgrowths of 'War Aims' courses." Further, writers often see in the scientific a threat to values alleged to be inherent in the humanities. "In the period from say 1919 to about 1965," writes Bloomfield, "the humanities saw the sciences as their main enemy. . . . It was to them . . . a question of the sciences versus the humanities." As early as 1902, Irving Babbitt, in an Atlantic Monthly article on "The Humanities," observes at length how "science aspires to be all in all, . . . and the man who would maintain the humane balance of his faculties must utter . . . protest against the excesses of the analyst." Babbitt, fearing universities will become "great scientific workshops," hopes for "a classification of studies as more or less humane."

The second part of the humanities context is lament. Writers consistently see the humanities on the defensive and lament their state. "The humanities are attacked everywhere," declares Gilbert Chinard in 1938; "they are
losing ground every day; the host of their enemies is legion and their defenders a mere handful."\textsuperscript{24} Moreover, another group attempts to absorb or annex the humanities "by peaceful penetration."\textsuperscript{25} Babbitt in 1902 complains that "the humanities themselves have ceased to be humane" under pressure of the scientific.\textsuperscript{26} As examples, he notes a plea for poetry "less 'human' and more 'biological'" and a plea for the "laboratory method" for studying poetry. The humanities further suffer from passivity and neglect, often, says Babbitt "content to become the humble handmaids of science."\textsuperscript{27} Norman Foerster in 1944 laments that "for a hundred years we have allowed the humanities to decline, progressively assigning them a place decorative or trivial, incidental to the great task of developing science, pure and applied."\textsuperscript{28} Foerster complains the humanities "were neglected in favor of technical interests essential in the winning of the second world war," echoing Beesley's comment about the "War Aims" courses after the first world war.\textsuperscript{29}

The third part of the humanities context is defense. Writers constantly echo a resounding refrain, in one or two modes, asserting the importance of the humanities. One mode is the grand ideals of the humanities, expressed in a wide variety of talk about wisdom and enrichment and civilization and so on, often within a culture-versus-anarchy motif. Foerster writes of the humanities defending "the values of civilization—justice, decency, tolerance, freedom."\textsuperscript{30}
"They embrace whatever influences conduce to freedom," writes Perry. Man must rely on the humanists, says Raymond Fosdick in 1942, to give "meaning and value to life." Chinard calls the position of the humanities "a very vital question for the future of the society in which our children will live." The other mode to the refrain is the humanities as a means to self-improvement, and includes passim frequent mention of awareness, enrichment, insight, self-expression, and so on, sometimes prefixed by "critical."

The fourth part of the humanities context is counter-attack. Writers plead for action, most often and most emphatically the diffusion of the humanities, chiefly through education. This attack includes criticism, often sharp, of education for neglecting the humanities. Babbitt complains that "the scientific workshop of nature" leaves the colleges with "very little of the humane ideal." Fosdick forty years later observes that "with few exceptions the departments of the humanities in higher education are ill-prepared for the high task before them." Foerster's *Humanities and the Common Man*—the title alone suggests the book's theme of diffusion—attacks "the utilitarian specialists who control our state universities" and who wish to shape students into "useful slaves." The remedy is to make education the instrument "to bring the humanities to the common man."
The term "humanities," then, from the start appears in a curious pattern—only inconsistently and weakly denoting something concrete, but always and strongly within a self-sufficient four-part construction. Writers, never agreeing on what the humanities are, always agree on their uneasy relation to the scientific, on their lamentable state, on the importance of their ideals and goals, and on the need for their greater diffusion.

The two most recent "reports" on the humanities are both reports of the Rockefeller Commission on the Humanities—one in 1964 and the other in 1980. In each report, the same vagueness of definition and four-part construction appear.

The more recent report declared its purpose as being "a contribution to rethinking the humanities." The report notes several times the widespread perception of a gap between the sciences and the humanities, but with a relentlessly positive approach it passes it off as "oversimplified" and attributes it to "frustration" and "misunderstanding" and "indifference." The report repeatedly recommends as "areas of interaction" between humanities and sciences the "new informational technologies" which purportedly can unify the branches of knowledge (p. 13; see also pp. 14-15, 18, 93-98, 149). There is no treatment of opposing views, whose holders presumably are frustrated or indifferent. Throughout are laments on the
condition of the humanities: "We proceed from the premise that the humanities are widely undervalued and often poorly understood" (p. 4). The report criticizes the neglect of the humanities in the colleges and schools not only in their rush "back to basics" but also for the deterioration of humanistic learning that triggered the rush (pp. 27-30).

In its defense of the humanities, the report is a lexicon of goals and ideals. It duly notes that the humanities "are difficult to define and classify" (p. 153), even "difficult . . . to discuss" (p. 19). Nevertheless, the report insists the humanities "are a social good and . . . in the national interest" (p. 4) and must have an "active role in shaping this country's future"; indeed, "we must stress . . . how imperiled our civilization is, if the humanities are exiled to a peripheral role of irrelevance" (p. 109). The humanities are needed as preparation for "civic participation" (p. 32) and for self-improvement, the latter treated with much fine language: "enriching lives" (p. 111); "improving the mind and nurturing the spirit" (p. 28); "developing critical, conceptual, and imaginative skills" (p. 42; much on "critical": "critical understanding," "critical judgment" [p. 12], "critical thinking" [p. 44], "critical awareness" [p. 46], "critical faculties" [p. 112]); and developing too "insight," "creativity" (p. 2), "human potential" (p. 1), "values," and "aspirations" (p. 3).
In summary—in answer to the second question posed, "What are the humanities, and have they, in fact, undergone a metamorphosis of their own, redefining themselves or being redefined throughout the ages?"—the humanities are fragments of the ruins of traditions dumped in the laps of twentieth-century Americans; they are constantly changing seeking to redefine themselves but succeeding only in further fragmentation. The humanities, on the other hand, have the potential to find a place in this world—and it is precisely their open-endedness, unpredictability, and capacity for conflict that can guarantee it.

The Professional Curricula Defined

The third question posed as a frame to this literature review is "What constitutes professional curricula?" But, before this question can be answered, an understanding of the term "profession" must be established.

In one of the more empirical studies of professionalism, Carr-Saunders and Wilson's analysis of nearly thirty occupations led them to conclude that, while an absolute distinction between professions and non-proessions is impossible,

... nevertheless the term professions clearly stands for something. That something is a complex of characteristics. The acknowledged professions exhibit all or most of these features... and all around them on all sides are grouped vocations exhibiting some but not all of these features.40

Statements such as this naturally beg the question: What are the distinguishing features of the professions?
Not surprisingly, the vast majority of the literature which has attempted to make general assertions about professionalism has begun (and also usually ended) by proposing some answer to the definitional question. Although attempts at defining a "profession" or professionalism can be traced to the sixteenth century, it is predominantly during the last hundred years that definitional statements have proliferated. Moreover, perhaps because writers dealing with professionalism have often relied on each other for ideas, Goode has noted a surprising consensus:

If one extracts from the most common cited definitions all the items which characterize a profession, however, a commendable unanimity is disclosed: there are no contradictions, and the only differences are those of omission.

Attempting to understand the uniqueness of professional occupations, professionalism's definitional characterizations have developed two forms of demarcating typologies—each specifying various elements. The first is an historical typology where specific occupational attributes are defined as professional and the process of becoming a profession is seen as the sequential development along the noted professional attributes. The second form of definitional typology is simply a dimensional approach. In the dimensional approach, professions are distinguished from other occupations—either dichotomously or on continua—because of their supposedly qualitative
differences on professional elements. However, because occupations can vary from totally lacking to highly developed on any selected dimensions, most recent writings have subsumed the historical developmental approach under a broader application of the dimensional perspective. The professionalization of an occupation is then seen as the movement along the various dimensional continua with the occupations further developed on many dimensions being considered the more professionalized.

Selected elements of professionalism specified by some definitional literature are summarized in Table 1 on the following page. Both older and recent literature is represented through the tabulation of professionalism's major characteristics.

To these "dimensions of professionalism" should be added an underlying element. According to Etzioni, a professional is one whose "authority" exceeds the limits of a "power hierarchy" or "administration." The knowledge of the professional becomes largely an "individual property" and as such cannot be controlled and coordinated by decree. As Etzioni notes:

In other words, the ultimate justification for a professional act is that it is, to the best of the professional's knowledge, the right act. He might consult his colleagues before he acts but the decision is his.

Thus, the individual professional has the ultimate responsibility for his professional decision; he is in
effect autonomous.

TABLE 1—Selected Dimensions of Professionalism by Citing Author

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*Full citations are found in the bibliography.*  
*Aspects of this table were adapted from Millerson*.*46*  
*Sequentially, the authors are Akers, Barber, Caplow, Carr-Saunders and Wilson, Cogan, Flexner, Foote, Goode, Greenwood, Gross, Lewis and Maude, Pavalko, Vollmer and Mills, and Wilensky.*

Based largely on this spectrum of dimensions, American universities recognize by professional degrees at least twenty-six fields of study, not counting various engineering and medical subspecialities— with the areas claiming both "professional" standing and university-situated certification currently on the increase. Although that seemingly unsteady number is too large to sustain a precise hierarchical order, there are status differences between fields well recognized on campus and off. There is,
however, no formally established classification of professional schools.

According to Stadtman, except for the two professions in the arts (fine arts and music), the rest are either "old" professions or "new" professions in terms of professional school origins, or related to one of these two categories. Each of the categories has twelve professions. The "old" professions include the original four (theology, medicine, law, and education) and their spin-offs and related fields ("older health-related professions"—nursing, dentistry, and pharmacy—all generally represented by professional schools by the turn of the century and "recent health-related spin-offs"—optometry, public health, hospital administration, physical therapy, and occupational therapy). The remaining twelve constitute the "new" professions (agriculture, engineering, business administration, architecture, criminology, librarianship, social welfare, home economics, and journalism) and their spin-offs (forestry, veterinary medicine, and landscape architecture (environmental design).

Etzioni wrinkles a bit the smooth and neatly pressed classification system set by Stadtman. According to Etzioni, there is a "group of new professions whose claim to the status of doctors and lawyers is neither fully established nor fully desired." He refers to this group as "semi-professions" and characterizes them with shorter training, less legitimate status, less established right to
privileged communication, less specialized knowledge, and less autonomy than "the" professions. He includes within this group elementary school teachers, hospital nurses, agency social workers, librarians, and just about any professional employee whose function is more bureaucratic than professional.

Jencks and Riesman also see an expansion of the concept of professionalism, and as such see it as "one of the basic trends that will shape higher education in the future." Thus, they treat professional schools as "special-interest institutions." In the process, they identify six species of professional schools—namely, seminaries, medical schools, military academies, engineering schools, teachers colleges, and graduate academic departments.52

While acknowledging that their "list" is by no means exhaustive of professional schools, they believe that their six species illustrate most of the "evolutionary patterns" found in professional schools in general. The first of these patterns is the one in which professionalization is accompanied by tightening the ties between a particular occupational group and its schools. This relationship seems to be only partly a matter of intellectual curiosity. "A profession," as Jencks and Riesman suggest, "is a subculture that shares certain values and attitudes, that feels itself separate and superior to the laity, and that is prepared to enforce its claims." Professional schooling thus becomes
crucial to developing these attitudes—perhaps even more crucial than to the mere transmission of knowledge. A second major theme or pattern is that professional schools tend either to affiliate with a multi-purpose university or to expand into one. According to Jencks and Riesman, "The affiliation of professional schools with universities probably encourages those who educate future professionals to take a more academic and less practical view of what their students need to know." The third major evolutionary theme is the way in which the professional schools sift and screen potential apprentices. According to Jencks and Riesman:

Professional schools have their students for only a few years, and they can do only so much with whatever raw material they get. But to the extent that they are overapplied and can select their raw material according to some pre-conceived plan, they can influence first by setting the age at which students enter a profession, second by setting qualifications for entrants, and third by selecting a minority of students for special rewards (e.g., law review) that make subsequent occupational success much more likely.55

Thus, for Jencks and Riesman, the kind of training taught by a school claiming professional status or the sheer number of alleged professional schools in American higher education is not the issue. What is (and seemingly will continue to be) the issue is the evolving process of socialization used by professional schools in particular and how it resembles "generational conflict and social mobility"—to borrow from Jencks and Riesman—in general.56
On a more philosophical note, a professional degree represents not only a body of learning but also a commitment to service. As Ruskin suggests, a professional can be defined by his feeling that it is his duty—"on due occasion," as Ruskin put it—to die for the cause to which he is committed.\(^5\)\(^7\) Ruskin's list of due occasions for dying implies an ethical imperative that makes the practitioner's role a purposeful one:

- The Soldier, rather than leave his post in battle.
- The Physician, rather than leave his post in plague.
- The Pastor, rather than teach Falsehood.
- The Lawyer, rather than countenance Injustice.\(^5\)\(^8\)

A man will be willing to die in a cause, says Ruskin, because "the man who does not know when to die, does not know how to live."\(^5\)\(^9\) This dramatic figure of speech proclaims that the professions should be concerned with the most committed of causes.

Again, as with the humanities context, writers question this degree of commitment on the part of professional curricula. Some\(^6\)\(^0\) feel the professional curricula would be improved by a "creative tension" between the concrete and the theoretical, the rationalistic and the empirical. Others\(^6\)\(^1\) feel that professional education needs to be made more intellectual, reflective, and liberal, by increasing theoretical understanding, by sharpening research and methodology, by questioning accepted practices, and by educating men and women to be flexible, civilized, and
responsible. According to Meyerson:

If we enlarge a person's understanding of the nature and origin and purposes of his calling and of the society which he serves, not only can we help the engineer, the communication specialist, the teacher, to be prepared to function as a professional fifteen and more years from now, but we can help make him more responsive to the new tasks he is bound to be called upon to undertake.62

Jencks and Riesman echo similar sentiments:

... the function of a professional school is not primarily to teach a narrowly defined set of skills of the kind measured by examinations, but to define a set of general criteria that recruits to the profession ought to meet and to screen out those who do not measure up. The novice is supposed to display a certain amount of diligence and the right mixture of assertiveness and docility, to accept the basic values and assumptions of the professional subculture and to master the rudiments of the professional vocabulary. If he does this, he gets through the course of study; otherwise he does not. Whether he actually learns the details of anatomy, court procedure or sewer design may indeed be irrelevant, or nearly so, since if he gains entry to the profession he can fill in the gaps in his technical knowledge later. The primary role of the professional school may thus be socialization, not training.63

Once again, in short, critics of professional schools are calling for a better balance between vocations or callings and the culture (or cultures) man inherits, recreates, and passes on to future generations.

In summary—in answer to the third question posed, "What constitutes professional curricula?"—professional curricula consist of recognized bodies of knowledge distinguished by a utilitarian sense of calling to the society they serve. The problem, however, is that the
"list" of "recognized bodies" is on the increase with the introduction of new professions, semi-professions, and the like. The problem is compounded by a general fragmentation of the professional curricula. Thus, the issue developing out of these problems is one of relationship—or, what is (or should be) the association of professional curricula within the university setting? In futuristic terms, professional curricula, like their sister humanities, have the potential to connect rather than separate the elements of knowledge to become a part of an environment in which all learn from one another, in which professional education is intellectual, and in which the humane and unscientific are not regarded as ornaments but are valued as socially useful and necessary.

The "New Vocationalism" Emphasis

The fourth question posed as a frame to this literature review is, "What is this alleged emphasis on practicality, utility?" and "Is this 'new vocationalism' which has allegedly surfaced real or illusory?" The answer to the two-part question is no less complex than that of the initial question posed some pages back.

"Should the useful in life, or should virtue, or should the higher knowledge be the aim of our training?" asked Aristotle 2,300 years ago. "All three opinions have been entertained." But, "no one knows on what principle we should proceed." Of course, the words and their meaning
have changed somewhat over the years. Virtue, it seems, is no longer in open contention, although there are new reasons to hope for its ascendancy. It was, long ago, claimed as a consequence of both the practical and the liberal. The old prescribed curriculum of higher knowledge, which was "liberal" because it liberalized the mind and trained it to respond to a variety of experiences with reason, has, in recent times, come to mean "unspecific" or "general," and that which is "practical" has changed with the demands of the market.

Indeed, one is led to believe that a new vocationalism has arisen in higher education since the 1960's whose momentum and numbers give practical importance to Aristotle's questions. In a series of student attitudinal surveys conducted in 1969, 1976, 1978, and 1979 by Arthur Levine, almost 2,000 people were asked how college students had changed since the 1960's. Overwhelmingly, their most common answer was that undergraduates were more career-oriented today. Of course, one cannot help but approach these answers with skepticism. Career preparation has always been an important part of college since the founding of Harvard in 1636. And, Jencks and Riesman are right in seeing in American higher education no "golden age" when students learned only for learning's sake. Yet based on Levine's findings and other available data, top among the reasons freshmen give for attending college today is not
just to get a better job but to launch a lasting, bright career. In short, as reported in The Chronicle as far back as 1974, "The most notable trend among college students of the 1970's is a new focus on practicality," or as it has become known, the "new vocationalism."²⁶

The single most obvious result of this emerging "vocomania," to borrow Levine's buzzword, is a change in students' enrollment patterns. Ten years ago, according to a 1970's survey, about seventy-five colleges offered programs and academic credit for on-the-job training.⁶⁷ Today, about 450 institutions—from Harvard in the East to the University of California in the West—are offering students experience in the world of work.⁶⁸ Indeed, "vocational" fields are drawing students in great numbers. According to Levine, the big "gainers" are business, the health professions, biology (as the "gateway" to medical school), agriculture, and other technical fields.⁶⁹ Business ranks first, being the subject in which nearly a quarter of all freshmen intend to major. The big "losers," again according to Levine, have been the fields where occupational opportunities are limited—education, the humanities, and several of the social sciences.⁷⁰ Put another way, the interest has shifted so much toward vocation that, to borrow from historian James Hitchcock, "the newest version of relevance is vocationalism."⁷¹

Interestingly, it might very well be the "selection"
shift in enrollment patterns which accounts for the alleged emphasis on practicality and the neatly packaged product of "new vocationalism." For what appears to have happened is that students' practical concerns have moved from submitting applications for history fellowships to taking out loans to pursue MBA's. Students are, in effect, concentrating more on the immediately useful and the materially most advantageous--to each of them, individually and personally--in light of the changing society in which they live.

Vietnam, Watergate, the demise of the traditional family unit, the rise in divorce, the women's movement, the increased threat of nuclear war, the advent of high technology, the increase of violence on television--all these happenings impact politically, socially, and psychologically on society in general and its college students in particular. As Levine so aptly puts it:

"The centre cannot hold," twentieth-century Irish poet William Butler Yeats observed in 1921; "something must be done." For today's college students, retreat is the something that is getting done--and the seeming obsession with the practical is only one aspect of it. To escape an inhospitable world, students, like much of the rest of the country, are turning inward. For many, the one remaining
refuse is "me." Levine dramatizes the situation with the following analogy:

One senses the development of a lifeboat mentality among students. Each student is alone in a boat in a terrible storm, far from the nearest harbor. Each boat is beginning to take on water. There is but one alternative: Each student must single-mindedly bail. Conditions are so bad that no one has the time to care for others who may also be foundering.74

The result of such a boat ride is students who are optimistic about their own futures yet pessimistic about the future of their country. The result is students who are idealistic about the kind of world they would like to live in but pragmatic about the kind of world they have to live in. The result is students who are liberal about social trends and life-styles but more conservative than they once were about political issues. The result, in short, is a desperate "meism" which wears a mask in American higher education decorated with a more forceful emphasis on practicality and a more pressing interest in career preparation.

In summary—in answer to the fourth question posed, "What is this alleged emphasis on practicality, utility?" and "Is this 'new vocationalism' which has allegedly surfaced real or illusory?"—this emphasis is largely a response on the part of students to political, social, and psychological changes within American society in general and the American individual in particular. It is, in fact, a
reality borne of individual needs, wants, and desires to, as Levine so aptly summarizes, "go first class on the Titanic." Thus, almost by accident, it might be interpreted as a "new vocationalism" which points out the inadequacies of the ivory tower notion of a liberal education and begs for a realization of the potential of a classical notion of the liberal arts. It might also, by design, be interpreted as identifying a need for a college education which enlarges upon the vocational preparation students seek, stresses the issues of values and questions of ethics, and emphasizes a common humanities with common problems and practical ways to solve them.

The Relationship of Liberal and Useful

The fifth question posed as a frame to this literature review attempts to synthesize the previous four questions by defining a relationship between the liberal and useful in American higher education.

If there is one overriding theme throughout the existing research on the relationship between liberal and useful education, it is that the liberal arts and professional curricula must integrate. Friedman addresses this need when he says, "What must be recognized is that the interrelationships between technology and humanistic studies are becoming too important to be ignored." Magill notes it when he says that "one of the errors of much educational theory has been the assumption that liberal education is the
very antithesis of education for a career or for meaningful work. . . . Meaningful labor is an integral part of human life, but it is made meaningful when it is set in the context of larger purpose and understanding. As academics, we must not turn our backs upon the vital relationship between education and work."77 Smith realizes the need for integration when he identifies a creative synthesis of liberal and professional education which would allow the comprehensive university to meet societal needs for professionally educated manpower, to respond to student interest in professional programs and careers, and to attain an integrative balance between theory and practice.78 And, the Virginia Tech University Committee on Liberal Education and the Professions recognizes the need when it calls upon the university community "to grapple with connections among multiple realities."79 Indeed, humanists and scientists alike are everywhere seeking to find educational means of achieving better balance between career and life, between what Earl Cheit80 defines as the "useful" and the "liberal." This passionate plea for integration grows out of a seeming dualism, a split view of humanity and the universe. Snow directly addresses this problem in The Two Cultures and the Scientific Revolution.81 In a broader context, Mumford expands on the split between "art and technics" in his book by the same name.82 Bronowski has sought to illustrate the essential unity in scientific and artistic endeavors in
numerous writings on the subject.\textsuperscript{83} Barrett provides an intellectual vision of man struggling with his own dualistic conceptions of human nature and the universe in both \textit{The Illusion of Technique} and \textit{Irrational Man}.\textsuperscript{84} And, Conrad and Wyer relate the dualistic problem to higher education in \textit{Liberal Education in Transition} when they report that "we are in an age that not only draws logical distinctions between reason and emotion, imagination, and creativity, between fact and value, and between theory and practice, but also seeks to separate them in educational practice."\textsuperscript{85}

Further research concentrates on how professional education really "fits" into the university structure. Two schools of thought emerge. According to Duncan, universities often resist—ultimately unsuccessfully—inclusion of professional schools within the academy.\textsuperscript{86} Veblen specifically objects to schools of commerce and engineering saying that they "belong under the same general category of practical aims, as contrasted with the aims of higher learning."\textsuperscript{87}

The second school of thought explores a quite natural fit of professional education into the university structure. Whitehead, for example, states that "it is a libel on human nature to conceive that the zest for life (if it be in business, engineering, law, etc.) is the product of pedestrian purposes directed toward the narrow routine of material comforts."\textsuperscript{88} And, according to Van Doren, it is,
in fact, inaccurate to even label something as "vocational" simply because it is a useful art. Van Doren sees every type of education as useful for some purpose. "Technique," he contends, "is the Greek word for art. . . . No antipathy appears between technical and liberal education if we remember that both are concerned with art." For this reason, the provost of Columbia University states to a humanities symposium that at his university, the greatest interest in understanding the humanities is by faculties of professional schools. The reasons, he argues, are simple. First, educators in professional fields now understand they must deal directly with value issues, and second the professionals realize they cannot cope with such problems without help from the universities.

Another approach to the question of liberal and useful relationships found in the existing research reverses the emphasis, looking at the liberal arts and how they fit into professional curricula. Almost a decade ago, Gray, in his book, The Promise of Wisdom, distinguishes between two kinds of wisdom central to the aims of education. According to Gray, there is a practical kind of wisdom—sometimes called life wisdom which enables a person to apply his learning and knowledge to the enrichment of his daily activities. In ancient Greece that man was wise who had achieved excellence or virtue (aretē) in the conduct of life. . . . But to be fully wise in even the practical sense of the term a man had to bring his daily life and thoughts under the guidance of reason. . . . Hence a man had achieved practical wisdom when he ordered his activity by
reason in order to realize his best powers gaining maximum happiness for himself and contributing according to his abilities to the common life of his society or state.92

Distinguished from practical wisdom is pure or theoretical wisdom which Gray defines as

the search for truth about the world and man's proper place in it. This wisdom is theoretical, as opposed to practical, the vision of the pure scientist or researcher, the philosopher, and the man of great things for their own sake. . . . This wisdom does not, as the Greeks poetically put it, "teach a man how to find his way home." It does not make him practically effective as a family man, citizen, or community leader. But Aristotle at least felt that it did make a man supremely self-sufficient and even god-like, for it enabled him to retrace the thoughts of God after Him.93

In Gray's judgment, these two contrasting views of wisdom are central to the debate between those who argue that ideas and learning are to be judged by their fruits in subsequent living and those who feel that higher education should prepare one for a life of scholarship.

Some fifty years before Gray, Alfred North Whitehead, in The Aims of Education, came to many of the same conclusions, though not so explicitly grounded in the early Greeks.94 Whitehead believes that education should properly be concerned with the whole of life, and that it should be relevant to the daily round of life and not limited to the laboratory or study. As he says,

Education is the guidance of the individual towards a comprehension of the art of life; and by the art of life I mean the most complete achievement of varied activity expressing the potentialities of that living creature in the face of its actual involvement.95
Whitehead believes strongly that university education, or its equivalent, must be "the great period of generalization," and he argues that "a well planned university course is a study of the wide sweep of generality." The motif of practical wisdom in his thought surfaced in his view of the use of the past:

The understanding which we want is an understanding of the insistent present. The only use of a knowledge of the past is to equip us for the present and future.

Magill outlines three objectives of liberal education as they relate to Whitehead's conclusions: (1) to aid in the development of an understanding and perspective about the world adequate for the future, (2) to develop a sense of vocation, and (3) to give persons the "art of utilizing knowledge"—to give, in other words, basic competencies or skills which equip them to live effectively and enjoyably.

Magill proposes that liberal education be defined not by the disciplines but by the qualities of mind, spirit, and body which are needed in the world. The academic disciplines, then, are not ends in themselves, but are instrumental to the larger aims mentioned. To Magill, liberal education is as or perhaps more relevant to students engaged in vocational and professional education than it is to students in the arts and science schools of colleges and universities.

The final branch of existing research on the liberal-
useful relationship deals with the "new vocationalism" defined earlier as cause for the decline in liberal arts. Cheit identifies six aspects of decline: (1) the disciplines as an inadequate basis for the organization of liberal learning, (2) the decline in enrollment growth, (3) the rapid growth in education for careers, (4) the serious financial problems in education, (5) the rise in status and authority of the newer professional schools, and (6) the demands being put upon professionals extending far beyond mere delivery of service. Hitchcock identifies the need for education to be oriented toward some kind of useful work. And Cosand argues for an educational system which, from kindergarten to graduate school, concerns itself with career choices and vocational training so that students can drop out at any point and find themselves with some marketable skills.

In summary—in answer to the fifth question framing this literature review—a battle is indeed forming and is certainly worth fighting. Most likely, relationships between the liberal and useful in American higher education exist; their characteristics, however, are neither specific nor clear. Again, there is fragmentation and unrealized potential.

The Land-Grant Idea, the Battle, and the Relationship

The last question posed as a frame to this literature review puts the battle and relationship within the context
of the land-grant idea. Specifically, the question is: "How has the land-grant idea fared thus far in the battle and with the relationship?" A review of the letter of the land-grant act and its spirit as manifested in historical studies, National Association of State Universities and Land-Grant Colleges (NASULGC) publications, critical assessments, and case studies forms the answer.

The letter of the land-grant act speaks quite clearly to establishing a relationship or creating a balance between liberal and useful education. The Morrill Act of 1862 is commonly recognized as having had three main purposes. A brief look at these purposes suggests if not a commitment to at least an acknowledgment of the need to have both liberal and useful elements.

The first purpose was to develop manpower capable of meeting the needs of a swiftly developing industrial nation. The United States had an industrial labor force, growing every year, which was wholly adequate to do the common tasks. What was not in supply, however, was the leadership which only engineers and technicians could give. For this leadership, experts had to be imported from Europe. Furthermore, American agriculture was already on that disastrous sequence of ruin and move. Someone had to learn how to farm right and teach it to others. So one dimension of the act commonly recognized by scholars is public service—the performance of research and teaching in order
to serve the nation's needs.

The second purpose was to open up post secondary education to young people who otherwise would have no access to it. In truth, few young people even went to high school; except for Massachusetts, high schools were rare across the country. So many of the land-grant colleges had to be high schools before they could be colleges. The act speaks of educating the "industrial classes," by which Morrill meant all those young people who were not served by the traditional universities which trained the children of the elite to be lawyers, doctors, teachers, and preachers. So more nearly equal access to higher education is a second commonly recognized dimension of the act.

The third purpose was to see to it that young people received a truly good education. And it is here that the question of balance between the liberal and useful is addressed. For, quite explicitly, the act insists that the education of this new student should be both a "liberal and practical education." More specifically, the act reads:

... 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. ...

While the act identifies a utilitarian leading object, it also quite clearly calls for a liberal and useful balance. Morrill and the other prime movers of the act, in other words, did not mean these not-wealthy young people to be
short-changed with a mere vocational or technological education. Indeed, even the Bankhead-Jones Act, which provides permanent authorization (though not funding) of further monies to the land-grant colleges, lists the courses of study for which the funds can be spent. There is a broad array of the social sciences and humanities among them. Thus, the third dimension of the Morrill Act commonly recognized by scholars is high quality education.

In short, then, from the perspective of the land-grant act's intent, scholars of both yesterday and today recognize the need for integration of liberal and useful education. However, this generalization—void somewhat of spirit—does not in itself tell the whole story of the land-grant concept's "faring" in the "battle" described in the previous section of this literature review. For, with equal clarity of purpose, it has been an evolving spirit of interpretation of land-grant letter which has defined the liberal/useful relationship within visual manifestations of the land-grant idea. A brief highlighting of the scholarship from this interpretative perspective of land-grant spirit provides clarification of this point.

Interpretative perspective one suggests strongly that historically speaking the three purposes of land-grant letter were not easily given concrete form. As Cheit notes, farming, mechanics, and the like just did not develop easily into modern professions. While recognition of the need
for education in these areas was evident as early as 1754, attempts to develop professional schools for such fields were initially beset by resistance and subsequently separatist attitudes on most college campuses. Eddy's study best defines the pattern.106

Though several precedents had been set for establishing professional schools in tune with the land-grant letter, the New York State legislature in 1824 refused to pass the legislation necessary to effect Van Rensselaer's offer of land to establish a publically supported school of agriculture whose aim—in Eddy's words—was "to qualify teachers for instructing the sons and daughters of farmers and mechanics."107 A quarter century later, in 1860, Congress failed to override President Buchanan's veto of the first land-grant college bill. And, in 1908, a business school was established at Harvard only through the efforts of a persevering president.

Here, interestingly, the "battle" began to be fought. Van Rensselaer started his own school without public funds in order to apply "science to the common purposes of life," and Morrill worked to initiate the instruction aimed at elevating modest vocations to higher status.108 The logic of their efforts was simple. As Bowman puts it:

If lawyers and doctors had higher institutions to serve them, farmers and mechanics should too; weren't their callings just as dignified? They must be offered an education that was vocational, practical and scientific. But this did not mean abandonment of other parts of a college course;
whatever in a traditional curriculum was worth continuing for an elite was good for other people too. 109

This populist theme provided the spirit for what Bowman describes as "a roaringly optimistic and an almost frighteningly successful endeavor to create the men—and the women—for a mass economy."110 Ironically, it was through a strong dedication to the three purposes of the land-grant letter—rather than the land-grant letter itself—that Bowman shows how the new land-grant colleges implemented this populist philosophy.

Constantly, however, despite the commitment to the letter and a demonstration of the spirit, there was resistance to the theme from some academics in established institutions. In his history, Eddy reports the frequently exposed fear that bringing these few fields on campus would undermine classical education. It was charged that the colleges were "prostituting the sacred cause of education to the business of making a living" and, more specifically, that the presence of agricultural studies "would convert a scientific institution into a cow pasture."111

Thus, from interpretative perspective one—history—the relationship between liberal and useful education was at the very least less ideal and idyllic than the land-grant's letter might suggest. Land-grant colleges and professional schools were developing, and out of them liberal/useful relationships were growing. But such relationships were at
the very best evolving tensions. A "battle" had indeed been forming.

Interpretative perspective two—the NASULGC—also suggests a liberal/useful relationship in evolution. However, its focus—rather than being of tension and resistance—is of service to the state and nation. Though understandably descriptive rather than critical and promotional rather than probing, the NASULGC's publications in titles alone speak to an evolution of focus. Analysis of four such publications over the past ten years speaks to this point.

The first work—*The Added Dimension* by Ione Phillips—published in 1970 speaks directly to service to state and local government. Reporting results of a survey of member institutions, it both highlights existent institutional activities in this area and outlines perceived "barriers" for an increased service. It reports, for example, institutional research institutes in areas as diverse as transportation, aging, and solar energy. And, it lists a lack of internal university funds and state funds as the major impediments to more cooperative relationships between state universities and government.

The second work—*People to People* by Lucrece Beale—published in 1973 expands the idea of service. More specifically, it analyzes the role of state and land-grant universities in modern America. In some one hundred pages,
the focus is on "people's colleges for people's problems."

Ralph Huitt, the association's executive director, writes in its epilogue:

Public colleges and universities were created and exist today to serve public purposes. . . . The [association's] record of yesterday will not serve the needs of tomorrow. . . . University people must never think that they are the community or its government. They must never forget that their function is to serve the community and its government.114

The third work—The State of the Arts at State Universities and Land-Grant Colleges—published in 1979 puts the idea of service in an even more comprehensive light.115 By focusing on the liberal element, it suggests that the liberal/useful relationship is now an outgrowth of its service raison d'etre. In other words, the call to service defines the relationship. For the first time, NASULGC reports:

Under the terms of the Morrill Act of 1862, which provided for grants of federal land to every state which agreed to establish at least one college to teach agriculture and the mechanic arts, along with traditional scientific and classical subjects, state universities and land-grant colleges accepted a three-fold responsibility: teaching, research and public service. While member institutions of the National Association of State Universities and Land-Grant Colleges have received international recognition for fulfilling this commitment in agriculture, engineering, medicine and human ecology, their very considerable achievements in the arts in teaching, research, and public service are less widely recognized.116

In this sense, the liberal/useful relationship has evolved as the member institution's service dimension has evolved.
Indeed, so much so does this appear to be the case that the pre-1963 clear distinction between state university and land-grant college has given way to collective comprehensive service to the state and nation.

The fourth work—a NASULGC descriptive pamphlet—published in 1983 outlines the comprehensiveness of mission by linking it to the "Jeffersonian belief that self government is wholly dependent upon an educated citizenry."117 Meshing both state and land-grant universities, the pamphlet notes that such institutions award more than thirty-eight percent of all degrees in U.S. higher education, including thirty-six percent of all bachelor's, thirty-nine percent of all first professional, forty-two percent of all master's, and sixty-four percent of all doctorate degrees.118 It further notes that approximately thirty percent of all students enrolled in institutions of higher educations attend the 142 NASULGC member universities and colleges with a Fall 1982 total enrollment of more than 2.8 million students.119

Thus, from interpretative perspective two—the NASULGC—the relationship between liberal and useful education evolves to reflect the equally evolving service to state and nation. Here, one is closer to the idyllic land-grant letter explained earlier—not, however, without an eye toward future refinement of purpose and adjustment of interpretation. Interpretative perspective three—critical
assessments and case studies—gives form to future developments. In so doing, the "battle"—such as it is—is still being fought, neither "side" ever totally winning or losing.

Critical assessments abound charting the land-grant future and adjusting the land-grant emphases. Nevins, for example, calls for a broader definition of "service to democracy" for today rather than yesterday.120 Seaborg defines the task confronting all universities and colleges to be to "help preserve and expand our libertarian and humanistic civilization."121 Allen—seemingly representative of land-grant centennial studies—projects two broad categories of opportunity for future development—namely, expanding constituencies and widening and deepening educational offerings.122 Under expanding constituencies, he includes opportunities in urban areas, general extension, international affairs, and community affairs. Under improving educational offerings, he includes liberal arts, graduate work, engineering, agriculture, military instruction, and teacher education. Hardin contends that the challenge facing all institutions is "to keep pace with the explosion of new knowledge in progress while at the same time provide students with a basic level of competence in the basic skills."123 And, Davenport defines the future spirit of land-grant institutions as "the spirit of service through the application of exact knowledge to the ordinary
affairs of life." Indeed, critical assessment after critical assessment sees the distinction between land-grant and non land-grant institution as somewhat "blurred" but simultaneously charts the land-grant future and adjusts the land-grant emphases with a refining of and adding to the purpose recognized as exclusively land-grant in origin. Though perhaps of a different form, the "battle" between liberal and useful is still being fought.

And, so too is the battle alive from the two relatively recent pertinent land-grant case studies conducted. Earl F. Cheit, in his 1975 study of four "new" professions--agriculture, engineering, business administration, and forestry--suggests (among other things) that far from constituting problems for American higher education in the future, the professional schools might provide models to which universities may look for making general higher education stronger and better suited to student needs. For example, he notes that the liberal must respond to practical concerns such as market force pressures and adjust to "fit" accordingly. And, from a single institutional view, Malcolm Moos in his 1981 study of the University of Maryland suggests that universities must respond creatively to major shifts in the culture and to the pressing challenges to civilization. In light of this belief, for Maryland in particular, Moos recommends a greater commitment to excellence in general with a restructuring of programs,
higher quality of existent programs, freeze on new programs, increase in state budget allotment, and a concerted focus on research--to name a few. Again, in both instances, that evolved sense of service as land-grant spirit is the focus but not without an awareness of such external variables as budgetary constraints and restraints. And, too, in the midst of this awareness comes the perennial battle of old versus new, general versus specific, and yes liberal versus useful. Clearly, no resolution has been reached; no battle has been won; no relationship has been neatly, nicely defined. Yet, the spirit governing the attempts to do so has been constant.

Thus—in answer to the last question posed as part of this review of literature, one finds the land-grant concept very much attempting in the visual manifestations of its spirit to both have a pervasive effect on the individual and produce specific achievements for the common good of society. As such, it has managed thus far to at least attempt a focus on education for being and doing and to at least cultivate a relationship between liberal and useful education. Of course, the odds for realization have often been overwhelmingly negative. But, the odds are neither the issue nor the focus. As Nevins notes, it is the spirit which gave the land-grant form life—and, one suspects, the spirit which thus far has determined its "farin" in both the battle and relationship. Specific study in this area is
warranted to test the hunch.

Conclusion

While the existing related literature offers no history of previous studies which treat specifically the relationship of useful and liberal education within the concrete structure of a particular institution, it does provide a useful critical background against which to conduct such a study. The scholars of previous research philosophize a need for an integration of the liberal arts and professional curricula even though they do not test their theories within the concrete setting of the university. They reflect upon an unsettled feeling that something is lacking in professional education even though they do not identify the missing element. They suspect, almost resignedly so, that the liberal arts are inadequate in meeting humanistic professional needs even though they do not demonstrate ways to satisfy that need. They speak of a land-grant spirit of service to state and nation and leave much room for critical speculation about liberal/useful balance; however, they do not trace the evolution of spirit and its effect upon the balance with any depth of analysis. The proposed case study of Virginia Tech, with its focus on the liberal arts and select professional curricula within the concrete structure of a land-grant university--can fill in some of these research gaps. It is, then, a fitting second chapter to the book already begun on the relationship
of the liberal and the useful in the American university setting.
Notes to Chapter II


11 Idem, "Reviving the Connected View," Commonweal, 2 February 1979, p. 47.

12 Lewis H. Drew, "The Greek Concept of Education and Its Implications for Today."
Harvard Committee, *General Education in a Free Society*.

Robert Maynard Hutchins, *The Higher Learning in America*.


Earl J. McGrath, *General Education and the Plight of Modern Man*.


See, for example, Theodore Greene, p. 153.

Patricia Beesley, *The Revival of the Humanities*, p. 3.


Patricia Beesley, *The Revival of the Humanities*, p. x. It is also interesting to note that the humanities survey courses were so new in 1940 that Beesley calls them "frankly experimental in both content and method."


Ibid., p. 771, 773.

25Ibid.


27Ibid., p. 770.


29Ibid.

30Ibid.


32Raymond Fosdick, quoted in Norman Foerster, The Humanities after the War, p. vi.


35Raymond Fosdick, quoted in Norman Foerster, The Humanities after the War, p. vii.


37Ibid., p. v.


summary.


45Examples are found in Elliott, 1972; Moore, 1970; and Pavalko, 1971.


48Ibid., pp. x-xi.


50Amitai Etzioni, The Semi-Professions and Their Organizations, p. 206.


52For an analysis of the impact of what Jencks and Riesman call the "academic revolution" on each of these species, see pp. 207-50 in The Academic Revolution.

54 Ibid., p. 252.

55 Ibid., p. 254.

56 Ibid., p. 206.


58 Ibid., p. 336.

59 Ibid., p. 338. Interestingly, Etzioni suggests that the distinction between a professional and a "semi-professional" might be that the professional's authority involves "questions of life and death and/or privileged communication" while the semi-professional's authority does not. Thus, for Etzioni, as for Ruskin, one sign of a "profession" is that its work has life and death consequences.

60 See "The Liberal Arts Defined" citations; all are relevant.


61 See "The Liberal Arts Defined" citations; all are relevant.


64 Aristotle, Politics, trans. Benjamin Jowett (Oxford:
Clarendon Press, 1905), Book 8, Section 2.


68Ibid.

69Arthur Levine, When Dreams and Heroes Died, p. 62.

70Ibid.


72Arthur Levine, When Dreams and Heroes Died, p. 21.


74Arthur Levine, When Dreams and Heroes Died, p. 22.


76Edward A. Friedman, "Technology and Higher Education in America for the Next Decade," Liberal Education 65(Summer 1979):199.


80Earl F. Cheit, The Useful Arts and the Liberal
Tradition, pp. 1-30, 131-44.


90Ibid.


93Ibid., pp. 24-25.


95Ibid., p. 48.

96Ibid.

98 Samuel H. Magill, "The Aims of Liberal Education in the Post-Modern World."

99 Earl F. Cheit, The Useful Arts and the Liberal Tradition.

100 James Hitchcock, "The New Vocationalism."


103 Eddy and Ross again give this purpose admirable and comprehensive treatment. So, too, does Nevins in The State Universities and Democracy (Urbana: University of Illinois Press, 1962). More recently, in article form, Samuel Proctor in "Land-Grant Universities and the Black Presence" and Kenneth Mortimer and Mark Johnson in "External Degree Programs: The Current Educational Frontier" address the topic of continued democratization of the land-grant university. Both articles are chapters in Anderson's edited work.

104 This purpose particularly within the past twenty-five years has received quite a bit of attention. Of particular note is a chapter entitled "Liberal Arts and Humanities" in Allen's Open Door to Learning: The Land-Grant System Enters Its Second Century (Urbana, Illinois: University of Illinois, 1963), several chapters addressing aspects of liberal learning and the land-grant system in Anderson's Land-Grant Universities and Their Continuing Challenge, and of course, Cheit's Useful Arts and the Liberal Tradition.

105 Earl F. Cheit, The Useful Arts and the Liberal Tradition, p. 17.
Edward D. Eddy, Jr., Colleges for Our Land and Times. The following accounting of events is based largely on Eddy's rendition.

Ibid., p. 10.

Ibid.


Ibid., p. 523.

Edward D. Eddy, Jr., Colleges for Our Land and Times, p. 72.


Lucrece Beale, People to People: The Role of State and Land-Grant Universities in Modern America (Washington, D. C.: NASULGC, n.d.). Based on textual references, one suspects a 1973 publication date.

Ralph Huit, quoted in Lucrece Beale, People to People, p 108.


Ibid., p. 11.


Ibid., p. 8.

Ibid., pp. 8-9.


Glenn T. Seaborg, quoted in Herman R. Allen, Open Door to Learning, p. 2.
122 Herman R. Allen, *Open Door to Learning*.

123 Ibid., pp. 59-64.


125 Earl F. Cheit, *The Useful Arts and the Liberal Tradition*.

COLLEGES STUDIED

Although the intent of this Virginia Tech case study is to examine the relationship of the university's liberal and useful elements by tracing the land-grant institution's evolution in general, such intent is best realized by concentrating on the institution's two oldest colleges—namely, the College of Agriculture and Life Sciences and the College of Engineering.1 The justification for such an approach follows.

In a general sense, the fields of agriculture and engineering have always been of special interest because their transition in the last century from "old arts to new professions"—as Cheit puts it—was part of the "larger populist movement which sought to produce the 'undifferentiated American' and through education to enable ordinary people to gain prestige and first-class status."2 Their entry into higher education forced a re-examination of classical assumptions about the relationship of higher learning to useful work. Philosophically speaking, then, they are excellent pivotal points for this case study.

Too, both fields were officially, or at least legally,
admitted into the realm of higher education through the legislation of the Morrill Land-Grant Act of 1862. Specifically, the act called 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 tactics, to teach such branches of learning as are related to agriculture and the mechanical arts, in such manner as the legislature of the States may respectively prescribe, in order to promote the classes in the several pursuits and professions of life.

Thus, again philosophically speaking, the two fields serve as suitable anchors for the case study.

Separately, each field presents a distinct means of producing Cheit's "undifferentiated American" as well as a unique manifestation of Morrill's Act. Viewed historically, the dominant characteristic of agricultural education is its setting in the context of public policy. Indeed, a study conducted in 1962 as part of the commemoration of the one hundredth anniversary of Lincoln's signing of the Morrill Act is entitled The Colleges of Agriculture: Science in the Public Service.3

Although the idea of federal support for agricultural instruction (particularly through the Morrill Act) was strong, three important conditions were necessary before an alliance between agriculture and the "academy" could be forged: (1) the development of important ties between agriculture and the market through the growing political
skills of an agrarian movement, (2) the growth of science, which was an instrument of reform and had become embodied in the work of the land-grant institutions, and (3) the development of public service in agriculture.

Since 1838, when crop failures upset favorable trade balances and forced the importation of millions of dollars' worth of food, and when Congress for the first time appropriated funds for a study of agriculture, the course of education in agriculture has been influenced by market considerations. In the years between 1840 and 1860, when scientific growth was changing commercial and industrial life in the United States, much interest was shown in its application to agriculture. But relatively little knowledge was available—because of what historian Frederick Rudolph calls a "half century of stumbling efforts and promises to establish something in the way of agricultural education."4

Clearly, however, the major factor in the successful development of the schools of agriculture was the determination of their founders to convert these stumbling efforts and promises into several forms of effective service. One was the training of teachers to instruct the sons and daughters of farmers and mechanics. Another was direct service to farmers, which ranged from providing marketing information to developing plant strains that were easy to grow. It was through these services that the land-grant college became "democracy's college," as Ross coined
Out of service obligations and expectations which were built into these institutions grew close political ties between agriculture and the colleges.

However, the growth was not without pain. In particular, it was the opinion of many farmers and artisans that the new "A and M" colleges were unnecessary, and therefore they ignored them. And, some organizations, such as the National Grange (organized in 1867), actively opposed the colleges because the offerings were not practical enough. Thus, the agricultural colleges did not receive initially the support of the agricultural community. Indeed, to this day, though outside support is quite strong, colleges of agriculture across the nation—what they are and what they teach—are regulated largely *internally* within the structure of the university of which they are a part. In this sense, then, agriculture with its common land-grant roots but distinct call of *internally* directed public service is one of two suitable foci for the Virginia Tech case study.

Engineering, as the other focus, also provides a distinct perspective while holding fast to land-grant roots. Unlike agriculture, engineering came into its own at the time of the westward expansion and development of the continent. By the 1840's, demand for technical training had risen sharply. Along with the movement for free public education and the lyceum movement, there developed a
mechanics institute movement, which stirred strong popular and legislative support. Yet, very few formal schools of engineering were founded until the passage of the Morrill Act in 1862.

Although the Morrill Act was frequently referred to as "The Agricultural College Bill," instruction in mechanics and mechanical arts was also planned for the land-grant colleges. These schools would open educational opportunity for classes of people not served by the traditional colleges and also help make the new colleges respectable to the men of industrial classes who would be uncomfortable putting on "classical" airs.

Indeed, for purposes of this case study, engineering's distinctive perspective lies with external variables of support and regulation. While the traditional colleges were hostile to mechanical arts, the new land-grant colleges gave them a comfortable home. Engineering programs in these institutions were less controversial than those in agriculture. Such was the case in part because engineering enjoyed the supportive demands of industry and in part because it had as a precedent the work being done in the few established engineering schools. Indeed, as early as 1893, the first effort was made to create a Society for the Promotion of Engineering Education (SPEE) in order to bring about understanding of the objectives among the faculties of the schools of engineering. Today, through the 1932-formed
Engineers' Council for Professional Development (ECPD), engineering schools are evaluated and accredited. The professional association, acting as an external regulative board, works on methods of improving the quality of engineering students, formulates criteria for individual curriculum content, develops plans for further professional development of engineers, and sets methods of gaining more professional recognition for the profession. In this general sense, then, engineering, with its common land-grant roots but distinct means of externally directed development, is the other suitable focus for the Virginia Tech case study.

Thus, in the particular sense of Virginia Tech, the College of Agriculture and Life Sciences and the College of Engineering are perfect foci for the case study of the relationship of liberal and useful education. First, they are the two oldest colleges of the institution. Second, their roots are deep in land-grant soil. Third, they are the two colleges upon which the institution's reputation was built. Finally, together, with their distinct characteristics, they present a composite picture of the development of the institution's other five colleges.

Data Gathered

With each of the colleges, the study attempts to identify the following:

1. The "stated mission" of the college;
2. The "perceived mission" of the college by its faculty and students;

3. The block of study required in its students' liberal education and its students' professional education;

4. The college's rigor in defining the liberal and professional components of its programs—and the degree to which the definitions are enforced;

5. The attitudes of its students and faculty to the liberal and professional requirements;

6. The lifestyle of its students and the extent to which university life exists outside the perimeters of the particular college; and

7. The receptivity of the college to the upcoming implementation of the University Core Curriculum.

Primary Sources for Data Gathering

The primary sources for the study are the following:

1. Virginia Tech Publications


This centennial edition is a revision and updating of an earlier edition published in January 1964 as Volume 57, No. 3, of the Bulletin series. It includes some new information and rearrangement of certain sections as well as subsequent correction of many widely believed facts and legends about the university.


This series in general includes the university catalogs, information for prospective students, and official publications dealing with the university.

This is the official centennial history of the university from 1872-1972.

e. VPI&SU. Catalogs, 1872-1983.

2. Virginia Tech Newspapers

a. Daily Bulletin
   This newspaper is a report of current college events, distributed on campus only.

b. The Techgram
   This newspaper published promotional data about the institution from 1923 until October 1929. From October 1929 to the present, it has included news about VPI&SU events and alumni activities.

c. Bugle
   This publication has been the student body yearbook since 1947.

d. Collegiate Times
   This student newspaper has been published since 1969. It was formerly called The Virginia Tech, 1903-1969.

e. Spectrum
   This publication is the general faculty and staff newspaper.

3. Interviews

a. Deans of Each College
Agriculture and Life Sciences: David R. Ford (Assistant Dean)  
Engineering: P. E. Torgersen

b. University Committee on Liberal Education and the Professions--Representative Members

George B. Collins (Physics): Chairman  
G. Burke Johnston (English)  
Charles Steger (College of Architecture and Urban Studies, Dean)  
Philip L. Hall (Assistant Provost, ex officio)

c. John D. Wilson, Provost (until February 1983)

d. John Perry, Associate Provost

e. William E. Lavery, President

f. Henry H. Bauer, Dean  
College of Arts and Sciences

William Etgen, Professor, Dairy Science

4. Other "qualitative" measures

a. The architecture and location of the buildings housing the two colleges;

b. The condition and maintenance of each building;

c. The instructional layout and design within the buildings;

d. The extracurricular activities of each of the college's students;

e. The various university events--their form and function.

Analytical Framework

The data analysis is framed by three constructs--namely, Benson Snyder and his philosophy of "hidden curriculum," Earl F. Cheit and his study of the useful arts and the liberal tradition, and Burton Clark and his notion of "saga" in general and the land-grant "saga" in
According to Snyder, there are two curricula governing a university degree. One is a formal or substantive one--visible to the students, faculty, and public alike and readily identifiable through official college publications, such as catalogs, newspapers, committee minutes, and faculty reports. The other is an informal or "hidden" curriculum—not so visible to the various university groups but potentially identifiable through a mastery of academic games, cues, and adaptations of the particular institution. Snyder contends that an awareness of both curricula is essential to student success. But, he argues that it is the hidden curriculum which supercedes the formal curriculum and as such ought to be examined closely if one is interested in understanding exactly the "stuff" of which a particular institution is made.

This conceptual orientation is appropriate to a study of the relationship between the liberal arts and professional curricula at Virginia Tech. First, the relationship is the product of both a "paper" or "formal" contract and a "behind-the-scenes" or "hidden" commitment. As such, data include official publications as well as extensive interviews with those who shape, enforce, and abide by the explicit policy found in the publications. Second, the relationship revolves more around what is practiced and less around what is preached. As such, the
interviews include administrative and faculty representatives lending divergent angles of perception and lenses of focus. Thus, Snyder's "hidden curriculum" provides a conceptual orientation for examining both the seen and the unseen aspects of the relationship under study.

The second construct framing the data analysis is Earl F. Cheit and his study of the useful arts and the liberal tradition. Cheit's study addresses specifically the relationship of higher learning to useful work.7 The premise of his study is that the experience of professional schools in general—especially those that have been classed as "new"—is relevant to the resolution of the current issue of developing in students "a sense of calling, in which life and career are integrated," to borrow from the 1973 project entitled "Change in Liberal Education."8 From this premise, Cheit proceeds to investigate the origin and direction of four of these "new" professional schools—namely, agriculture, engineering, business administration, and forestry. Of these four schools, Cheit concludes that they were not "swept in by the Morrill Act," but that "all the time, . . . through self-study, criticism, and outside study, . . . they were seeking to find a synthesis . . . of the useful problem on the one hand and the discipline, the liberal, on the other."9 Cheit draws these generalizations from "the leading, or style-setting, institutions in the various fields."10 Because of this, the generalizations are
of breadth rather than depth and might not capture the
diversity of individual institutions not quite so "style-
setting."

Cheit's study is useful in establishing the analytical
framework for the case study in three basic ways. First, it
provides the breadth of the study by examining four select
professional schools through the lenses of several and
various institutions. Second, it suggests a means for
probing more deeply; that is, it sets the stage for
reversing the study by suggesting the examination of the
relationship of the useful and the liberal through the lens
of one institution and several of its professional
curricula. Third, it aids in the identification of the
particular institution; that is, it discounts any possible
Morrill Act influence on its professional schools but raises
unanswered questions about the "tension" between the useful
arts and the liberal tradition at particular land-grant
colleges and universities. In short, Cheit's extensive
treatment of the useful arts and the liberal tradition
frames this case study's intensive treatment of the same,
shaping an examination from the "inside-out" rather than
the "outside-in."

The third construct framing the data analysis is Burton
Clark's notion of "saga" in general and the land-grant
"saga" in particular. Clark's case study of three private
colleges--Antioch, Reed, and Swarthmore--addresses the
dynamics of institutional image building. According to Clark, the key to success for an institution, particularly in uneasy times, revolves around its creating a unique institutional image, or "saga," and remaining faithful to the viable tradition that is an outgrowth of that "saga."

Most certainly, the Land-Grant Act of 1862 gave birth to a unique "saga" still--through the National Association of State Universities and Land-Grant Colleges--being chronicled. To Justin Smith Morrill, the Land-Grant Act's prime mover, the land-grant college was to teach both the liberal arts and the useful arts. According to the act he fought through Congress, "... 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." What Morrill called "scientific and classical studies" are what educators today know as "the liberal arts" or "the arts and sciences." What Morrill called "agriculture and mechanical arts" are what educators today broadly expand to include the professions. The National Association of State Universities and Land-Grant Colleges, originally established in 1887 as the American Association of State Universities and Land-Grant Colleges, is dedicated to a constant questioning and evaluating of this land-grant object. It is charged with telling the story of what W. J. Kerr in the 1930's called the "fourfold Spirit of the
Land-Grant Institutions"—namely, "the spirit of initiative—pioneering; the spirit of growth—progress; the spirit of equal opportunity for all—democracy; the spirit of helpfulness—service."\(^{14}\)

Thus, Clark's notion of "saga," particularly as it relates to the national association and its land-grant "saga," completes the analytical framing for the case study. The unraveling of the relationship between the liberal arts and select professional curricula at Virginia Tech is but another chapter of the land-grant saga. Whatever else, the relationship is a product of the 1862 Morrill Act's charge of teaching agriculture and the mechanical arts without excluding other scientific and classical studies. It is also a reflection of that fourfold "spirit" of land-grant institutions that the National Association of State Universities and Land-Grant Colleges seeks to chronicle.

Data Interpretation

There are two methods employed for data analysis—namely, triangulation and integration.

The first method is "triangulation of measurement processes."\(^{15}\) According to Webb et al., "Once a proposition has been confirmed by two or more independent measurement processes, the uncertainty of its interpretation is greatly reduced."\(^{16}\) Thus, if a proposition can survive the onslaught of a series of imperfect measures, with all their irrelevant error, confidence should be placed in it.
Using this method of triangulation, the various sources used for gathering data are cross-checked to either confirm or deny the hypotheses about the relationship between the liberal arts and the select professional curricula. Such cross-checking serves both to authenticate and make credible the sources themselves.

The second method employed for data analysis is an "integrative approach"—with "two discrete time series, one based on available records and the other freshly developed by the investigator." Webb et al. explain this approach as follows:

With this strategy, it is necessary to have an overlap period in which the relationships between the two [time] series are established. Given knowledge of the relationships, the available records can be studied retrospectively, thereby providing more intelligence than would be possible if they existed alone.18

Using this integrative method, the sources identified for gathering data are of two types. The first type is rooted in the available documents of Virginia Tech. Specifically, the first type consists of existing university official publications (catalogs, committee minutes, bulletins, self-studies, annual reports, the official "house" history of the institution, and the faculty report on liberal education and the professions at the institution) and university newspapers (student newspapers, campus bulletins of current events, yearbooks, and faculty/staff newspapers). The second type is freshly
developed sources at Virginia Tech. Specifically, the second type consists of extensive and intensive interviews with the deans of each college examined; select faculty members; representatives from the University Committee on Liberal Education and the Professions; the Assistant Provost, Associate Provost, Provost and President of the university; and the Dean of the College of Arts and Sciences.
Notes to Chapter III

1 This study treats only the agricultural element of this college.


7 Earl F. Cheit, *The Useful Arts and the Liberal Tradition*.

8 Ibid., pp. 14, 132.

9 Ibid., pp. 132, 142-43.

10 Ibid., p. 133.


16 Ibid.

17 Ibid., pp. 320-21.

18 Ibid., p. 321.
CHAPTER IV

IN MEDIAS RES--VIRGINIA TECH'S PRESENT

Introduction

It seems quite appropriate to begin the saga of Virginia Polytechnic Institute and State University in medias res. For as in Milton's Paradise Lost, so much of the present is shaped by the past and so much of the future will be charted by the present. A brief exposure to the university's explicit "mission" highlights its present shaping and provides an excellent outline for an analysis of its evolving. As presented in the Virginia Tech Catalog, 1983-84, the purpose of the university is as follows:

Virginia Polytechnic Institute and State University strives for excellence in fulfilling all three missions of a comprehensive land-grant institution: instruction, research, and extension. Achievement of this goal depends on concentrating efforts on those activities that the University is uniquely qualified to pursue and on effectively planning and adapting its programs in teaching, research, and extension to the changing needs of society and to the University's evolving capabilities. Above all, attainment of excellence depends on the quality of the people who constitute the University and on the extent to which they contribute cooperatively to its general purposes.

Deserving high priority among the University's aims are attraction of the best potential students and increased emphasis on recruiting and developing a faculty of the highest quality. Also crucial are enhancement of the intellectual atmosphere, continued improvement in
As stated, the university's purpose focuses on a striving for "excellence" in four basic areas--each with an aim toward meeting the changing needs of the society it serves and, in so doing, realizing the evolving intent of the land-grant act effected some 120 years ago. First, the purpose acknowledges the familiar triune mission of teaching, research, and service, calling for "continued improvement" in both instruction and extension and "vigorous support" of research and graduate studies. Second, it emphasizes an aim of attracting "the best potential" student body. Third, with equal emphasis, it calls for developing a faculty of the "highest quality." And, finally, it brands as "crucial" the enhancement of a university "intellectual" atmosphere.

The Triune Mission

The first basic area in which excellence must be sought is the triumvirate of teaching, research, and service--in many ways the land-grant university's evolving raison d'être. According to Charles Steger, dean of the College of Architecture and Urban Studies and member of the Committee on Liberal Education and the Professions, in their early years land-grant schools in general had a particular mission "to help advance agriculture and engineering."2 But, he
contends, through their constant changing to meet society's needs, today as "mature land-grant institutions," they need to be viewed as serving the same teaching, research, and service functions of any major research public university in the nation. Sharing this philosophy, Virginia Tech's president, William Lavery, says that land-grant institutions must strive to be in tune with society, being "applied" as well as "basic"—whether talking about instruction, research, or extension.3 In this spirit, Lavery identifies a three-fold mission for the university he leads—namely, "to prepare young people for jobs and professions, . . . to prepare young people for lifelong citizenship participation in a rather complex world with an understanding and appreciation for other social, economic, and political systems, . . . [and] to stay on the cutting edge and help shape what society will look like in the future." Thus, Virginia Tech's present purpose reflects the mission of any major higher education institution in the country. With its "three-legged stool of teaching, research, and service"4—to borrow from Asst. Provost Philip Hall—the university is both the repository of knowledge and the generator of new knowledge as well as the conventional social critic and self-critic.

Indeed, Virginia Tech's diversity and wealth of recent programs and research/extension activities speak to a realization of this mission. On the undergraduate level,
instruction is offered in more than fifty departments of seven academic colleges. The colleges are: Agriculture and Life Sciences, Architecture and Urban Studies, Arts and Sciences, Business, Education, Engineering, and Human Resources. On the graduate level, both master's and doctoral degrees are offered in almost seventy different areas of concentration through the Graduate School and the Virginia-Maryland Regional College of Veterinary Medicine. In 1982, with a 1981-82 enrollment of 21,510 students, the university awarded 3,639 bachelor's degrees, 963 master's degrees, and 227 doctoral degrees.5

From the aspect of instruction, of particular note is the plight of the university's College of Arts and Sciences. While the arts and sciences have always been a part of education at Virginia Tech, they were not housed in their own college/school until 1963. With this event has come an interestingly unusual but seemingly healthy tension within the university structure. This tension revolves around the college's function and its image.

The College of Arts and Sciences exists as both a support service and a professional college in its own right. The latter function appears to have evolved out of the former. First, the arts and sciences fit into Virginia Tech's structure in an historical sense. At Harvard, for example, the liberal arts are the cornerstone of the whole university. They were there first, and everything else has
evolved out of them. At Virginia Tech, the story is different, for quite clearly—as Assoc. Provost John Perry remarks—the "arts and sciences evolved from supporting work for other colleges that existed." Second, the arts and sciences have evolved at Virginia Tech through a change in society since the Industrial Revolution. As Lavery explains it:

During the last twenty years especially, Virginia Tech has recognized that it has done a good job preparing students for jobs and professions. But, it has asked: "Have we done as well as we should in preparing for lifelong citizenship participation?" The last twenty years have tended to say that this part is of equal importance for all students. . . . Other things [outside the major—e.g., engineering or agriculture] are of equal importance to their well being and society's well being.

Third, the arts and sciences have evolved through a genuine philosophic realization of their intrinsic value. According to G. Burke Johnston, C. P. Miles Professor Emeritus of English, first dean of the College of Arts and Sciences, and member of the Committee on Liberal Education and the Professions, "The business of any good university is producing good citizens of the state and the country. [This means] giving them, in addition to their specialty, whatever it is, some breadth of understanding of what the world is all about." As Hall reflects: "One can't be effective in one's profession without some knowledge of the way we understand human beings, the way they interact, and the world they live in. . . . This is the stuff of arts and
sciences, a central core of knowledge and understanding." And, too, on a more concrete plane, to quote Lavery: "Engineers and the like need that [liberal arts] kind of education." Of course, because of the problem of how to add this non-technical dimension of education into a curriculum that is perceived by many to be already full and essential, the arts and sciences role as support, while secure, is "not without struggle and give and take," according to Lavery. And, herein lies the first string of tension. Thus, there is an "unusually large number of arts and sciences courses offered at Virginia Tech, with the arts and sciences faculty constituting roughly forty-four percent of the entire university faculty--a figure arts and sciences Dean Henry Bauer sees as significantly large "but not as big as it ought to be."8

The second string of tension revolves around a subsequent recognition of the need for the acquiring of majors in the liberal arts to give the institution "university status" and "comprehensiveness of purpose," to borrow from Lavery. The argument for a college of arts and sciences of professional standing is rather clear cut. According to Lavery, the college needs both service courses and majors in the liberal arts and graduate programs in "some" areas to attract the needed faculty. From his perspective, both of these requisites feed the support function of arts and sciences, "establish[ing] their
credibility so that they are excited about themselves and can then in turn excite others." He explains:

I think we need the humanists and sociologists here as majors else it [the liberal arts orientation] really doesn't rub off. I think the support you get from the majors in the liberal arts lends a great deal of support and need of balance, if you will, in the physical sciences.

Bauer agrees with the president's needs assessment from two perspectives. First, he explains that the needs reflect his conception of a university: "My view of a university is a place that is dedicated to the intellect. . . . One can't have a university [in this sense] without an arts and sciences college." Second, he explains that, from a practical and logical perspective, the support service function of the college cannot be realized without a College of Arts and Sciences with professional stature. He contends that if a university wants good teaching in general, it, of course, needs good faculty. Without providing a faculty with some students to teach who are genuinely interested in their specialty, it will prove impossible to keep them—hard times and all. More so, while he does not think graduate programs are essential in all arts and sciences disciplines, he does think they are important in some—specifically in the sciences and social sciences and again in order to attract good faculty.

In the midst of this reasoning, the faculty seemingly define two roles for themselves. According to Hall, the arts and sciences faculty see themselves as having a
"responsibility" to the university (in terms of support service) and having a distinct "mission" (in terms of scholarship and their own "blossoming" programs). He contends that "ultimately they [the faculty] measure their success by how well they do their mission but feel they must not neglect their responsibility." Perry concurs: "[Arts and sciences] faculty would be distressed if they thought of themselves only in a support role. They want to serve all students of the university but need to have students of their own. The university--since it is a university--must allow for all of this, or something is lost."

The second string of tension is tuned, adjusted, and otherwise pulled in large measure by diverse reactions and attitudes to both functions of the college. The following "facts" serve to illustrate various aspects of the tension. More so than other land-grant schools, the number of non-arts and sciences majors as compared to the number of arts and sciences majors is unusually large. Likewise, the number of service courses compared to the number of major courses is quite large. Engineering students generally take forty-five percent of all their coursework in arts and sciences. Business students take sixty percent. Within this context alone, Bauer sees arts and sciences as "a professional college on their own." Too, he sees the college itself as in the same situation right now as at any other public university. Generally, courses within the
liberal arts disciplines have been tailored to meet the institutional needs of the student, not the specialized needs of a particular discipline major. Although there is not an institutional position on whether the arts and sciences' primary function is support (depends upon whose view and always needs to be qualified, according to Perry), the support role is significant and "probably is the primary role in most people's view." According to Hall, "Thinking of the liberal arts as being in service to the professions has been a part of the university for a long time." And, so, the College of Arts and Sciences lives—as both a unique entity itself (the first string of tension) and a support service unit to other colleges (the second string).

The third string of tension revolves around the College of Arts and Sciences' image and reputation. According to Bauer, the college's image—both internally and externally—is not good. This result he attributes more to "the tradition of the other colleges being independent" and less to the university's agricultural and mechanical roots per se. Of this independence, Bauer remarks:

It is staggering still to me how many decisions that really affect the whole university are made by individual colleges.11

From the perspective of faculty, this collegial independence has created a problem of "a lack of self-confidence" for the arts and sciences faculty. While the faculty appear to be appreciated in other colleges with interaction among faculty
in various disciplines and colleges "quite extraordinary," to what extent the arts and sciences programs are appreciated is unknown.

Out of this internal image problem has come an external one, largely a matter of reputation. Indeed, both appear to feed off each other. The faculty sense that, generally speaking, they are not known outside. In turn, it becomes frustrating for them; the reality does not in fact equal the reputation, according to Hall. The result is more pressure being exerted on everyone to prove himself as scholar—so much so that there is perhaps a little overcompensating and added emphasis on it. The result is a university that will not hire people who say they want more than anything else to teach; reality's dark dream of legitimacy-through-research is too potent. The result, in short, is a perpetual fight turned plea on the part of the arts and sciences dean first with the faculty, to be patient until the external reputation of the programs catches up with reality, and second with the university-at-large, to be careful that it not make the wrong assumptions within the institution.

The university's research efforts also speak to a realization of the institution's triune mission. A descriptive narrative of its research division illustrates this point. The Research Division is responsible for enhancing and fostering the growth of research activities in the colleges of the university. The division provides a
wide range of administrative and technical services to assist the faculty in carrying out their research programs.

Five units have been organized under the division to focus research on state and national problems. These units are: (1) the Virginia Agricultural Experiment Station, which coordinates a broad spectrum of agricultural and related research with most of the research conducted in the Colleges of Agriculture and Life Sciences, Human Resources, and Veterinary Medicine, and at experiment stations located in outlying areas of the state; (2) the Virginia Center for Coal and Energy Research, which coordinates research programs directed toward the solution of state and national energy problems; (3) the Virginia Water Resources Research Center, which coordinates research of an applied nature in relation to water resources and provides for the dissemination of research results; (4) the University Center for Environmental Studies, which encourages and helps organize research programs directed toward the solution of environmental problems; and (5) the University Industry Research Center, which is a joint undertaking with the Extension Division to stress technological innovation and service to Virginia business and industry through research and development.

The university also operates an intercollegiate Center for Public Administration and Policy. This center provides university-level leadership and coordination for advanced
graduate study, as well as research and public service in broad fields of public administration and public affairs. Drawing upon courses offered by faculty of the center and cooperating colleges, it offers a post-master's curriculum encompassing various specialty programs and leading to a Certificate of Advanced Graduate Study or a Ph.D. in public administration and public affairs. The center's programs are uniquely designed to prepare students for dual roles—that of university teachers and researchers and that of high-level managers for policy analysis in the public sector. Programs are offered at both the Blacksburg campus and the Northern Virginia Graduate Center near Washington, D.C.

That the research component of the triune mission is an integral part of Virginia Tech can hardly be questioned. In 1980-81, competitively funded research grants and contracts totaled $23.2 million, an increase of around $3.7 million from the previous year.\(^{13}\) In the same year, core research appropriations from state and federal funding for applied research work totaled around $17.7 million, up from $16.1 million in 1979-80.\(^{14}\) Indeed, Lavery remarks in his 1980-81 annual report that "the University undertook a systematic effort to strengthen its internal research administration to better facilitate the faculty's research efforts."\(^{15}\) According to Steger, on the average, the university now does $50 million worth of funded research alone a year, making
Virginia Tech fortieth in the nation in terms of its research efforts. David P. Roselle, the university's new provost, sees research as the key to academic growth with appropriate facilities to conduct it. Further, he acknowledges that there are special equipment needs in music, theater, and the arts as well as the more obvious of areas like engineering. As a matter of fact, he sees the university as an institution committed to research and extension—and one moving toward developing a computer literate student body. Thus, from the perspective of research alone, the university is certainly in the middle of realizing the objective of excellence it set for itself in its current mission statement.

The final component of the institution's mission—service—is realized through a variety of outreach activities of the university's Extension Division. This division defines its mission as extending the educational resources of the university to all citizens of the state. This goal is accomplished through formal non-credit extension and continuing education programs, and informal extension and continuing education activities. The mission is carried out by extension faculty members located on and off campus, professional extension agents, and paraprofessional extension technicians. Local offices are staffed in 110 locations throughout the state. Programs are financed by federal, state, and local government support; by
industry; by grants and contracts; and by individual participants. Adult education is also conducted on a broad scope. The Donaldson Brown Center for Continuing Education provides the on-campus physical facilities for conferences and short courses that offer an economical means of providing refresher material and the latest information to the public on a year-round basis.

The "Best Potential" Student

The second area of the university's mission as outlined in its statement of purpose emphasizes an aim of attracting "the best potential" student body. It is perhaps important to focus on the word "potential" in an analysis of this area of mission. For, it is in two respects that this potential is addressed.

The first respect treats what might be called the philosophical orientation of the student. In a 1962-72 university report, administrators identified two basic ingredients which characterize the philosophical mood of the typical Virginia Tech student. The first ingredient concerns the quality of life the student has decided to shape. According to Thomas E. Cook, director of University Counseling Services:

There are increasing numbers of students who come to the University with the primary objective of personal and intellectual development, without regard to vocational applications. They seek exposure to new ideas, opportunities to engage in independent study and research, and have as their most important goal the development of an
acceptable philosophy of life.19
This concern for personal and intellectual development is
tempered by a second—seemingly more potent—ingredient.
Despite a philosophical commitment of sorts, students are
still vocation-oriented in both motivation and behavior.
According to the 1962–72 report, "They come to the
University primarily to acquire credentials with which to
enter desirable jobs, find economic security, and improve
their social and economic status."20 Indeed, they are
perceived as being like the typical student described by
Arthur Levine in his recent study on today's college
student, going "first class on the titanic."21 They know
what they want and are directed toward getting it. One of
Tech's former job placement directors reinforcing Levine's
characterization as follows:

Our students traditionally have been job oriented.
The fact that there have been fewer jobs in the
past few years, and little indication as to when
the economy would support a more favorable
employment situation, has tended to cause students
to think more seriously about income-producing
jobs—as opposed to socially meaningful but low
paying work.22

Inded, the 1962–72 report speculates that Virginia Tech
students are slightly more vocation-oriented than the
national group.

Current perceptions serve to reinforce this
philosophical mood. According to William Etgen, Professor
of Dairy Science, most agricultural students know what they
want to do after they graduate before they start college.23
In fact, seventy-five percent of them have well-defined goals and are confident that there will be a job for them when they graduate. Seemingly, agricultural students simply assume that agriculture is the most basic industry in the United States--and that everyone needs to eat. In short, according to Etgen, "These kids know what they want to do, are serious about doing it, and want to get on with it." Dean Torgersen of the College of Engineering makes similar observations about engineering students, noting that most engineering students are very positive, active, and upbeat—whether it be a reflection of their own potential for success or of their view of the world situation. And, even according to Bauer, liberal arts students come with pre-determined goals and vocational objectives, just in not quite so technically narrow fields. Such philosophical orientation suggests that the best potential student is thus one who shares a strong vocational orientation, is already relatively clear about goals, and has charted a future course for both during and after college.

The second aspect in which the aim of attracting "the best potential" student is addressed in what might be called an academic sense. In other words, to what standards must the Virginia Tech student subscribe in order to succeed? According to the 1980-81 report, the calibre of the students is becoming increasingly impressive and the admission standards are becoming increasingly competitive. The
university received 15,200 applications for 1981-82 and accepted only 5,000. Too, the high school class rank distribution of entering freshmen went up consistently from 1966-1974. Table 2 depicts this pattern.

### TABLE 2—High School Class Rank of Entering Freshmen

<table>
<thead>
<tr>
<th>Class Rank</th>
<th>1966</th>
<th>1974</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>20.4%</td>
<td>32.89%</td>
</tr>
<tr>
<td>Second</td>
<td>23.2%</td>
<td>25.58%</td>
</tr>
<tr>
<td>Third</td>
<td>20.5%</td>
<td>19.13%</td>
</tr>
<tr>
<td>Fourth</td>
<td>16.3%</td>
<td>13.79%</td>
</tr>
<tr>
<td>Fifth</td>
<td>10.5%</td>
<td>6.34%</td>
</tr>
</tbody>
</table>

Interestingly, though, since 1973 the university for the first time accepted some (less than one percent) students in the eighth, ninth, and bottom high school class rankings. This new event was perhaps significant enough to explain a decrease in the median SAT score from 1102 in 1966 to 1042 in 1974. At present, the university's median score on the SAT is 1087 (506 verbal and 581 math). However, engineering students average over 1200 on the SAT, with every tenth student being a high school valedictorian. Dean Torgersen notes that "faculty all across campus are anxious to get engineering students. . . . In fact, Virginia Tech attracts top level engineering students—even more so than the University of Virginia. . . . But, of course, this is not true across-the-university."
But, perhaps, it is the most recent action of the Commission on Undergraduate Studies which best addresses the university's aim to attract "the best potential" student. In Spring 1983, the Commission proposed to increase the basic admissions requirements, effective Fall Quarter 1987. Specifically, the Commission proposed to increase the number of academic college-preparatory courses required from nine to sixteen units of the overall eighteen units set as requirement in 1960. The two remaining units can be used for vocational courses. Even more specifically, the Commission's resolution proposed to require (1) two units of social sciences, with one being in history (used to be one of history only); (2) two units of lab science (from the current requirement of one); (3) four units of English, with one unit completed each year of high school (no change); (4) three units of mathematics (no change), but preference given to students who complete an additional unit of mathematics beyond Algebra II; and (5) four additional units, with recommendations in subjects that develop writing skills, analytical reasoning, and research skills. The resolution also recommended that the academic units be evenly distributed throughout the high school years, with seven units completed during the last two years.

Apparently, the increased requirements were sparked by high school students, parents, and teachers who questioned whether the current entrance requirements adequately
prepared the students for college and university studies. Too, they were sparked by Virginia Secretary of Education John Casteen and SCHEV Director Gordon Davies, who encouraged universities to review and update their entrance requirements to provide a "barometer" for high school students as to what is expected of them. David Ford, assistant dean of the College of Agriculture and Life Sciences and chairman of the subcommittee which drafted the commission's resolution, notes: "We have a concern that high school students know what we expect." He explains that the committee looked at other Virginia schools--The College of William and Mary and the University of Virginia in particular--and found that Virginia Tech's requirements were just as rigorous but that most students at William and Mary and Virginia exceeded the standards. In light of this, Ford feels that the resolution will "provide a more accurate picture of what is expected" at Virginia Tech.

Ford sees these proposed changes as appropriate in light of Virginia Tech's image as Virginia's technology-oriented university. He says that it is important for students to know that "we expect our students to be better qualified than what is currently recommended." But, he warns, in so doing, the university must not lose sight of its land-grant status:

Those of us in high technological areas understand, more and more, the need for a wide
understanding in humanities and social science. It is important that we have an idea of our history and social awareness.

Thus, the second area of the university's mission as outlined in its statement of purpose emphasizes an aim of attracting the "best potential" student body. This area is realized in two senses—the philosophical orientation of the students and their academic preparation. Both senses stress "potential" and speak directly to the university's evolving excellence.

The "Highest Quality" Faculty

The university's statement of purpose emphasizes a third area of focus by calling for developing a faculty of the "highest quality." According to Lavery, ultimately it is the faculty who make the institution and in so doing determine its quality. With this point as a given, it stands to reason that in its quest for excellence, the university has emphasized the conscious development of an exceptional faculty. This emphasis is readily apparent in both its hiring practices and tenure/promotion/salary adjustment decisions.

The university's hiring practices aim toward enhancing the reputation of the institution. Thus, publications, research, and demonstrated accomplishment and notoriety play an important part in hiring. According to Steger, the quality of the faculty has improved "amazingly so" over the past twenty years. In fact, there are many outstanding
recruits from top-ranking institutions throughout the nation. Even a cursory glance at the faculty's credentials documents the claim; there is a significant number of faculty with credentials from Harvard, Yale, Johns Hopkins, Stanford, MIT, and the like. In 1983-84, for example, the university has brought in a new civil engineering head, who holds a doctorate from California and was one of the "stars" at Stanford; an associate dean for research, who holds degrees from Yale, Berkeley, and the University of Stockholm and was director of the building science program for the National Science Foundation; a lab director, who holds degrees from Pennsylvania, Berkeley, and MIT and was the head of a major federal entity; and at least two teaching faculty who did graduate work at Harvard. While for some colleges (e.g., Arts and Sciences) the push to hire senior faculty members is off (most of it having been done in the sixties), even these colleges look to those applicants who, through ivy-league credentials, demonstrate a potential for future notoriety in research and publication. Thus, from the perspective of hiring, the university seeks "to continue to enhance and improve"—to borrow from Perry—the quality of its faculty and, in so doing, move a little closer to excellence and renown.

The university's tenure, promotion, and salary adjustment policies also serve to contribute to an enhancement of the institution's image and reputation. In
the University Self-Study, 1975-76, reports indicate a widespread lack of support among the faculty-at-large for the present policies and procedures governing tenure and promotion. In fact, faculty survey results show seventy-five percent of the faculty feeling that teaching, research, and extension are not considered equally in granting promotion, tenure, and salary adjustments. Whether this attitude reflects uncertainty about the criteria applied, or the relative weight given to each, or distrust of those by whom the criteria were applied, is at this point a moot question. The responses indicate clearly that faculty members did not agree with the procedure and criteria used in tenure and promotion decisions, to the extent that they understood them.

One suspects that faculty opinion about the policies has changed little in the past seven years. Indeed, current administrative candor suggests that the policies have, if anything, been strengthened—all seemingly in the name of institutional excellence. According to Perry, tenure and promotion decisions are based "heavily" on research. In fact, he claims that considering the thirty-five-year-plus investment an institution must make in the individual, no one is tenured today who has not demonstrated at least the potential to make significant contributions to his field. But, he assures, this contribution is not the only measure. As Hall puts it, "We cannot allow someone to remain in the
classroom if he is doing an irresponsible job in it, regardless of his reputation as a scholar." Truly, Perry contends, if he is involved in undergraduate instruction, he must also be competent. But, he concludes, "This competency will not stand by itself." It is perhaps within this context that Roselle stresses that successful programs—be they in the technologies or the humanities—attract funding and increase the amount of resources available to the university and subsequently enhance the reputation the university enjoys.38

Thus, it is seemingly this intimate relationship among the enhancing of the university reputation, its striving for excellence, and its research that puts the goal of developing the highest quality faculty within a context. In the University Founders Day Address spring 1983, Ernest Boyer, president of the Carnegie Foundation for the Advancement of Teaching, said:

Research in its broadest form is creative response to anything that we fail to understand but yearn to know. . . . We must sustain it; . . . it is crucial . . . for every field, from the humanities to the sciences. . . . There is a need to put colleges in touch with the need for inventions of our times.39

At Virginia Tech, it is seemingly this definition of research that has governed faculty hiring practices and decisions about tenure, promotion, and salary adjustments. All the while, the goal is a fulfilling of the statement of purpose—in short, a striving for excellence.
The University "Intellectual" Atmosphere

The final area the university's statement of purpose emphasizes is the enhancement of a university "intellectual" atmosphere. To this end, two happenings merit analysis. The first is a series of regular college events, and the second is the more complex attempt to establish a university core curriculum.

The regular college events are coordinated under the auspices of the Office of Student Organizations and contribute immeasurably to a university intellectual atmosphere. The Virginia Tech Union is the primary student programming organization of the university and operates on money generated through a student center fee. Students are involved in all aspects of programming. The program council office is located in Squires Student Center. Programs emphasize cultural, social, and recreational events, including concerts, a cultural arts series, films, dances, lectures, and special interest programs.

The performing arts federation provides a wide variety of activities in communications, music, and theater which are open to all members of the student body as participants or as spectators. Areas in which performing activities are available include film, debate, public speaking, oral interpretation, electronic and print media, theater, and music.

There are several programs at Tech which are especially
designed to broaden and enrich the student's educational experience. Under the sponsorship of the University Union, a variety of concerts and programs are brought to the campus each year. Attractions include internationally known orchestras, ballet troupes, and individual artists of renown, ranging from classical to the popular artists of today. In addition, Squires Student Center contains an excellent art gallery, featuring student artists, local professionals, and touring exhibits.

A Visiting Scholars Program brings to the campus a continuing schedule of outstanding scholars who speak on topics of wide and specific interest. The program also provides opportunities for faculty and students to consult with the scholars in small group sessions.

Each of these college events adds an extra-curricular dimension to the intellectual life of the university. In a 1978-79 annual report, Lavery notes that it is the "intangible values . . . that are the essence of the University itself." Clearly, the tangibles manifested in these college events help shape that which is essential about the university—and, in so doing, move toward a realization of the goal of excellence.

Clearly, however, the most intriguing and complex aspect of this area of current institutional purpose, and perhaps the culminating string of tension to that purpose—which at present is Virginia Tech—is the university's
attempt to establish a University Core Curriculum. In-depth analysis—via the core's beginnings, intent, content, and impact—is warranted.

The concept of a core curriculum for Virginia Tech began in 1975-76 with then-Provost John Wilson. Indeed, today, without exception, everyone (even Wilson himself, after a little prodding) identifies Wilson as the core's prime mover. According to Wilson, when he arrived at the university in 1975, he discovered a university with seven colleges but no "university conception in so far as you could easily discover it beyond Burruss Hall and its administrative apparatus."41 To Wilson, each college defined its own degree requirements, creating a university which was simply the "sum of the seven colleges."

Further, even within the colleges' own cores, there was fragmentation. Both Wilson and Hall looked at one hundred transcripts of graduating seniors to see what the college cores "translated out to be in the lives of young people," to quote Wilson. Of the result, he remarks, "I was really quite appalled." The core courses were taken "helter-skelter," according to Hall, "one snippet with no relation to another and no depth—period." There was no minimum statement on "university" requirements for "university" degrees. The college average "just happened" to be around 180 credits. Nor were there any "university" requirements for English or mathematics. Again, they "just happened" to
be one year for each. Even the social science requirement within each college was "very professionally oriented," says Wilson, recognizing, for example, agricultural economics in the College of Agriculture and Life Sciences as an acceptable course for the social science component of its core. Hall comments:

We were not irresponsible in what we were having students do, but there wasn't any university cast to it. Each college was on its own and in many instances departments were on their own in defining the curriculum. In several colleges, there was no distinction made between social sciences and humanities. It would be humanities/social sciences.

Thus, partly because of its deep-seated land-grant roots and an historical context in which the professions formed the core and the arts and sciences supported them, Virginia Tech had evolved into a university—but perhaps in name only. Hall notes that Virginia Tech "discipline by discipline got to be something like a university but the pieces just didn't come together." Wilson contends that the core was a direct result of a need for "a sense of the university," addressing two vital questions: "Where is the university's interest in the baccalaureate degree? Where is the expression of the university's values?"42 In short, the hidden agenda of the core's prime mover was, as he so aptly puts it, "to establish the idea of a university." Clearly, it is with this agenda that the core's saga has unfolded.

The establishing of a university core curriculum became a means of realizing the land-grant mission, but in terms of
university setting. In the 1980-81 annual report, Lavery discussed the significance of it:

This represents a significant new dimension for Virginia Tech, rooted as it is in the pragmatic and technical heritage of the land-grant college movement. We must not diminish the effectiveness of the technical/professional programs. But we must strive for a desirable balance between professional preparation and the knowledge and skills essential for satisfying and productive lives.43

Of course, the assumption in all of this is that there is a common core of knowledge which belongs to anyone--be he engineer, agronomist, poet, or painter--with a baccalaureate degree. The core becomes a way of ensuring variety and coherence in general education with liberal arts elements. Thus, the core is--in Wilson's words--an "attempt to build a strong university-wide base in the arts and sciences for all students that would serve their non-professional ends as human beings." And, its intent is to emphasize the university aspect of Virginia's first land-grant institution.

Given the emphasis, the core's implementation reflects at this point process more than product. The initial aspect of the process was administered through an ad hoc Committee on Liberal Education and the Professions specially formed by Wilson in Fall 1979. The committee consisted of thirteen representatives from both the administrative and faculty ranks spanning all seven colleges. The committee was charged with proposing a plan for a university core that
would be applied to all its students, according to George Collins, Distinguished University Professor Emeritus of Physics and chairman of the Committee on Liberal Education and the Professions. The task, according to Johnston, made for a "fearful time coming up with a ... milk and water compromise ... that would suit the thirteen people there." Two years later, the committee issued a unanimous final report to the faculty and solicited their comments. After subsequent revisions, in January 1983—two more years later—a university core curriculum was put before and subsequently approved by the university's Commission on Undergraduate Studies, the University Council, and the president—effective immediately.

The legislation marking this resolution reads as follows:

... Therefore, Be It Resolved, that the University move forward as promptly as possible with the implementation of a core curriculum for all undergraduates, but one that requires at the outset only the courses, resources, and structures now in hand. ... Further, the core consists of forty-eight credit hours—"to be completed by all students receiving any bachelor's degrees from Virginia Polytechnic Institute and State University." The hours are distributed in five areas as follows:

<table>
<thead>
<tr>
<th>Nine Hours</th>
<th>Freshman English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nine Hours</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Nine Hours</td>
<td>Humanities and/or Fine Arts</td>
</tr>
</tbody>
</table>
Nine Hours: Social and/orBehavioral Sciences
Twelve Hours Natural Sciences (including laborator y experience)

Finally, the courses within the areas must move to provide "a continuous experience in intellectual development for the student." Thus, within the core, the focus is on course "clusters"—connected by design—or course "sequences"—connected by ordering. Initially, the particular clusters and sequences are to be drawn from existent course offerings. Once these clusters and sequences are selected, the registrar will maintain a list of acceptable core curriculum courses, in addition to their being noted (with an asterisk) in the university Catalog. Full realization of this core implementation process into a working product is planned for Fall 1985.46

At present, five core curriculum area committees, consisting of five people each and representing disciplines in their respective areas as well as professional colleges, are in the process of reviewing the proposals of various colleges for the particular core clusters and sequences for each of the five core areas.47 Proposals are submitted using a memo issued recently by Hall to deans, directors, and department heads on the guidelines for submission of core curriculum course nominations.48

The memo identifies basic guidelines, treating particular core areas separately where necessary. The basic guidelines include:
1. Work to make various introductory course sequences within the core that are specified as requirements by particular degree programs suitable for both university and degree program requirements.

2. Insure that enough courses are available and that they are appropriately distributed in each area to accommodate around 4,000 enrollments per quarter per core area.

3. Be gradual and give careful attention to the relationships between and among courses.

4. Aim for sequences rather than clusters, though clusters are acceptable, and plan for a four-year adoption and subsequent review.

5. Nominate courses by content and design rather than by any particular a priori categorization of departments.

6. Assign a particular person to be in charge of each cluster or sequence.

Particular core area guidelines include:

1. Mathematical Sciences
   a. Do not accept high school level algebra or geometry.
   b. Include at least two courses in sequences.

2. Humanities
   a. Begin with breadth and then move progressively to a more specialized emphasis in the disciplines.
   b. Begin at a level that is within the abilities of the general student.
   c. Emphasize intellectual content and be grounded in traditional humanities areas.
   d. Do not include exclusively or mainly practical, "how-to" studio or performance courses.

3. Social Sciences
a. Have explicitly stated objectives reflecting the general objectives of the liberal core.

b. Insure instruction by those who are effective teachers as well as scholars.

c. Design sequences or clusters to function as a coherent whole.

d. Give students the opportunity to know the way social scientists study and explain the human social world.

e. Encourage students to reflect on the enterprise of social science as one way to attempt to attain knowledge about the natural world and human action.

f. Include explicit consideration of conceptual and methodological issues involved in the investigation of the subject matter examined.

g. Include consideration of the historical, philosophical, and comparative issues that contribute to an understanding of analytical and explanatory approaches.

4. Natural Sciences

a. Take traditional course/approach, but place special emphasis on relationships between the subject and other realms of science.

b. Perceive the science as more than a body of knowledge to be learned and remembered and as a means of formulating meaningful questions and obtaining valid and useful answers.

c. Look to establish some interdisciplinary courses but at a level with a rigor which is fully equal to more traditional first courses for majors.

d. View a laboratory aspect as mandatory and mutually reinforcing.

In light of these guidelines and the very nature of the
university core itself, reactions have been mixed and
speculations on the core's impact diverse.

Obstacles to the core's implementation fall into three
categories—philosophical, financial, and practical. From
the philosophical perspective, Johnston notes that he often
encountered from his technical colleagues the notion that
technical knowledge is increasing at a rapid rate and the
core could take away from keeping up with this rate "by
putting students in an English class when they should be in
a technical class." Even more global than this, on the
technical side, Johnston reflects that he often thought the
biggest objective was "most wanting to have requirements of
what most people think are the non-useful, non-technical
courses." Collins concurs, finding the biggest objection to
be that the core would take one-third of the baccalaureate
credit hours away from professional studies and control.
From the philosophical perspective, then, it has become
difficult to break the heavy chain of technical orientation
at Virginia Tech. According to Collins, "[This was] the
inherent obstacle of a polytechnic institute masquerading as
a university." Thus, because of narrow fragmentation and
specialization and protectiveness of knowledge within and
between disciplines, there was tension and "great struggle"—to borrow from Hall—to get the "uni" in
university. As Ford puts it, "When you have faculty who are
heavily discipline oriented, it is difficult to find some
who are willing to think cross or inter discipline."

The other two obstacles are equally difficult. According to Wilson, one of his only regrets in initiating the core concept was to have waited five years. For, by the late seventies and certainly today, university resources became fixed and finite; in short, today, there is no money. Or, as Collins puts it, the core "fell on very hard times."

Thus, the original recommendations to create new courses specifically designed for the core had to be discarded due to lack of funds; Policy Memorandum No. 44 stipulates that the core must be implemented with existing courses. Related to this, faculty are offered no incentives (e.g., release time, promotion/tenure consideration) and colleges/departments no new positions. Bauer paints the following picture for the College of Arts and Sciences:

We are not offered anything. We cannot offer the faculty anything. So we are in a situation of trying to urge departments to design and teach these courses instead of some of their other courses.

Thus, whatever money is used for core implementation has to come out of existent funds. And, here says Ford, the problem is "not a matter of redirecting the dollars. They are already too tight the way they are, and there is simply no room to redirect."

Aside from the financial obstacle, there are other practical barriers. These all revolve around turf protectiveness. Colleges and departments within those
colleges are concerned about the inevitable loss of student credit hours generated—which, as Perry notes, could lead to department-created courses for the wrong reasons. Perry cites a proposed statistics course in business. And Bauer cites similar proposed courses in the Colleges of Human Resources, Education, and Agriculture and Life Sciences. Another aspect of practicality of turf protection links the core's implementation to an infringement upon academic freedom. Some faculty contend that no one outside the field can know what is best for inside. Thus, obstacles exist.

And, too, there is a mixed reaction to the core implementation by both faculty and administrators on both the technologies and arts and sciences sides. According to Perry, the "aspirations were grander" when the university initially set out to create the core than the "outcome can claim to be at this point." At best, he contends, the university will have a watered-down compromise. Still, he is optimistic, seeing it as "neutral ground almost," a "reasonable consensus" through which the university can grow and in which practice will dictate change "thoughtfully."

Initial committee members lamented what the core concept had become in practice. Johnston was disappointed, wishing every student be required to take at least a course in history (preferably western civilization), a course in literature (preferably English), and two years of foreign language. Steger philosophized that the core was a
compromise for the sake of practicality and the committee "far too timid in what we did." Collins hoped courses would be developed which would be designed for non-professionals.

Reactions by faculty have been varied. According to Hall and Perry, there have been various kinds of commitments to it, much based on their own personal experiences with it. Positive and negative reactions were not limited to any particular group. In general, the core has been endorsed philosophically—with the actual implementation creating the problem. Faculty ask, "What will you ask me to do with my course? What will I have to give up for the core's sake?"

In jest, Hall quips that one of the great unwritten rules of academe appears to be, "Thou shalt not walk into someone else's discipline." Again, the turf-protective practicality surfaces.

Particular colleges' reactions produce a similar mixture. Engineering supports the core but sees itself little affected by it since its own core is similar. Torgersen emphasizes that engineering is governed by accreditation requirements, placing the college well in advance of the core curriculum requirement. Thus, the college will at best be affected in simply giving engineering students less flexibility. Agriculture also supports the core, but with reservations revolving around limited resources and control and, one suspects, loss of FTES generated. Agriculture will be most affected in its
sequencing and professional definition of social sciences, according to Ford. Arts and Sciences is philosophically supportive of the core, though somewhat disappointed in the compromise. Too, Arts and Sciences feels strongly that the total responsibility for the core ought to rest with its, though the college is concerned over the practical and financial obstacles discussed earlier. Arts and Sciences majors will not be affected by the university core, since the latter is a subset of the former. For these majors, the only difference will be qualitative—in terms of attitude and actual content of courses.

And yet, despite these mixed reactions, there looms a cautious endorsement of the core's implementation accompanied by equally cautious optimism about what it has the potential to accomplish. Granted, the possibility exists that the core once implemented will be nothing more than a paper product—especially, according to Steger, if it "did not enjoy the sustained nurturing and support of the higher administration and the deans." And, it is possible that the university will have "business as usual" with the core but "under a different label," according to Hall. And, no, it does not have the "idealistic notions" about what the core courses ought to be. And, yes, the whole business with the individual core area committees selecting their courses is potentially quite political.

Still, the guarded optimism manages to creep into
discussion, sometimes in spite of the participants. Most see it as an opportunity to establish a "climate"--as Steger calls it--of creative thinking and experimenting about courses in ways not done before. As Hall hopes, "Coherence should be created in this way." For Bauer, the most redeeming effect of the core will be to move the control from the individual colleges to the university, thereby ensuring that students take some humanities and some social sciences. From this perspective, it will be interesting to see what happens. Course offerings are not only an effect of what students do, but they are also an effect of how, for example, the social sciences see themselves. For Collins, the core should give the world educated rather than merely trained professionals. For Etgen, it could enhance "the exposure of professional students to general studies" and, in so doing, seek to produce the "educated" and "trained" individual. For Johnston, it is "a very small step," but a step nonetheless, in the direction of giving students breadth of understanding of what the world is all about--beyond the confines of their major. And, for its prime mover, Wilson, the university core can "provide for a significant experience of basic subjects in almost every student" as well as "some internal analysis within departments of courses."

And so, the core, while hardly revolutionary in itself,
is a significant event in this land-grant university's striving for excellence as delineated in its statement of purpose excerpted at the onset of this chapter. According to Lavery, the core will be another step in the university's attempt to bring the liberal arts component to all in realization of its mission. And, in this sense, all point to the faculty as the key to the core's success (or lack of it). Indeed, the faculty must support the effort; otherwise, like any other university movement they have failed to support, it will not succeed. In another sense, Lavery notes that neither the university nor its core would be to its present stay without the strength of its liberal arts majors. In both senses, then, the core most likely shall be more process than product, leading to more institutional evolution and continual development—all in the words of the university's statement of purpose, "a steady movement . . . [that] will help to attain the ultimate goal of [University] excellence."

**Excellence and Strings of Tension**

Thus, in the four basic areas on which Virginia Tech's purpose focuses for a striving for excellence—namely, the familiar triune mission of teaching, research, and service; attracting "the best potential" student body; developing a "faculty of the highest quality"; and enhancing the university "intellectual" atmosphere—the university is much immersed and seemingly heartfeltly committed. And yet, one
feels varying strings of tension. For how, one might ask, can any institution excel in all four areas? How, in other words, can an institution be comprehensive and excellent? More particularly, how can an institution be a university and remain true to the land-grant ideal which conceived it?

In opening remarks for 1983-84, Virginia Tech's new provost, David Roselle, focused on research with only a vague acknowledgement to quality teaching and instruction. As a matter of fact, he noted that, unlike his predecessor who emphasized and encouraged more assigned writing, he really had no "single issue like that." He said instead that it was up to the faculty to "take initiatives to do that" and then went on with a discussion of faculty taking initiatives to continue research. Indeed, he hedged questions about whether concerns on campus about his commitment to the arts were relevant by responding, "I don't know." Perhaps necessarily, the balance has been tipped, the strings of tension tightened.

And, to tighten the strings a little more, in his opening remarks to his administration for 1983-84, President Lavery encouraged "creative thinking" and cited several "new initiatives" for Virginia Tech, including additional national recognition, new students, new faculty, a computer science chair and systems research grant from the United States Navy, a coed dorm, special purpose housing, a bus system, and two million dollars in equipment from IBM.
Lavery commented:

So, science and technology, and liberal arts—the humanities—are receiving lots of recognition. Tech is receiving recognition for what it has to contribute and we can begin the year with a great deal of pride.56

In the midst of this useful and liberal meshing, the land-grant university struggles to implement a university core curriculum, symbolically appending a university mark to the baccalaureate degrees it grants, be they in engineering, dairy science, or English. Indeed, the university should take pride in what it has become, and certainly what it has become should be noted. But, seemingly, with the resultant pride and need for recognition come strings of tension calling for constant fine tuning to meet both the useful and liberal needs of the students and concurrently more than fulfill the university's purpose as it strives for excellence.

With such a "balance," such "tension," the future is intriguingly bright. But, one might ask: And, what of its past? How is it that Virginia Agricultural and Mechanical College turned Virginia Polytechnic Institute turned Virginia Polytechnic Institute and State University came to be in medias res the popular Virginia Tech? In the opening book to Paradise Lost, Milton exclaims: "... What in me is dark/Illumine, What is low raise and support;/That to the highth of this great Argument/I may assert Eternal Providence,/ And justify the ways of God to men."57
Granted, the letter of the intent here is not quite so lofty. But, yet, its spirit is. For, here too "ways" (though only of men) need to be justified and a "great Argument" illuminated. Clearly, a tracing of this land-grant product's evolution is in order.
Notes to Chapter IV

1Catalog, 1983-84, p. 10.

2Charles W. Steger, Jr., interview, Blacksburg, Virginia, 9 September 1983. Unless otherwise noted, subsequent attributions to Steger are from this interview.

3William E. Lavery, interview, Blacksburg, Virginia, 8 September 1983. Unless otherwise noted, subsequent attributions to Lavery are from this interview.

4Philip H. Hall, interview, Blacksburg, Virginia, 6 September 1983. Unless otherwise noted, subsequent attributions to Hall are from this interview.


6John M. Perry, interview, Blacksburg, Virginia, 8 September 1983. Unless otherwise noted, subsequent attributions to Perry are from this interview.

7George Burke Johnston, interview, Blacksburg, Virginia, 7 September 1983. Unless otherwise noted, subsequent attributions to Johnston are from this interview.

8Henry H. Bauer, interview, Blacksburg, Virginia, 9 September 1983. Unless otherwise noted, subsequent attributions to Bauer are from this interview.

9Bauer singles out English faculty as a particular problem in this regard. He says that the freshman English composition load can be stifling to faculty. Interestingly, Virginia Tech is one of many in this regard. It is rare indeed not to hear this lament from English departments in public, state-supported colleges and universities throughout the country.

10Bauer believes that the sciences and social sciences graduate programs are essential in the university setting for one very practical reason. Faculty in these areas simply cannot conduct their research without graduate students.

Bauer does not think the same practicality exists in the humanities, however. Faculty in this area look for other fringe benefits--i.e., a light teaching load, release time for research, travel money, and decent library facilities. Interestingly, in Virginia Tech's College of Arts and Sciences, the highest graduate degree in English is
the master's; there are no graduate programs in philosophy or foreign languages.

Bauer cites as an example the recent decision of the College of Engineering to require its students to purchase their own computers. According to Bauer, this decision has repercussions for the basic support courses in arts and sciences—especially mathematics—that these students are required to take.

Bauer highlights some of the programs which are very well known because of their faculty and research. Specifically, he mentions psychology, sociology, and philosophy. He says that English has made "great strides" over the past few years and that the natural sciences are "good." Mathematics, statistics, and computer science are not known "as much as they should be," he contends.

Ibid.
Ibid.
Ibid.
Ibid.
Building a University: Virginia Polytechnic Institute and State University, 1962-72, p. 8. Published under the auspices of Virginia Tech Bulletin 65 (August 1972) and as a substitute for the annual presidential report for 1971-72.
Ibid., p. 10.
Building a University, p. 10.
William W. Etgen, interview, Blacksburg, Virginia, 7 September 1983. Unless otherwise noted, subsequent attributions to Etgen are from this interview.
Paul E. Torgersen, interview, Blacksburg, Virginia, 7 September 1983. Unless otherwise noted, subsequent attributions to Torgersen are from this interview.

26Ibid.


28Ibid., p. 40.

29Admission Office Records.

30Torgersen interview.


33Ibid.

34David R. Ford, interview, Blacksburg, Virginia, 9 September 1983. Unless otherwise noted, subsequent attributions to Ford are from this interview.


37Ibid., p. 160.


41John D. Wilson, interview, Lexington, Virginia, 31 August 1983. Since February 1983, Wilson has been serving as president of Washington and Lee University in Lexington. Unless otherwise noted, subsequent attributions to Wilson are taken from this interview.

42Hall poses two similar questions: "How can the curriculum be viewed as a means of coming together for the students and also the rest of the university? What are we doing as a whole and not just in the service of our
disciplines individually?"


George B. Collins, interview, Blacksburg, Virginia, 29 September 1983. Unless otherwise noted, subsequent attributions to Collins are taken from this interview.

"A University Core Curriculum," Policy Memorandum No. 44, Memorandum to the Faculty from W. E. Lavery, 31 January 1983. Subsequent details in this paragraph delineating the core are from this document.

In January, implementation was planned for Fall 1984. However, according to Perry and Hall, the process leading to implementation has taken more time than anticipated. Explanations follow in the chapter text.

"Implementing the Core Curriculum: Initial Steps," Memorandum to Deans, Directors, Department Heads from John Perry, 11 March 1983.

"Guidelines for Submission of Core Curriculum Course Nominations," Memorandum to Dean, Directors, and Department Heads from Philip L. Hall, 16 September 1983.

Social sciences guidelines resemble closely a draft set proposed to Hall by Etgen, September 1983.

Torgersen also highlighted a course, a "freshman seminar" offered for one hour as an elective for engineering students. Taught in an interdisciplinary fashion with weekly liberal arts discipline guest lecturers, its purpose is to give students the opportunity "to see early on in their academic careers what various liberal arts disciplines are about and what they have to offer." Seemingly, the seminar has been available "for quite some time" and is "exceedingly popular."

After reading the Collegiate Times article on the university's new provost (already cited), Collins reflected: "But the whole undercurrent of the place [Virginia Tech] is so strongly technically oriented that I think this feeble effort by our committee is not likely to achieve very much." Interestingly, Collins suspects that Wilson hand-picked him in 1979 for the Committee on Liberal Education and the Professions because he developed a course known as "Physics as a Liberal Art." The purpose of the course, according to Collins, was to "explain the beauty of physics to lay students, students who are not interested in the profession of physics." The course has not been taught since Collins retired in 1976.

53 Ibid.

54 Ibid.


56 Ibid., p. 8.

57 Paradise Lost, bk. 1, lines 22-26.
CHAPTER V

STRINGS OF TENSION IN A "TECHNICAL SCHOOL," 1872-1891

Introduction

In classical tragedy, it is often said, things happen not as they may but as they must. The inherent inevitability of the event is weaved around the "how" of the actions rather than the "what" of them. Though anything but tragic, a similar inevitability pervades the evolution of Virginia Polytechnic Institute and State University. This sense of the inevitable is best addressed by Burton Clark's notion of saga.

In his framework of institutional organization, Clark contends that there are some colleges which "sustain and develop [their] mission over time to the point of success and acclaim" and, in so doing, transform their mission into an "embracing saga." Such seems to be the case with Virginia's land-grant university. For, even in its early years, the institution--though tense about the "how to" or implementation of purpose--identified itself (with seeming inevitability) as Virginia's distinct "technical school." And out of this budding saga blossomed strings of tension between its liberal and useful education. Ironically, however, the question constantly tuning and adjusting the
strings did not become how best to incorporate the liberal arts into the budding professions of agriculture and engineering. Rather, the question became how best to mesh these budding professions with the liberal arts. A tracing of mission, curriculum, instruction, and faculty from 1872-1891 provides a means for analysis of both the saga and the tension which accompanied it.

**Land-Grant Basis of Mission**

Without doubt, in the early years of 1872, Virginia Agricultural and Mechanical College looked to the Morrill Land-Grant Act of 1862, the federal legislation that conceived it, to plant the seeds for sustenance and development of a mission. According to the act:

> ... the leading object [of a land-grant college] shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agricultural and mechanical arts ... in order to promote the liberal and practical education of the industrial class in the several pursuits and professions of life.

In the act, three basic points surfaced, which proved to be the guiding force behind Virginia Agricultural and Mechanical College developing a purpose distinct to itself. In journalistic jargon, these points provided answers to at least three of the five questions of investigative reporting. The first point answered the question, "What?" by prescribing the explicit intent of the college—namely, to provide instruction primarily in the agricultural and the mechanical arts but not to the exclusion of the liberal arts.
and military tactics. The second point answered the question "Why?" by offering the college its raison d'être—namely, to foster both "liberal and practical education" in "several professions." And the third point answered the question, "Who?" by identifying the college's audience—namely, the "industrial class" or those not ordinarily provided higher educational opportunity.

Interestingly, it is this act's combination of specificity and glittering generality which prompted the early Boards of Visitors to do some investigative reporting of their own. In particular, the visitors were interested in learning how other land-grant colleges had interpreted and subsequently implemented realization of the landmark act which was their cord of commonality. Two crucial documents—one in 1873^3 and the other in 1879^4—evolved out of this interest.

The earlier report found four types of technically oriented schools in existence prior to 1862. The first, according to Board Member Thomas Eaton, was the "polytechnic school." These, he found starting up everywhere as either "separate" institutions or outgrowths from colleges and universities. Their rationale, according to Eaton, was that at one time all believed that "every man is the better for this liberal education, whatever may be his subsequent pursuit. But it has been impossible to hold the world up to this doctrine. Simpler and more direct methods of education
have been demanded."⁵ Seemingly, this particular style of education discarded, or at least passed lightly over the "humanities," in a general sense, and gave prominence to the sciences and modern languages. Further, the general training of critical thinking skills and habits of mind formed no part of its purpose, though such effects were possible. According to Eaton:

The great characteristic of all forms of polytechnic education is that it has an objective purpose, one external to the student himself, and external to man as man. Its foundations are in the objective sciences; its eye is upon nature, whose powers are studied that they may be utilized.⁶

Eaton cited the establishment of the Polytechnic School by the French government as the first great divergence from the established course of education.

The second pre land-grant technically oriented school discovered by Eaton was the agricultural schools. Since 1799, these schools had flourished abroad—first in Prussia, Switzerland, and Austria, and later in France, Scotland, Sweden, Denmark, Russia, and Germany. The first agricultural school established in the United States was in Michigan in 1855, with New York, Maryland, and Pennsylvania following the lead shortly thereafter. Their intent varied, thus classifying them into four types—didactic, with an emphasis on the teaching of agricultural theory and practice through textbooks, lectures, and lecture room illustration (e.g., Sheffield Scientific School of Yale); practical, with
an emphasis on manual labor and actual practice with tools (most common in Europe and unknown in the United States); combined, with an aim toward combining theory and practice (e.g., Massachusetts Agricultural College and Cornell); and progressive, with a focus on preparing students for original research (e.g., experimental stations).

The third pre land-grant technically oriented school discovered by Eaton was the scientific engineering school. The intent of these schools was quite simply to provide special schooling for engineers. They had their beginnings in the 1750's in the Real Schools of Germany, and slowly gained in popularity throughout the next century. By 1851 they existed all over - especially in Switzerland, Prussia, Holland, France, Belgium, and England.

The final pre land-grant technically oriented school was the agricultural/mechanical colleges. These, according to Eaton, fell into three classes. The first class focused on "training of all sorts, but on a professional level," appealing to engineers, architects, chemical technologists, manufacturers, scientific teachers, explorers, agriculture professors. The second class aimed to meet the needs of farmers and mechanics who expected to continue in their vocations and who had a desire to know something of the scientific principles underlying their vocations. The third class consisted chiefly of practice, usually connected with reform or eleemosynary operations.
Thus, by 1873, after careful perusal of the four types of schools which pre-dated the land-grant act and its colleges, Eaton reported to the Board of Visitors:

Every successful school must have an idiosyncrasy—a life of its own—into which everything about it is absorbed.

While neither Eaton nor any other member of the college's Board of Visitors could isolate or identify the idiosyncrasy of Virginia Agricultural and Mechanical College, all almost unwittingly planted the seed for nurturing and sustaining the saga to evolve.

It was the 1879 Board of Visitors' report which put the idea of idiosyncrasy into a land-grant light. Over a course of two years, W. H. Ruffner, the board's chairman, visited eleven land-grant schools and surveyed by mail an additional twelve. His findings led him to three general conclusions about the land-grant act and individual manifestations of it.

His first conclusion was that there is no school that is attempting to do everything—i.e., focus on agricultural and mechanical arts, not exclude the liberal arts or military tactics, and serve the industrial class. He found, for example, a sharp distinction between the mechanical engineer—as one who "plan[s] and superintend[s]"—and the mechanic—as one who "does." He found some schools which would "not train farmers" (Yale and Harvard, to cite two), one which was saved from abolition by area farmers
themselves (Massachusetts Agricultural College), one which focused on "hard field work" (The Ontario School), and some which incorporated "manual labor" as a kind of practicum into their curriculum (most notably, Michigan Agricultural College). Too, he found several which had a very distant and general connection to the industrial classes (the first seven listed as surveyed in note eight). And, he found many whose courses in agriculture and mechanics—among numerous others—were highly scientific and taken by very few students (the last five listed as surveyed in note eight).

Indeed, so great was the diversity (or "idiosyncrasy") of land-grant manifestations that Ruffner was forced to draw a second conclusion—namely, that it is the spirit of the 1862 act, rather than its letter, that is important. He said:

The best sentiment now prevailing seems to be this, namely, that any college receiving the land fund, or any part of it, should not strangle itself with literalities, but strive honestly to do all that can be properly done by it in carrying out the aim and spirit of the law.

Ruffner's reasoning on this point was really quite sound. That the law's terms are incongruous is a given. Also given is the ability of any college board to "find some clause in the act which will seem to favor almost anything that may be wanted." Thus, rightfully, it is the act's spirit which must give form and function to any idiosyncratic
manifestations of it.

Ruffner's third conclusion revolved around the act's technical distinction in service to the industrial class. Of this, he said:

"It is very certain that the thing demanded by the public of the technical college is the technical feature. This is what they look for, and talk about, and criticise. There must be something to show that this school is not a sham, but a reality true to its name."

As he saw it, the various doubts about the act's intent seemed to have checked the harmonious development of the technical idea in education. Congress, he contended, meant to promote the public interest by doing something for the industrial classes that "would be equivalent to what has been done for the professional classes in other vocations." Thus, while idiosyncratic manifestation in service to the land-grant spirit may (and perhaps should) vary, its saga must be told in light of this technical distinction - else, in Ruffner's eyes, "it is a failure."

The Mission Defined

It is seemingly the conclusions of both reports that gave form to the mission of Virginia Agricultural and Mechanical College in its first twenty years, as well as a seed of direction for the next twenty. Three characteristics defined this mission. Broadly speaking, they encompassed the college's prescribed audience, purpose, and image.

The first characteristic of the college's mission was
broad in its conscious decision to address the needs of the industrial class and actually educate it. As Eaton's earlier report defined it:

The industrial classes then are not the bankers, capitalist merchants or men belonging to the learned professions but they are the men who handle tools, the men of the field, the mine and the workshop.20

In light of this characteristic, this attempt to serve a population not usually the "stuff" for which colleges were made, college officials were faced with two considerations.

One consideration was that of student qualification. From the opening year, students were admitted to Virginia Agricultural and Mechanical College who were, to put it simply, underprepared. The only requirement was one of age—sixteen since 1873 and if a younger brother of a student only fourteen. However, as an 1873 report noted, if the college saw fit to admit only those adequately prepared for college work, it would not be reaching the industrial class.21 As the 1872-73 annual report noted:

If the privilege of entering were restricted to such as are properly prepared, the number who could come would be few indeed, and moreover, would consist only of the sons of men of exceptional wealth, who might have been able to procure for their children exceptional advantages and, as a further consequence, such students would usually turn out lawyers, doctors or merchants—not practical farmers or mechanics.22

From 1872-1891, the college experimented with various approaches in light of this consideration. All the approaches included mechanisms for working with the
underprepared student after he had been admitted. The goal was to help the student overcome his disadvantages, thereby raising his skills level to a level necessary to ensure him the opportunity for success. Of course, such a goal was easier said than done; problems did exist. As an 1873 report explained:

... so many of our students come to us with the scantiest preparation, making it necessary for our curriculum to include much of the work properly belonging to the high schools, or even the grammar schools, thus leaving it impossible to do all that is to be desired in the special technical courses.

Still, the first characteristic shaping the college's early mission developed and sustained itself, becoming very much a distinctive feature of the institution.

The other consideration was of a more practical nature. Simply put, if the college were to reach the industrial class, the cost to the student would have to be low. Regardless of a lack of adequate funding, especially from the state, tuition was kept to a minimum. And, in cases when any tuition was too high, "scholarships" of kindred spirit to today's "work study" arrangements were available. According to an 1877-78 annual report:

In order to be useful to the young men who have been and expect to be working farmers and mechanics, the school must fulfill one condition, without which all other excellences would be useless; it must afford them opportunity to live while enjoying their free tuition at very low cost.

Quite clearly, Virginia Agricultural and Mechanical College
was captured by the land-grant act's spirit of intent in
serving the industrial class.

The second characteristic of the college's mission was
linked intricately to its perceived calling to be "... a
technical school as distinguished from a liberal school—a
technical school, with liberal appendages if you choose, but
still a technical school."26 In the early 1872 report,
Eaton advised that Virginia Agricultural and Mechanical
College "trench as little as possible up on ground well
occupied by institutions already existing in the state."27
Rather, he had the vision to early on plant seeds of
idiosyncrasy and distinction. And, since that early report,
others had shared a similar vision. An 1873 report called
for institutional "organization and management ... to make
it [the college] an efficient training place for practical
farmers and mechanics, ... ."28 An 1873 commencement
speaker took pride in Virginia establishing, "for the first
time in her history ... a college primarily devoted to
practical education."29 An 1877 commencement address echoed
the earlier sentiment, with the speaker weaving his whole
speech around "the possibilities of a system of education
based on science allied to practice."30 An 1879-80 report
refined the notion that:

it was not the design of the Assembly, or of
Congress, to establish here a military school, an
academic college or a university, but an
institution whose primary function should be to
turn out scientific farmers and mechanics, so far
as a school may serve that purpose, and whose secondary object should be to accompany that special training and teaching with so much of a liberal general education as may consist with and conduce to the primary aim. 31

And, finally an 1887-88 report highlighted the college's intent "to give prominence to the sciences and their application, especially those that relate to Agriculture and the Mechanic Arts, . . . and, at the same time, the discipline obtained by the study of languages and other branches is, not to be neglected." 32

Interestingly, it was the last two vague references to the act's classical studies component which highlighted this second characteristic of the college's evolving mission— and, almost again unwittingly, suggested the strings of tension between the college's useful and liberal education to be strummed throughout the nurturing saga. Again, since its founding year, the college recognized the need for a proper mix of liberal studies, despite the "special school" status. In an early report, the board commented:

There is a certain degree of general intelligence and of mental culture, which are essential in order to enable the student to profit by the special studies, . . . . Hence some liberal studies are needed for their training and liberalizing effects, as well as for the light they directly cast upon the path of the student. 33

The problem for the board became one of selecting the proper liberal courses to mix with special studies so as to "commingle the general and special, as to produce the best possible result upon the student, and through him upon the
material interests of the state." Thus, from its founding year, the college's recognition of the need to include a liberal education component in its curriculum created a tension that was to evolve along with, and sometimes in spite of, the technical school status and practical education focus.

The third and final characteristic of the college's mission was its distinct image as the "people's college," to borrow from Earle Ross, and its instilling early on of that kind of institutional "morale" cited in Chapter 1. The feeling was apparent in both the college itself and its alumni. From its beginning, college officials sensed the importance of cultivating pride and feeling in what the institution had become. In an 1875-76 report, the board wrote:

The whole resources of the College are devoted to meeting the wants of those for whose benefit it was organized . . .

And, too, in Ruffner's 1879 report, he emphasized:

Colleges must work among the people not above them. The people must understand the college, and love it, and be proud of it - and thus only can you have a prosperous and useful college.

But, perhaps, most illustratively in this regard is the following 1875 student recollection of his alma mater from a delightful and personal rendition some thirty years later:

Of course, at this early period of its history, this institution was looked upon at best as an experiment; and the Commonwealth impoverished by the war, and burdened by an enormous debt, could give but little from its almost empty coffers for
needed improvements. And yet in the face of these difficulties, hampered by poverty, confronted with the problem of creating a system of education unknown and untried in the South, the first faculty set itself to the task with such grim courage and ability that the results achieved were beyond the expectations of the most sanguine . . .

Blacksburg! Virginia Agricultural and Mechanical College! What memories those words revive! . . . Across the gulf of the years I can hear, almost, the inspirit rat-tat of the drum and the clear sweet call of the bugle. . . . I shall never forget my first view of the old town and college.

In this recollection, "memories those words revive," the pride can be felt, the distinct image of the people's college envisioned. In many ways, it was this third and final characteristic which in its unencumbered simplicity captured the essence of mission as the saga prepared to unfold.

Once this mission had been prescribed, it was its implementation—via curriculum, instruction, and faculty—that created the intrigue. The overriding question became, "How can this mission of technical education with sprinklings of the liberal arts in service to the industrial class best be realized?" In this regard, the "tension" mounted.

Its Curriculum Component

The curriculum itself was perhaps the primary aspect of the mounting. Curiously, its cause never appeared to be an uncertainty of rationale; rather, it was a combination of inexperience, poor background, and weak curricular development in the manifestation of the guiding rationale.
From the start, the curriculum was shaped with a distinct and underlying rationale. In 1872, college officials thought that its institution should be separate from existing public school systems and colleges and universities. So committed they were to this belief that the Board of Visitors consulted not only with each other but also with "literary" institutions on what they thought the "new school" should have for its curriculum. In an 1872 report, college officials reasoned:

The spirit and tendency of the institution should be, not to educate its students away from their vocations, but in and for them, . . . to send them back [home] with fresh zest for their work and a high sense of its dignity and its capabilities.

By 1877, the fact was recognized that if the school were to do anything "peculiar to a technical school," it could not do all that the classical schools do besides.

Confidently, the 1877-78 annual report proclaimed:

... the fact was recognized and acted on that the State had elsewhere made ample provision to train the sons for the learned professions and to provide scientists, . . . engineers, . . . [and] military officers . . . ; that the task of this College should be to train practical workingmen . . . guided intelligently by the analysis of others . . . , and furnish in time of need a large number of men well trained in company and battalion drill.

And, in 1884, the Board of Visitors marked the course of study at Virginia Agricultural and Mechanical College as not only unique and complete in its "embracing [of] literary, technical, and practical studies" as prescribed by the land-
grant act but also of a quality of delivery equal to that of the non land-grant institutions of the state. Indeed, by 1884, the rationale that was to guide the college through 1891 was set firmly in the hearts and minds of its early fathers.

As well-meaning as the rationale was, it served to produce inherent conflict in curricular organization and content. Slowly, the tension mounted. Initially, the college was organized into three departments, re-organizing into four in 1881 and holding to this plan through 1891. The three departments were literary, scientific, and technical, with the first two making up most of the curricular structure. Broadly speaking, the literary department included English language and literature, ancient languages, modern languages, and moral philosophy. The scientific department included mathematics, natural philosophy, chemistry, mineralogy, geology, botany, and zoology. The technical department covered agriculture and mechanics. Interestingly, the mechanics component of the technical department was not initially organized, presumably because of non-existent means. The plan of study spanned three years and led to a diploma, or certificate, in either agriculture, mechanics, or a combination of the two. In 1881, the three organizational departments became four—namely, agriculture, mechanics, literary and scientific, and business. The intent here was to put the focus more on
the student's "major." As the 1881-82 catalog explained it:

Some of the studies, such as English and Mathematics are common to all the courses; but at certain points, a divergence occurs, so that the student may devote the large share of his attention to his special work.48

By 1891, the diplomas which grew out of these departments consisted of the three-year certificate in agriculture, mechanics, or a combination of the two and a one-year business course—to prepare the student for commercial life—as well as a four-year Bachelor of Arts (B.A.) degree, a Mining Engineer degree (E.M.), a Bachelor of Science degree (B.Sc.), a Bachelor of Scientific Agriculture degree (B.S.A.), a Mechanical Engineer degree (Mech.E.), and a Civil Engineer degree (C.E.).49 Thus, by no means settling anything, college officials struggled with an organizational structure to reflect the intent of the curriculum and, in so doing, hold true to the mission of the college.

Curricular content reflected similar tensions. Within the college's initial framework of three departments, the actual content of its curriculum was the same for everyone until the third year of study which branched one way for "farmers" and the other way for "mechanics."50 The three years consisted of the following:

First or Junior year

First Half of Session—Arithmetic, English Grammar, Geography, French or German, Physics, Latin and Greek (optional), Weekly Compositions

Second Half Session—Algebra, English Grammar, English Composition, French or German, Physics,
Latin and Greek (optional), Weekly Compositions

Second or Intermediate Year

First Half Session—Synthetic Geometry, Physics, Chemistry, Natural History, Composition and Rhetoric, French or German, Latin and Greek (optional)

Second Half Session—Trigonometry, Surveying, Physics, Chemistry, Natural History, English Literature, French or German, Latin and Greek (optional)

Third or Senior Year

First Half Session—For Farmers—Algebra, Conic Sections, Agriculture, History, English Literature, Moral Philosophy, Book-keeping, Astronomy

First Half Session—For Mechanic—Algebra, Conic Sections, Mechanics, Mechanical Drawing, History, English Literature, Moral Philosophy, Book-keeping, Astronomy

Second Half Session—For Farmers—Algebra, Conic Sections, Agriculture, History, English Literature, Moral Philosophy, Astronomy, Book-keeping

Second Half Session—For Mechanics—Algebra, Conic Sections, Mechanics, Mechanical Drawing, History, English Literature, Moral Philosophy, Astronomy, Book-keeping

A percentage breakdown of the "courses" of study in agriculture and the mechanical arts illustrates the tension between the useful and liberal educational components. In agriculture, the student was required to take a total of forty-one "courses." Of these, seventeen were from the scientific department, seventeen from the literary department, and seven from the technical department. Thus, roughly eighty-four percent of the student's coursework was
in the "liberal arts" and only sixteen percent in his chosen special field. A similar situation existed with the mechanical arts. Here, the student was required to take a total of forty-three "courses," with eighteen from the scientific department, seventeen from the literary department, and eight from the technical department. Thus, for the mechanical arts student, roughly eighty percent of his coursework was in the "liberal arts" and only twenty percent in his chosen special field. In short, despite the conscious focus on developing a technical school, the reality of curricular content in those nadir years suggested otherwise.

The curricular content change in 1881 still produced similar results. The three years consisted of the following:

First or Junior Year

English Grammar and Composition, United States History, Latin, Higher Algebra, Synthetic Geometry, Elementary Physics, Elementary Agriculture, Book-keeping (by single entry), Commercial Calculations, Drawing

Second or Intermediate Year

For Farmers—General Chemistry, Geology, Lectures on Agriculture, Farm Practice, Rhetoric, History of the English Language, Algebra, Synthetic Geometry, Ancient and Modern Language

For Mechanics—Elementary Mechanics, Algebra, Descriptive Geometry, Drawing, Physics, Shop Practice, Rhetoric, English Language, Ancient and Modern Language

Third or Senior Year
For Farmers—Lectures on Agriculture, Agricultural Chemistry, Agricultural Botany, Agricultural Zoology, English Literature, Government, Surveying, Farm Practice

For Mechanics—Technical Mechanics, Cultural Chemistry, Mineralogy, Metallurgy, Mechanical Drawing, English Literature, Conic Sections, Trigonometry, Shop Practice

Again, a percentage breakdown illustrates the tension forming between the curriculum's useful and liberal components. In agriculture, roughly fifty-six percent of the student's coursework was from the literary and scientific departments, seven percent from the mechanical department, seven percent from the business department, and thirty percent from the agriculture department. Thus, less than one-third of his coursework was in his technical field of study. In the mechanical arts curriculum, the situation is better balanced but still creating the similar tension. Roughly, fifty percent of the student's coursework was from the literary and scientific departments, four percent from the agriculture department, two percent from the business department, and thirty-nine percent—a little over one-third of the total coursework—from the mechanics department, presumably his chosen technical field of study. Thus, while the 1881 reorganization plan attempted to implement a clearer focus on the technical aspect of the curriculum, it succeeded primarily in tightening the existent tension between the already defined liberal and useful components of the curriculum.
By 1891, college officials, while using the 1881 curricular plan as a guide, further tightened the strings of liberal and useful tension. Military tactics experienced varying degrees of emphasis; however, constantly it was seen as a mandatory and valuable curricular dimension. Annual reports throughout this early historical period sung its praises, beyond citing the obvious preparation of soldiers for possible duty. The following 1884-85 excerpt is representative:

This feature of the College does much for the student. It teaches prompt obedience to orders, thorough system in all things, promptness, manly bearing, respect to superior officers, neatness in person and quarters, ... all of which should be taught the sons of farmers and mechanics as well as the soldier in the field.\textsuperscript{52}

A preparatory department also faded in and out, adding to the tension already mounting. The department was established in 1877, "to meet the wants of those young men who have been deprived of the advantage of an early education."\textsuperscript{53} It remained in existence for eight years, consisting of one year of study in arithmetic, English grammar, geography, diction, elocution, and penmanship. It was abolished by order of the Board of Visitors in 1884, with the following rationale:

Whilst this lessens our number and may, perhaps, exclude some worthy young men, it nevertheless increases the advantages of those in the regular course, and adds to the efficiency of college work.\textsuperscript{54}

And, in annual report after annual report, the
intrinsic and extrinsic value of selected liberal arts was
delineated, creating further tightening of existent tension.
In the 1882-83 report, Latin was characterized as "the most
necessary to the English-speaking student."55 In the 1884-
85 report, the importance of including--especially in a
technical school--English Literature, ancient and United
States history, rhetoric, logic, mental philosophy,
elocution, and spelling was highlighted.56 And, in the
1882-83 report, French and German were listed as two of the
traditional requirements of "all scientific and technical
institutions," though the requirement was dropped in 1886
for all students except those in the general scientific
degree course (B.Sc.).57

Too, the business "option" was dropped in 1889 as a
course of study.58 Agriculture separated into two branches
--scientific and practical--in 1886.59 The Virginia
Agricultural Experiment Station was legally established in
1886, adding another dimension to the useful component of
the curriculum.60 Finally, "manual labor" was incorporated
into the curricula in wavering degrees in a constant attempt
"to preserve a due equilibrium between the claim of brain
and muscle."61 In short, in small but significant ways, the
strings of tension between the liberal and useful underwent
constant adjusting and tuning--all presumably with a
heartfelt commitment to Virginia Agricultural and Mechanical
College as Virginia's technical school.
Thus, in these early years of the college's history--1872-1891--its curriculum experienced constant metamorphosis. However, the change revolved not around "what" the institution should be--that was consciously decided. In the spirit of the land-grant intent, it was to be a "technical school" unlike any other institution in Virginia. Instead, strings of tension mounted around "how" this saga was to be realized. In response to the "how," the early years of Virginia Agricultural and Mechanical College saw an institution swelling with that Callcottian sense of morale over its useful image and, at the same time, curiously clothed in a curriculum predominantly liberal.

**Its Instruction Component**

Instruction as the second aspect of the evolving tension between useful and liberal and the evolving college mission also reflected a commitment to technical school purpose but inexperience and confusion in its actual implementation. A brief look at learning activities, evaluation methods, and support services illustrates this point.

Virginia Agricultural and Mechanical College's learning activities revolved primarily around the traditional ones inherited from non land-grant colleges and universities--and based heavily upon the medieval university prototype. Throughout this early 1872-1891 period, instruction consisted primarily of recitations and lectures, ranging
from two times a week to five times a week, depending upon the subject. For example, in 1872, students were required to attend their foreign language, book-keeping, geography, physics, history and literature seminar classes two times a week; their English grammar and composition, moral philosophy seminar, composition and rhetoric, natural history, mechanics, and chemistry classes three times a week; and their mathematics and agriculture classes five times a week. In this period, agriculture and mechanics, interestingly, were taught almost exclusively by lectures with accompanying textbooks.

Indeed, perhaps most intriguing, was the controversial subject of manual labor as an instructional learning activity. Seemingly, in the founding year 1872, four sets of views concerning it surfaced. The first view saw no use for requiring manual labor at all. The second view advocated as requirement one to two hours of it per day without pay. The third view recommended anywhere from two to five hours of manual labor per day without pay as requirement, with any work beyond that receiving fair compensation. The final view—perhaps the most liberal and least specific—espoused the belief that all labor should be voluntary and paid.

As a result of these four different points of view, an in-depth study of the issue conducted by the Board of Visitors led the board to establish a direct relationship
between manual labor and technical studies. As reported by the board:

There are not only improved methods to be learned, but there is a training needed for the eye and hand, which has great educational as well as practical value and which should be conducted with as much system and careful supervision as instruction in penmanship and drawing.\(^6\)

Further, the board recommended requiring manual labor "without distinction" at specified times and seasons, treating it, in effect, just like "any other part of the curriculum." In choosing to focus on the instructional benefits of manual labor as a learning activity, the board de-emphasized the economical or compensatory aspects of the issue, seeing it solely as an educational one.

Ironically, however, the actual realization of this recommendation was somewhat watered-down, clinging still--one suspects--to a more traditional instructional clothing. The 1872-73 catalog put forth the following statement about work on the farm or in workshops:

[These are required] only in so far as is necessary for their [students'] thorough [indoctrination] in those technicalities, and it is believed that it will not exceed two hours a week for each student.\(^6\)

Thus, while the labor was acknowledged as instructionally beneficial, it was not yet placed on the same level as lectures and recitations.

Slowly, from 1873-1887, this attitude changed. In 1873-74, manual labor was required for instructional purposes with work in excess of the requirement being
voluntary and receiving compensation. Proudly, this year's annual report proclaimed that there were many "volunteers" who needed help to defray schooling costs as well as many "volunteers" from the city who needed the exposure:

... so entirely has the public opinion of the college overcome any false shame about hardwork.®5

In 1877-78, this sense of false shame was even more directly given instructional implications. The annual report of that year explained:

The labor system of the College, besides the practical instruction gained, serves the following excellent purpose: it prevents the weaning from labor, and contempt for it, which so many boys, bred to labor, bring back from a college where headwork only is required, and it keeps in countenance the youths who have always labored, and must labor, by leaving no non-laboring class to look down on them.®6

Finally, in 1886-87, the commitment was demonstrated by including laboratory instruction in chemistry, physics, engineering (through field work), agricultural engineering and surveying, agriculture, natural history, technical drawing, and mechanical arts.®7 Plainly, college officials, though hardly committed to, were beginning to be comfortable with the "doing" or experiential dimension of instruction, particularly in a technical school.

As with the learning activities, the evaluation methods in 1872-1891 reflected predominantly a traditional focus—again inherited from non land-grant colleges and universities. In 1872, the Board of Visitors specified that
at the very least students should be able to pass an exam in spelling, reading, writing, elementary grammar, intermediate geography, and arithmetic "to the end of decimal fractions."68 Too, in 1872, for all courses of study, the board identified three kinds of examinations to be used—namely, daily, monthly, and general intermediate/final.69 The former two concentrated on questions based on textbook assignments and previous lectures. They were both oral and written. The latter general combination was collectively comprehensive in nature—with "general intermediate" covering the whole first-half of the course and being conducted at mid-session, and the "general final" covering the second-half of the course and being conducted the closing week of the session. This method of evaluation—despite seemingly the later attempt to incorporate the experiential dimension into the instruction—remained the norm through 1891. Again, the college in practice "picked" yet another string of tension between its useful and liberal education in service to a technical school mission. With the mission secure and the intentions, no doubt, most noble, the reality was evaluation methods with elements of classical education.

Too, the extracurricular activities of the college contributed to the mounting tension—despite the technical school mission. For throughout the entire period, these were also clothed in classical tradition. In 1872, the only
formal extracurricular activities consisted of two literary societies and various "religious opportunities." The literary societies met weekly for "the purpose of cultivating the powers of the members in debate and composition." The religious opportunities consisted of daily exercise, opened with Scripture reading and prayer, as well as regular participation in one of Blacksburg's three churches. Indeed, in 1873, the college added a "Christian Association" to its extracurricular activities, and the activities remained in this form through 1891. Speaking of literary societies in the context of late eighteenth-to-early-nineteenth century American colleges in general, historian Frederick Rudolph notes:

The literary societies . . . owed their allegiance to reason, and in their debates, disputations, and literary exercises, they imparted a tremendous vitality to the intellectual life of the colleges, creating a remarkable contrast to the ordinary classroom where the recitation of memorized portions of text was regarded as the ultimate intellectual exercise.

Too, in the same context, he emphasizes the importance of extracurricular moral training. While Virginia Agricultural and Mechanical College no doubt would have been in principle supportive of this intellectual and moral development as a component of its mission, the college nevertheless in practice again appeared to don this classical clothing. Indeed, even outside the classroom and its formal curriculum, the tension mounted.

Perhaps, the most explicit nodding of this
instructional aspect of mission in the technical direction was the hidden agenda of support—physical plant and otherwise. From the founding year and throughout this early "technical school" period, in report after report after report, officials issued statements and made plans for building equipment and supplies better suited to meet the technical needs implicit in the college's statement of purpose. The 1872 report declared equipment "particularly important" for an agricultural and mechanical college:

The College needs lecture and recitation rooms but it also needs illustrative rooms and apparatus.75

Further, in the same report, it placed emphasis on the need for "illustrative models"—i.e., of machinery, instruments, drawings, animal models for dissections, buildings, fences and bridges.76 And, finally, the report highlighted two "external appliances" and declared the farm as "the great theatre of agricultural illustration."77 In 1875, the college began to include mechanical drawing "supplies" as part of the cost estimates in the catalog.78 Too, in the same year, it announced that the mechanical drawing "facilities" were "shaping up"—with workshop areas, printing presses, and telegraphing apparatus.79 Most significantly, in 1881, the new president himself made the following report on the status of the college from a support perspective:

The condition of the College ... was deplorable. The workshop, the practical part of the Mechanical
Department, was closed, and its costly engine had slept the sleep of months. The Farm, the practical part of the Agricultural Department, was without proper organization, . . . . [Overall, there was a] want of proper equipment, . . . a Laboratory without a drop of water, a department of Agriculture without even a seed, . . . a "model farm" and no dairy, no piggery, no hennery, . . . a $30,000 farm without an ear of corn . . .

He vowed to give the proper attention to these practical concerns. Indeed, by 1887, with the establishment of the Virginia Experiment Station and its heavy emphasis on experimentation and dissemination of useful/practical agricultural information, the college came closer than it ever had in applying the principles governing its mission.

Thus, from the second aspect of instruction, Virginia Agricultural and Mechanical College, in this early period of 1872-1891, reflected a continuing tension between the liberal and useful in the midst of its technical school mission. In its learning activities, evaluation methods, and support services, it planted seeds for a saga rooted deeply in distinct land-grant service to its commonwealth but clothed rather innocently in the traditional elements of classical education.

Its Faculty Component

The faculty was the third aspect of the evolving tension between the useful and the liberal in the 1872-1891 period of Virginia Agricultural and Mechanical College's budding saga. Like the other two aspects of the tension and saga, this final one also reflected good intentions and
basic commitment to the spirit of creating a distinct technical school for Virginia but inexperience and confusion in its actual implementation—often, this time, with political undercurrents. An analysis of the college's first faculty and the circumstances surrounding its selection serves as powerful illustration of this point. Although individuals resigned and others were brought in as replacement, the first faculty is representative of the norm during these first twenty years.

Once the Board of Visitors had established a mission for its college in 1872, it turned its attentions to the selection of a faculty. To this end, according to an 1872 report:

The Rector was instructed to give notice of the fact in the Richmond and Christiansburg papers, and to state that changes might be made in the assignment of branches of instruction to suit the wishes of the Professors who may be elected.88

The board resolved to employ individuals "in sympathy with the objects of the institution, who have a natural versatility, and who have had some experience in the direction aimed at."83 In other words, the college's success depended more upon "obtaining the services of men having the peculiar qualifications needed than upon all other circumstances combined."84 Interestingly, even some one hundred plus years ago, this board realized, at least in principle, that in large measure an institution's faculty is the institution.
In practice, however, the faculty in a formal sense often fell short in meeting prescribed qualifications. A board, at times, too strong for the college's good, as well as politics, partisan and otherwise, often interfered with principle. This reality can be seen at two levels - the presidential and faculty.

The board acknowledged from the institution's inception the powerful role the president plays in putting ideas into practice. It recognized the office of the president "as of course the most important." It felt that the president, in addition to directing the varied internal affairs of the institution, "should give much thought and labor to its advancement in public estimation, and especially in securing an enlarged endowment, and donations for special purposes."

Ironically, however, the board seemingly assumed too potent a role itself in presidential matters related to the institution's implementation of its mission. While it is not pertinent for purposes here to develop this point exhaustively (though it is certainly worth the developing), it is here mentioned to demonstrate an external aspect of tension. About many institutional shaping characteristics, the board had ideas of its own, but none so sharply and frequently conflicted with the president's and various state constituents as faculty selection. In the first twenty years of the college's history, for example, four presidents
had a varying, though traditional, academic background—but no one was suited for the "job" in the sense prescribed by the board. Too, each was "elected" (as the board preferred to put it) on the basis of external concerns—mostly in the form of political support—having little to do with demonstrated ability or at least potential in fulfilling the college's mission.

For illustrative purposes, the most interesting case in point is the election of Charles L. Minor as Virginia Agricultural and Mechanical College's first president. There were four chief contenders for the office in 1872, Thomas N. Conrad, former principal of Prestin and Olin Institute; General L. L. Lomax, a graduate of West Point; Charles Martin, principal of the Christiansburg Female Academy; and Charles L. C. Minor, a native Virginian on the faculty of Sewanee. Curiously, over the institution's first twenty years, all four were intimately involved with the college and all four eventually (three between 1872-1891) were given a turn as president. Only one, however, could be the first.

In the race, "platforms" clearly reflected political alliance rather than ability or potential to realize the college's mission. Conrad had the strong support of the Methodists, especially those having been connected with the Prestin and Olin Institute. Lomax was endorsed by former wartime comrades-in-arms and an aristocratic old Virginia
family. Martin was the Christiansburg Presbyterian backup when it became obvious that the Methodist was out of the picture. All three of these platforms proved to hold too little political weight.

Minor, the final contender, was the successful candidate. He was a native of Hanover County, Virginia, and a graduate of the University of Virginia in 1858 with an M.A. degree. Descended from a long line of distinguished Virginia ancestry, he had mounted a comprehensive, thorough, aggressive, yet tactful campaign for the presidency. Through well-placed connections, he secured endorsements from many outstanding lawyers, politicians, clergymen, farmers, businessmen, and college professors.

Many individuals in endorsing Minor for the presidency stressed his experience gained as president of the Maryland Agricultural College. Strangely enough, the fact that his tenure in this office had lasted only about one year was never adequately explained. Minor himself felt this experience gave him "some advantage" over the other applicants, since as president he had spent much time studying the organization of agricultural and mechanical colleges already established in other states. In addition to this study, he had made numerous visits to examine the exhibits and experiments of the Federal Bureau of Education, only nine miles from the Maryland school. These visits, he confidently wrote, had also given him "considerable
advantage for learning what little is known about the very difficult question [of] how to tend the science and art of agriculture."

There is no question whatever but that Minor with his broad base of support and experience came the closest of all the presidential candidates to meeting the criteria, official and unofficial, which the board had set up for the presidency. The fact that the name Minor had been so prominent in the affairs of the ante-bellum Virginia State Agricultural Society certainly did not hurt his candidacy either. Even so, his margin of victory was a close one over Martin, who, according to one editorial, lost out because two of his known supporters were absent when the president was elected. Thus, at the presidential level, the board and external politics associated with it interfered with the best of all possible realizations of the college's mission. The interference resulted in four presidents serving the college in the opening twenty years who—despite their other qualifications—were in fact classically trained and technically unaware. Such situations—collectively or individually—could only serve to have tightened further the mounting tension between liberal and useful education at the college in this budding stage of Virginia Agricultural and Mechanical College's saga.

At the teaching faculty level, a like tension and saga pervaded. Again, though the board hoped to employ those
individuals sympathetic to the mission of the institution and somewhat experienced in realizing it, those qualifications were seemingly put aside during the selection process. Hufnner nearly three decades later in reminiscing about the occasion yet remembered it with considerable emotion and perhaps bias. Regarding it he said:

When the time came to elect a faculty, we had even more trouble in getting suitable men than we had in shaping a suitable scheme. They all had to be Virginians, Democrats, Confederates, whilst a previous technical education and practice was not deemed at all important.

... The faculty chosen consisted of educated gentlemen not one of whom had the least idea of what a technical college ought to be. No two agreed in their views. They argued and they struggled and they wound up in a fist fight.88

Subsequent events, letters, and editorials tend to confirm much of the aptness of Hufnner's description of the election.

In August 1872, the Board of Visitors elected Virginia Agricultural and Mechanical College's first teaching faculty:89

* James H. Lane, graduate of Virginia Military Institute, to chair of natural philosophy and chemistry (with responsibility for military tactics)

* Charles Martin, graduate of Hampden-Sydney College, to chair of English language and literature (with responsibility for ancient language)

* Gray Carroll, graduate of the University of Virginia, chair of mathematics (with responsibility for modern language)

Thus, the college opened for its first session October 1872
without any faculty in agriculture or mechanics—fitting the largely classical curriculum previously set.

In February 1873, the board held a special meeting for the purpose of completing its appointment of a faculty. It "elected" two individuals—John W. C. Davis, of Hanover County, and M. G. Ellzey, of Fauquier County. Davis held an M.E. from the University of Virginia and presumably participated in the program of agricultural education at Virginia getting underway. Ellzey was an M.D. who, according to Conrad, was "of a mechanical turn of mind." Supposedly, Davis had been elected to fill the "chair of agriculture," while Ellzey had been elected to fill the "chair of mechanics." The catalog for 1872-73, on the other hand, listed Davis as professor of agriculture and mechanics and Ellzey as professor of natural history and analytical chemistry. The catalog of 1873-74 showed yet another arrangement of titles and listed Davis as professor of chemistry, technical mechanics, and drawing, while Ellzey was listed as professor of agriculture and natural history. This shifting of assigned duties, particularly in agriculture and mechanics, was typical of the college in these early years as it sought both to create and to implement applied sciences in these two areas—and, in so doing, to find balance between the useful and liberal aspects of its curriculum.

This first faculty collectively represented the faculty
aspect of tension and saga in this early period, 1872-1891. Not surprisingly, it also reflected the two other aspects of curriculum and instruction. Individual faculty names aside, there was much combining of "disciplines," suggesting little attention to technical expertise and always (and occasionally only) an abundance of professorships in the liberal arts. In one sense, it is fascinating to speculate as to what this first faculty with a liberal arts background would have done if the first students to arrive had demanded training in agricultural or mechanical education. In another sense, it is admirable what they did do even though no such demands were issued.

Indeed, it appears to be a spirit of intent among the faculty—especially the first—rather than a credentialed prescribing to its letter that created saga-nurturing. And, indeed, what better judges than the students themselves! In 1913, a graduate of the class of 1880, Isaac Diggs, wrote an article for the Virginia Tech in which he fondly recounted the first faculty. In it, he recalled Minor as "Mr. Minor to his face, and 'Old Charlie' when he was not around"; Carroll as "beloved, honored and respected by every student who was ever under his teaching"; Martin as "the boys' friend and counselor"; Lane as "the greatest disciplinarian and most ornate quarreler the world ever produced"; and Ellzey as having a wonderful command of the English language with never an idea in his mind that "he could not find a
ready expression for in fluent and graceful words." Subsequent flashes of nostalgia of other graduates abound. Quite clearly, in the midst of presidential "elections," teaching faculty appointments, political undercurrents, and mounting curricular tension over balance, seeds external to those events were being planted in the soil of some "hidden curriculum"—to borrow from Snyder—which contributed again to that Callcottian sense of morale as an institution's belief in itself and nurtured the saga that was to be Virginia's distinct land-grant technical school.

Conclusion

And so, the analogy of Virginia Agricultural and Mechanical College, 1872-1891, to classical tragedy is complete. The college's fate, like the drama's, revolved around the "how" of its actions rather than the "what" of them. At a January 1891 board meeting, the board reported:

The board decided that the prime object of the college was not to furnish a cheap low-grade collegiate education; that its object was higher, its mission was grander; that if it did not rise to the true dignity of its requirements... there was no place for it in the educational system of Virginia. The board knew that Virginia sadly needed and was loudly calling for true technical education; that such was the demand for it that our young men were going North to get what Virginia should give them at home... We did not wish to dwarf the study of our mother tongue, of the modern languages, or of the sciences. But we did intend to make the college what it should be—a true agricultural and mechanical school that Virginia would be proud of.

With this statement, the inevitability of the "what"—its mission—was cemented. The intrigue in this period was with
the "how"—the balancing of tension between useful and liberal aspects. And, herein lies the rub. According to Cheit, professional schools are formed around the periphery of an institution with the liberal arts as the core. At Virginia Agricultural and Mechanical College, by 1891, the challenge had become "how" to transform the existent core, unwittingly consisting of classical studies, into a technical, budding professional curriculum more in line with its mission to be that "true agricultural and mechanical school that Virginia would be proud of." The seeds had taken hold; a saga was about to grow.
Notes to Chapter V


3"Virginia Agricultural and Mechanical College: Its History and Organization," 1872, University Archives, Virginia Tech, Blacksburg, Virginia.


6Ibid.

7Ibid.

8Ruffner visited Delaware College, Towne Scientific School (University of Pennsylvania), Stevens Institute of Technology at Hoboken, Sheffield Scientific School (Yale), Worcester Free Institute, M.I.T., Harvard University, Massachusetts College of Agriculture at Amherst, Ontario College of Agriculture at Guelph, Canada, State Agricultural College of Michigan at Lansing, and Purdue. In addition, he surveyed the University of Wisconsin, University of Minnesota, University of Iowa, Brown University, University of California, West Virginia University, Claflin University (South Carolina), Cornell University, Missouri University, University of Tennessee, Arkansas Industrial University, and Illinois University. "VAMC: Report of the Committee on Reorganization," 1879, pp. 11, 31.


10Ibid., p. 18.


12Ibid., pp. 23-29.

13Ibid., pp. 31-32.

14Ibid.
15Ibid., p. 36.
16Ibid., p. 37.
17Ibid., p. 38.
18Ibid., p. 37.
19Ibid., p. 38.
22Ibid., p. 3.
27Ibid.
29Governor Gilbert C. Walker, Commencement Address, 9 July 1873, University Archives, Virginia Tech, Blacksburg, Virginia, p. 1.
30Robert Beverley, Esq., Commencement Address, 15 August 1877, University Archives, Virginia Tech, Blacksburg, Virginia, p. 4.
34Ibid.
35Earle D. Ross, Democracy's College: The Land-Grant Movement in the Formative State (New York: Arno Press & The


40Ibid. Literary institutions consulted include Washington & Lee, Randolph-Macon, William and Mary, Preston & Olin, UVa, V.M.I., and Hampden Sidney.

41Ibid.


43Ibid., p. 5.


45Catalog, 1872-73, University Archives, Virginia Tech, Blacksburg, Virginia, p. 17.

46Ibid., p. 12.

47Catalog, 1881-82, University Archives, Virginia Tech, Blacksburg, Virginia, p. 9.

48Ibid.

49Annual Reports and Catalogs, 1883-1891, University Archives, Virginia Tech, Blacksburg, Virginia. It is interesting to note that all of these degree programs were discontinued shortly after their inception. The B.A. was discontinued in 1886, the B.Sc. in 1891, the B.S.A. in 1888, and the Mech.E. and C.E. in 1889. It was not until 1892 that the first present-day B.S. was awarded and 1958 that the B.Arch. conferred.

50Catalog, 1872-73, p. 15.

51Catalog, 1881-82, p. 10.

53 Catalog, 1877-78, University Archives, Virginia Tech, Blacksburg, Virginia, p. 20.
57 Catalog, 1882-83, University Archives, Virginia Tech, Blacksburg, Virginia, p. 4.
59 "Annual Report, 1886-87," University Archives, Virginia Tech, Blacksburg, Virginia, p. 5. The practical branch was defined as "the art of agriculture, consisting in putting into operation the processes by means of which plants and domestic animals are developed to the greatest degree of perfection." The scientific branch was defined as "governing the facts and determining the laws whose application by the farmer is practical agriculture."
60 Ibid., p. 7.
61 Catalog, 1872-73, p. 12.
62 Ibid., p. 16.
64 Catalog, 1872-73, p. 16.
69 Catalog, 1872-73, pp. 21-22.
70 Ibid., p. 22.
71Ibid.
72Ibid.
74Ibid., pp. 139-141.
75"VAMC: Its History and Organization," 1872.
76Ibid.
77Ibid. According to the 1872-73 Catalog, the agricultural department was equipped and organized from the start with an experimental farm of around 245 acres "of great beauty and fertility as well as college buildings." The purpose of the farm, the catalog reported, is to teach "practically the most approved methods of cultivation." (p. 12)
78Catalog, 1875-76, University Archives, Virginia Tech, Blacksburg, Virginia, p. 15.
81Catalog, 1887-88, University Archives, Virginia Tech, Blacksburg, Virginia, p. 31.
83Ibid.
84Ibid.
85Ibid.
86Ibid.
87Factual details are taken from several sources, including Duncan Kinnear, The First 100 Years: A History of VPI&SU (Blacksburg, Virginia: Virginia Polytechnic Institute Educational Foundation, 1972), pp. 60-62, and Miscellaneous Faculty (MF) Archives Files, University Archives, Virginia Tech, Blacksburg, Virginia.
88Duncan Kinnear, The First 100 Years, p. 60.
Information of fact taken from a variety of sources, most notably catalogs, MF Files, and Kinnear.

MF Files. Davis resigned in 1874 because his teaching assignment had been switched from agriculture to mechanics, seemingly against his wishes. S. K. Jackson, M.D. became his replacement, subsequently resigning because of his workload. By today's criteria, faculty teaching loads were staggering—all-day loads!

MF Files. Ellzey, though trained in medicine, set to work to prepare and organize his courses and content as he saw fit. Described as a brilliant lecturer in the classroom but taciturn, moody, and sparse of words outside, this individual deserves more credit than he gets as a pioneer in agricultural education. He is primarily responsible for organizing and creating lectures manageable in size and sufficient in scope to meet the needs of organized classes studying agriculture.


See, for example, the 1904 recounting by Samuel P. Withers, Class of 1886, in the *Gray Jacket* and subsequently reprinted in the *1908 Bulletin*, already cited.


1891 Board of Visitors, quoted in Duncan Kinnear, *The First 100 Years*, p. 134.

CHAPTER VI

A NEW SET OF STRINGS IN A POLYTECHNIC INSTITUTE, 1891-1919

Introduction

"The child," philosophizes English romantic poet William Wordsworth, "is the father of the man." For he gives birth to what the man may become. In similar fashion, as a new administration at Virginia's distinct technical school struggled to meet the challenge of creating an agricultural and mechanical college of which Virginia could be proud, it quite deliberately gave birth to a polytechnic institute that would prove a powerful shaping force in years to come. In this second period of institutional saga, 1891-1919, the college passed through its dark ages and emerged as a new institution—in name as well as in fact. In so doing, it disturbed permanently an already tense balance between the institution's liberal and useful education, defining irreversibly a new relationship for the institution's two land-grant objects. Using a key 1891 presidential report as the base, an analysis of its impact on the institution's evolving mission, curriculum, instruction, and faculty during this period serves as excellent illustration of the new set of strings being played for Virginia's polytechnic institute. Indeed, the
saga continues!

The Land-Grant Basis for Mission

When John M. McBryde assumed the college's presidency on May 11, 1891, it took him only two months to submit a report to the Board of Visitors which called for a restructuring of the entire college. His recommendations included higher standards, more organized admissions/exit procedures, a clearer focus on the technical aspect of the land-grant act as well as its liberal aspect, and an acknowledgement of, if not a commitment to, the importance of the English language in a practical sense. This report, in both form and function, shaped dramatically the college's saga for the next twenty-eight years. In the report, McBryde formulated an interpretation of the 1862 land-grant act and its subsequent 1890 companion act, using both as the basis for a plan of reorganization for the whole college.

As McBryde saw it, the object of the land-grant college was sufficiently defined by the 1862 act itself. The problem revolved around the act's language of vagueness—seemingly, as he put it, "purposely so, [as] it is asserted by the author and advocate of the bill." Morrill saw clearly that the educational conditions prevailing among the beneficiaries of his bill—the industrial classes of this country—virtually prohibited the exclusivity of the agricultural and mechanical schools of Europe. To enter them from abroad, the student must bring with him a sufficiency
of general outline to serve for the technical instruction provided by them. Herein, according to McBryde, lies the source of the language problem. He said:

... the introduction of the term liberal ... has proved a veritable Pandora's box. It has been frequently pleaded in justification of the most shameless perversion of the funds donated by the act; it has greatly hampered the efforts of the real friends of industrial education, and compelled a departure from the strictly professional type of the European schools. With those who held that culture was not to be found outside the humanities, liberal education was synonymous with classical. It is not surprising, therefore, that in the earlier agricultural schools too large provision was made for the liberal features, and too little for the scientific and technical.4

And, indeed, the differences between the earlier agricultural schools' course of study and those of the "literary" colleges were often microscopic. From McBryde's perspective on the 1862 act, the differences should be in the application of the liberal arts in a sense other than literary or classical:

In my opinion, a well planned course of scientific study, thoroughly taught in the laboratory and lecture room, can be made to give some of the best elements of a liberal education, the development of the observing facilities, the strengthening of the power of inductive reasoning, accuracy of method and statement and love of truth.5

His interpretation of the subsequent 1890 companion act merely reinforced this perspective. In 1890 the Committee of Land-Grant College Presidents appeared before Congress. In its remarks, it advocated more funds for land-grant use. The presidents argued that the schools were in letter and
spirit attempting to be schools of technology, and, in this regard, were necessarily expensive, though much in demand by their respective constituencies. In his 1891 report, McBryde offered the following interpretation of this 1890 act:

[On] August 20, 1890 each land-grant college received $25,000 to be applied only to instructions in agriculture, the mechanic arts, the English language and the various branches of mathematical, physical, natural and economic science, with special reference to their application in the industries of life and to the facilities for such instruction.6

Again, the focus from McBryde's perspective was quite clearly on the technical object of the act.

For McBryde, then, both acts pointed clearly to an emphasis on technology with a general nod in the direction of developing some liberal arts competencies in service to the primary emphasis. He believed that both acts intended to establish and endow schools in which agriculture and mechanics should hold the leading positions, and that the classics, literature, and the sciences, without immediate bearing upon these two branches, should, if allowed at all, be held strictly subordinate and secondary. He said:

I am convinced that the true development to be given to such schools should lie in the direction of technology. They should be made as far as our educational, social, and economic conditions will allow, more and more professional and technical.7

In this sense, McBryde envisioned both an increasing demand for technical training and a potential for success based largely on the "high plane of usefulness and success" of
such schools in Europe. Holding to their technical emphasis, McBryde gave a general nod to some of the liberal arts—science, language, history, and economics—as necessary support to technology. Since agriculture and mechanics are not mere "handicrafts," he contended, the "hard" sciences—mathematics, physics, chemistry, biology, mineralogy, and geology—should underlie them and be given a prominent place in the curricula. Too, since the colleges must train citizens as well as specialists, "a command of their mother tongue and a knowledge of the political and constitutional history of their country and of the questions profoundly effecting its material interests . . . are of overwhelming importance." Indeed, the focus for McBryde was quite firmly on technology in both theory and practice.

**McBryde's Institutional Vision**

Based on this land-grant evolutionary interpretation, McBryde put forth seventeen very specific recommendations about the form and function of Virginia Agricultural and Mechanical College. These recommendations, broadly speaking, addressed the three basic structural areas of any educational institution—curriculum, instruction, and faculty.

In curriculum, McBryde called for a radical restructuring of the courses of study. He recommended two general programs—general agriculture and mechanics—leading to a Bachelor of Science degree in seven possible fields:
Agriculture, horticulture, applied chemistry, general science, civil engineering, mechanical engineering, and electrical engineering. In each, he allowed for what he called "liberal cultural elements," consisting mainly of English, modern language, political economics, and history. To complete the curriculum, he also recommended two "shorter" courses— one for farmers and one for mechanics. The focus of these, he contended, would be "very technical and special, to speedily give young men special training for industrial life in order to avoid interference with the degree course." Indeed, one cannot help but wonder here whether these shorter courses were not one means of serving the "industrial classes" in an open-door sense without compromising the standards he was to set for the four-year B.S. degrees.

In instruction, McBryde called for a refining of classroom methods and a prioritizing of facilities, equipment, and supply needs. Under classroom methodology, he recommended that:

1. Lab work be required in every department—even English via take-home compositions.

2. A uniform system of exams for entrance and exit, together with a uniform plan of evaluating them in particular and each term in general, be formulated.

3. Saturday student work loads be reduced by adjusting the schedule of hours and classes to allow students to prepare for literary societies.
4. Textbook selections for each course offered be thoroughly reviewed and altered, if necessary.\

Under support needs, he recommended a general prioritizing of them with an accompanying commitment to getting them. He included the need to build up a library; improve the grounds; improve the facilities and equipment for agriculture and mechanics in general and the scientific departments in particular; and build an adequate chapel, infirmary, mess hall, and refurbished faculty housing. Again, the focus throughout this area appeared to be on increasing the standards of the college as well as enhancing its quality of life in light of an already determined focus on technology.

In faculty, McBryde's recommendations also focused on increasing standards and enhancing quality in light of the technology emphasis. He asked that the president be completely in charge of the internal affairs of the college, especially with regard to faculty and in "intimate" association with the board. He asked that professional ranks be instituted, with accompanying increases in salary for "faithful service." He asked that particular positions in support of his recommended curriculum be established. Finally, he asked that a treasurer, secretary of the faculty, and librarian be appointed. Though these three positions were not "faculty" positions, they—like those recommendations specifically referencing
faculty—would develop both a higher level of standard and quality throughout the college in light of the technology emphasis.

With this plan for reorganization, McBryde took the 1872 idea of an applied science or technical school, which planted seeds for a budding saga, and enlarged upon it. For this, in countless reports through the present, he is frequently referenced as the "Father of Modern VPI."22 In emphasizing technology—both theoretically and practically—as its leading land-grant object, while seeking to increase its standards and enhance its quality, McBryde proposed a refined institutional purpose which was to become the very foundation of the polytechnic institute Virginia Agricultural and Mechanical College became in this second period of its saga, 1891-1919. In so doing, a new set of strings were to play out the tension between the college's liberal and useful. Perusal of the institution's mission, curriculum, instruction, and faculty suggest the tune.

The Evolving Mission

Simply put, the enlarged mission for Virginia Agricultural and Mechanical College which grew out of McBryde's plan was:

\[\ldots\text{to make the college a real school of applied science—an institution of technology that will in due time be an honor to the state.}^{23}\]

The college was to be a school in which "the sciences, especially those related to Agriculture and the Mechanic
Arts, hold, in strict accordance with the acts of Congress from which the college derives its income, the foremost place." It was to be a school to meet the needs of the state of Virginia in the applied science and technological areas not being met by other schools. It was, in short, to be Virginia's polytechnic institute.

And, indeed, by 1896, Virginia Agricultural and Mechanical College had evolved into just that. In March 1896, the General Assembly added "Polytechnic Institute" to the college's title—"for the purpose of more clearly defining the scope of the work of the College"—and almost overnight it popularly became known as Virginia Polytechnic Institute or VPI, for short. As such, it was but beginning to meet a distinct need in Virginia and perhaps offer a new dimension to education never before seen. In a 1908 work entitled "New Spirit of Country Life," this new dimension of purpose, complete with an ever-present liberal and useful tension, was captured as follows:

In all of these institutions [academies, city high schools, normal schools, state colleges and universities] the educational philosophy of the older church-governed schools dominated. The curriculum of the past was emphasized, and the needs of the present and the prevalent tendencies of the times were ignored. This old philosophy insisted that a live man should spend four to eight years in the study of dead languages, and that the man who could express his thoughts in a live one only, was as good as dead already. Many of the graduates of these schools, after contact with the real affairs of life, found themselves almost helpless and finally they became hopeless. It was not uncommon to find graduates of our great eastern and European universities employed as
clerks, sewing machine agents, and waiters in hotels. The false ideals which they received at these institutions were largely responsible for their failure. There is something inherently wrong in that system of education which gives the man or the woman $5000 tastes, and earning capacity of $500 a year. . . . We have outgrown this ancient and aristocratic philosophy. The curriculum, once confined to classical learning, has broadened out so as to cover the practical as well as the theoretic and the aesthetic.

At VPI, in its second period of saga, 1891-1919, such "broadening" was a visual manifestation of the college's single-minded "technology" mission—with accompanying strings of liberal and useful tension strumming tunes the likes of which were never before heard. The college's curriculum, instruction, and faculty provided both the music and the lyrics.

Its Curriculum Component

The college's curriculum during this period demonstrated an increasing focus on specialized content. As a result, the liberal arts or general education component clearly evolved into a support service role. These two curricular transformations both reflected the "new" mission of the college and served to create a similar evolution in the relationship between the college's liberal and useful elements.

The first aspect of curricular evolution revolved around a slow increase in admission standards. The first serious raising of admission standards came in 1908-09 when entrance requirements were increased one full year:
Candidates for admission to the Virginia Polytechnic Institute must now stand rigid entrance examinations in English, mathematics, and history, or must furnish satisfactory evidence in the form of certificates from accredited high schools that they have successfully covered the entrance requirements elsewhere.27

From here, the degree of specificity regarding admission requirements increased. In 1911-12, they were at ten units.28 And, in 1913-14, they were raised to fourteen Carnegie units—where they remained through 1919.29 The fourteen units were distributed as follows:

- English: 3.0 units
- Algebra: 1.5 units
- Plane and Solid Geometry: 1.5 units
- History: 2.0 units
- Elective: 6.0 units

Again, however, because, one suspects, of the land-grant spirit, the college made provision for a conditional admittance for selected students. The 1913-14 report explained the situation as follows:

Experience has proven that the raising of the entrance requirements has been a very great benefit to the institution as a whole. The ill-prepared student and the very young student are equally excluded under these requirements, the result being that our students are both more mature and better prepared. It has been long evident that the greatest loss this institution suffered in students was from the number who entered ill-prepared and later became discouraged and dropped out. This class, while not entirely eliminated, has been so much reduced as to lead to the hope that at no distant date the institution will be entirely free from such students. The true policy would dictate that we admit only graduates of four-year high schools. We have not deemed it wise to come to this, however, on account of the three-year high schools and the magnificent effort they have been making. We do, therefore, admit graduates of three-year high
schools and condition them on two units. In a 1914-15 report, the president reiterated similar sentiments:

I hope the day is not far distant when we shall feel justified in admitting only graduates of high schools. This is unquestionably the wisest policy and should be adopted just as soon as the high schools adapt their courses to the colleges.

Thus, though the college experienced a decided raising of admission requirements during 1891-1919—again, in tune with the college's new mission—it remained sensitive to its land-grant roots of service to the "industrial class."

This sensitivity impacted upon the curriculum in the form of re-establishing in 1891-92 a "preparatory course of study . . . [for] applicants not sufficiently prepared to enter the collegiate classes." The course was billed as "sub-collegiate" in nature, spanning one year and including English, history, mathematics, physical geography, and elementary science. With modifications throughout this second period, the preparatory course remained a part of the curriculum, though with diminishing emphasis as the years progressed. Indeed, there was an inverse relationship between the evolving of the college's new mission and its sub-collegiate course of study; as the former grew stronger, the latter necessarily grew weaker.

Without a doubt, curricular focus was on the new technology mission throughout the 1891-1919 period—and increasingly so. In 1891-92, the college offered seven
courses of degree study—all four years long and all leading to a Bachelor of Science—as well as two "shorter courses." The four-year courses included agriculture, horticulture, applied chemistry, general science, civil engineering, mechanical engineering, and electrical engineering. The shorter courses were in practical agriculture and practical mechanics. While the college retained with remarkable consistency the shorter practical courses in agriculture and mechanics, it expanded with equally remarkable consistency its four-year degree courses. In 1903-04, an eighth B.S. degree course of study—in preparatory medicine and veterinary science—was added. In 1904-05, a ninth B.S. degree course in applied geology was added. In 1911-12, three more degree courses were added—in mining engineering, chemical engineering, and metallurgy and metallography. In 1913-14, yet another degree course in preparatory veterinary medicine was added. In 1915-16, agricultural engineering was added as a four-year course. And, in 1916-17, a final course of study leading to a B.S. degree was added in applied physics. Thus, the total number of possible courses of study at the four-year Bachelor of Science level increased from seven in 1891 to fifteen in 1919. The new technology mission was clearly well in focus.

Another aspect of the focus was graduate level courses of study; again, they experienced gradual increase
throughout this period. McBryde introduced a program of graduate study leading to a Master of Science in 1891. In 1907, a graduate department was established. In 1908-09, graduate courses were entirely re-organized. In 1908-09, after a careful study of graduate offerings made by faculty members, the college revealed "that the scientific and agricultural work now being carried on at the Virginia Polytechnic Institute will compare favorably in character with that of any of the large scientific colleges in the North and West." In the same year, the graduate department was made one of the five regular college departments. By 1919, the college offered five graduate degree programs; they were the Master of Science (established 1892), the Civil Engineer (1893), the Mechanical Engineer (1894), the Electrical Engineer (1910), and the Engineer of Mines (1912). Thus, the graduate aspect of the college's curriculum during 1891-1919 merely served to sharpen the focus on the new technology mission.

Too, the department organizational structure's evolution during this period defined the focus even more. By 1903-04, the college was organized into four departments—each with its own faculty and dean. The departments were academic, scientific, engineering, and agriculture. After a few organizational experiments, the college settled comfortably into five departments—namely, agriculture, applied sciences, engineering, graduate
studies, and the experiment station. It remained with this structure through 1919.48 Thus, even the organization reflected an evolving focus on technology.

The organizational structure the student followed within the program of study also "fitted" the new mission. Throughout the period, the freshman year course of study, for the most part, was the same for everyone, including as it did fundamental studies in mathematics, history, and English, as well as, by 1915, chemistry and physics.49 Thus, even here an increasing technical emphasis could be detected. However, it was with the remaining three years that the marked evolution occurred. Increasingly, the trend was more and more toward election and specialist work—only in the senior year in 1908-09 but as early as the sophomore year by 1915-16. In fact, the focus evolved so heavily to technical that the liberal aspect of the college's curriculum underwent a metamorphosis of its own.

Slowly, the liberal arts assumed a service/support place in the curriculum, completely replacing the "core" position they accidentally held from 1872-1891. Of course, with this redefined role came a new set of strings to adjust the liberal and useful tension.

Throughout the 1891-1919 period, the issue was never whether or not the liberal arts belonged in the technical curricula; indeed, in most instances, they were welcomed. Rather, the issue was how and to what extent they belonged.
Each catalog within this time frame included the following statement:

Every course contains a certain element of general or liberal culture in addition to the special or technical studies appropriate to it, the aim being to give the student a practical as well as theoretical knowledge of the sciences related to the profession or pursuit he proposes to follow and at the same time to fit him intelligently to discharge the duties of citizenship.

To this end, each catalog also listed constitutional history, general history, psychology, mathematics, English, French, German, political economics, and ethics as the prescribed liberal studies. At the same time, each catalog (and corresponding annual report) highlighted "the sciences, especially those related to Agriculture and the Mechanic Arts, . . . [as having] the foremost place."

Despite this seemingly sincere acknowledgement of the value of the liberal arts, though in a support role, in seeking to realize fully its new technology mission, the noble intent often succumbed to practicality. In 1908 and later, excerpts like the following from Herbert Spencer's classic "Education" were constantly being quoted to justify increasing technical curricular content often at the expense of liberal:

It is one thing to admit that aesthetic culture is in a high degree conducive to human happiness and another thing to admit it is a fundamental requisite to human happiness. However important it may be, it must yield precedence to those kinds of culture which lean more directly upon the duties of life. Here we see most distinctly the vice of our educational system. It neglects the
Perhaps the most dramatic application of this kind of "justification" came in 1918-1919. In Fall 1918, various departments submitted requests for sixteen new courses and fifteen revised courses to the dean of the college, Joseph Campbell. In each instance, he judged the course to be "strong" and perfectly acceptable "from a purely technical standpoint." However, he rejected each on the basis of overall intent. More specifically, he was critical of their technical bent at the expense of liberal education and thus in violation of the 1862 act. For example, he criticized revised courses in civil, mechanical, electrical, and mining engineering as follows:

These are strong courses from a technical or commercial viewpoint, but are too highly commercialized and too technical for a degree from a standard college which does not exclude other scientific and classical subjects and which has for its object promoting a liberal and practical education.

Of the entire package, in a draft letter on the proposed changes to the respective departments, he wrote:

Many of the courses as submitted are so technical as to raise grave questions of the violation of the intent, if not the letter, of the original act. . . . Any B.S. course offered in a standard college which does not require language and economics, civics, or some form of U. S. History, is in the opinion of your Dean an anomaly and should not be recommended for adoption.

Clearly, it was through the vision of this one man that the liberal arts could withstand the technical fire. Indeed,
one cannot help but wonder what would have happened if another man, perhaps not so set on preserving the original 1862 act's intent and his own sense of liberal and useful balance, had been dean at this time. Curricular reform is often a matter of timing, personalities, and versions of reality.

Thus, by 1919, the curriculum had evolved into being well in line with the new mission adopted by the Board of Visitors in 1891. Admission standards were increased significantly. The curriculum had been expanded to include fifteen highly technical courses of study leading to the B.S. degree. Graduate study was available in five advanced professional areas. The college had been organized into four departments to reflect the technical focus. And, the liberal arts had been relegated to a service position, with increasing moves to remove, reduce, or otherwise limit their extent even in this role. Indeed, Virginia Polytechnic Institute's new mission had given birth to a new relationship between liberal and useful education. A new set of strings was needed to strum out the resultant tension.

Its Instruction Component

Like the college's curriculum, its instruction during this second period served to reflect its new technology mission and increasing technological focus. In the 1891 catalog through the 1919 catalog, the following statement
The method of instruction adopted combines theory with practice. Laboratory or practical work is required in every department.

Based on this belief, a student's weekly schedule consisted of sixteen hours of class work or recitation and fifteen hours of laboratory, shop, or field work.

The purpose of the laboratory or practical work was "to illustrate, emphasize, and apply the principles and theories propounded in the lecture room." It was to be considered "instructive and . . . not paid for." And, it spanned the entire curriculum. In the sciences, it consisted of laboratory work; in engineering, of shop or field work and mechanical drawing; in agriculture and horticulture, of shop and field work; in veterinary medicine, of dissecting and clinics; and in English and modern languages, of compositions and other written exercises. Recalling the 1872-1891 conflict over manual labor as a part of instructional methodology, one again suspects the new mission, with its clear focus on technology, as the reason for nonexistent conflict over the issue and commitment to its purpose in this second period.

The specialized aspect of instruction--military tactics--remained as a requirement for all throughout the period. Aside from its prescribing to the letter of the 1862 land-grant act, it also served to reinforce the "theory into practice" aspect of instruction. In so doing, it too
reflected the college's new technology mission.

The extracurricular aspect of instruction evolved to highlight the "standard college," to borrow from Campbell, aspect of the polytechnic institute. In 1891-92, the college organized an athletic association, adopted black and cadet gray as its colors, formed a football team, composed a "college yell," and revived The Gray Jacket (a student literary journal dormant since 1889.) In 1895-96, the college changed the school colors to orange and maroon, changed the "college yell" to "Hokie, Hokie," and adopted "Ut Prosim" as its motto. Along with the already existent literary societies, these extracurricular features remained in existence throughout this entire second period (and, as a matter of fact, with a few exceptions are still current today but with a long tradition behind them). Subsequent years during this period saw the establishing of an engineering club (American Society of Mechanical Engineers, 1915), a science club ("to stimulate interest in the various scientific fields," 1914), and a corps of cadets (the precursor of the current Student Government Association, 1908). Interestingly, though they have been unofficially in existence since 1873, the college refused in 1916 to recognize social fraternities as a part of the extracurriculum. Thus, the extracurriculum—even those parts (i.e., social fraternities) that were "hidden"—served to highlight the collegial image of the polytechnic
institute, distinguishing it from a mere vocational or technical school and, in so doing, reflecting its new mission and focus.

From an instructional perspective, the final area reflecting the new mission and focus during this period was the physical plant and equipment. From 1891 through 1907 alone, there were numerous improvements in both, though annual reports consistently expressed a need for more. For example, a combination chapel and auditorium was built; dormitory space was increased to accommodate a student enrollment that grew from 135 in 1891 to 728 in 1904-05; and an infirmary and mess hall were constructed—as well as several academic buildings serving the evolving academic departments. Too, departments acquired specialized equipment and supplies. Although 1907-1919 did not see such prolific building nor "M & O" support, it too witnessed numerous material improvements. In short, the college's physical plant and equipment came in this second period to reflect that collegial image, which both supported the college's new curriculum and served as partial visual realization of its new mission.

Thus, the college's instruction served to reinforce the curriculum, realize the new mission, and develop a distinct collegial saga for the Virginia Polytechnic Institute. In so doing, it too contributed a string or two to the new set strumming the liberal and useful tension. For how does an
institution reconcile a highly specialized course of study with a college yell which, according to its composer, O. M. Stull, Class of 1896, had no meaning and was used merely as an attention-getter: "Hoki, Hoki, Hoki, Hy; /Techs! Techs! V.P.I.; /Sola-Rex, Sola-Rah; /Polytechs--Vir-gin-ia!; /Rae, Ri; /V.P.I.!

How does a college which focused on the objectivity of technology reconcile oh-so-subjective letters to its presidents (e.g., McBryde) such as these excerpts represent:

My two boys left this morning for your college. Charles is a husky boy and will get along. William is in poor health. Please see that he wears his hat and coat when the weather is bad.

# # #

I have just received my son's report and see that his professor is surprised. So am I, please explain.

# # #

No doubt you get a lot of letters from fathers telling you all about the fine qualities of their sons. Well I love my son very dearly but so far as books are concerned I have not discovered any fine qualities yet. Will you take him in your school and see if your professors can find any?

# # #

Your school is supposed to build character so I am sending you my son. I do not want him to smoke, chew, cuss, loaf or run around. He does all of these things now.

Indeed, the liberal and useful tension "played"—but with a whole new set of strings, complete with accompanying new music and lyrics.
Its Faculty Component

Finally, the college's faculty reflected the polytechnic institute's evolution in mission from 1891-1919 by becoming increasingly credentialed representatively within the curriculum and professional across it. A brief tracing of faculty credentials, organization, and professional activities illustrates this point.

Unlike the faculty in the 1872-1891 period of the college's history, the faculty of this second period more specifically reflected the curriculum. For the most part, they were credentialed to some degree in the area in which they taught. One early sign of this occurrence was that, for the first time, faculty's degree credentials were listed in the 1895-96 catalog. Although a perusal of the listing did not identify the specific area of specialization of the degree, it did identify the degree and the teaching field. In a broad sense, they appeared to match. Too, increasingly, faculty were added to reflect the courses of study. For example, in a 1903-04 report, special mention was made that they were "all young men of thorough training and excellent promise. Two of them held the degree of Doctor of Philosophy from one of our leading universities." Geology and mineralogy faculty were hired in 1904-05 when those two disciplines were introduced into the curriculum. By 1908-09, though college officials acknowledged still "weak places in the ranks of our teaching
force," they were content with the progress they had made and optimistic about the future for both faculty growth and enhancement. By 1915-16, the total faculty equaled thirty-nine, with a total "college teaching force" (including instructors and assistants) of fifty-three. Indeed, in a credentialing sense alone, the faculty evolved closer to matching the increasingly technical curriculum in response to a new technology mission in a collegial setting.

The faculty organizational structure also reflected an awareness of the new college mission. In 1903, four deans were appointed to complement and assist in the administrative work of the newly formed four academic departments (academic, scientific, engineering, and agriculture). A graduate department dean was added in 1907 to reflect the recognition of graduate studies as an entity unto itself. In 1905-06, faculty ranks were modified to reflect traditional collegiate practice—namely, professor, associate professor, assistant professor, instructor, and assistant. Though varied through 1919, this ranking practice was the basis from its inception in 1905 through 1919.

One marked practice developed within it that merits special treatment. It concerns ranking qualifications. By 1917-18, the following generalizations could be induced about ranking qualifications:

1. All professors—with the exception of five out of thirty-two—had at least master's degrees.
However, it was difficult to determine whether the degrees were in the actual field in which they taught.

2. The majority (seven out of ten) of associate professors had at least master's degrees also. Again, however, it was difficult to determine the actual field.

3. Instructors had at least bachelor's degrees. But, again, it was not possible to determine the area.

4. The teaching areas in which there were faculty with no master's but in the professor or associate professor ranks included mechanic arts, dairy husbandry, animal husbandry, and military science and tactics. One suspects this situation to be typical of the times and analogous to a present-day situation in the public service technologies in the community colleges.

5. All college departments and courses of study and disciplines within those departments were represented in the faculty ranks.

6. The "officers of instruction" included twenty-two student assistants in technical areas, primarily chemistry and engineering. These assistants no doubt complemented the practical aspect of instruction (mixing "theory with practice") and were precursors to contemporary lab assistants.

7. Faculty salaries were raised because of increased state appropriations to reflect the ranking, with a professor's salary range being $2,100-$2,600, an associate professor's being $1,600-$1,800, and an instructor's being $1,200-$1,600.70

Thus, by 1918, the faculty ranking structure came to reflect the increasing emphasis on technology and the collegial model in which it was housed.

Finally, faculty professional activities came to reflect the new-found emphasis. Faculty increasingly viewed
research as a part of their "teaching" assignment. In 1912-13, for example, the annual report noted a significant increase in leaves of absence for faculty to pursue advanced graduate study for doctorates in their field. It was also noted that many of the agriculture faculty went to Cornell. Too, in 1912-13, by action of the board of control in the experiment station, the director had been allowed to grant leaves of absence for further study to promising "young men" on the station staff. In this respect, the activities focused on the "technology" aspect of the new mission. Presumably, the goal was to build up a strong research staff. Faculty professional activities also included service on faculty committees. By 1917-18, faculty committees were thirteen in number, including entrance requirements, matriculation, advanced standing, degrees, library, athletics, student English, and public exercises. In this respect, the activities emphasized the collegial setting. Thus, in both ways, faculty professional activities complemented the college's curriculum and instruction and, in so doing, contributed to a realization of mission.

In short, the evolution of the college's faculty reflected the evolution of the college's curriculum and instruction—all in service to its new "technology" mission. Although the faculty in both levels of expertise and professional engagement had by no means reached Nirvana,
they had moved with the spirit of the revised mission. Too, it was clearly no longer the exclusive liberal arts trained faculty, technically unaware and unexpert, unwittingly but spiritedly, attempting to "make do." It was a part of the Virginia Polytechnic Institute's "form" that, with increasing awareness and expertise, was evolving to fit its new (and also evolving) "function."

Conclusion

And, so this chapter of saga ends where it began—with a child being father to the man. In true Wordsworthian fashion, the newly birthed VPI was itself to "father" an even more refined polytechnic institute for Virginia. Indeed, the seeds had already been planted: A clearly focused technology mission was in place with a curriculum that was no longer classical in origin, with aspects of instruction working to complement the specialized content, and with a faculty slowly acquiring a collegial level of technical expertise and professionalism. And, indeed, with this mission, the college's liberal and useful tension required a whole new set of strings. "That I may serve" was more than just a motto. The saga was unfolding . . . and the child was to father the man.
Notes to Chapter VI


2 "President's Report on Organization, Scope of Work, Course of Study, etc.," 1 July 1891, University Archives, Virginia Tech, Blacksburg, Virginia.

3 Ibid., p. 1.

4 Ibid.

5 Ibid., pp. 1-2.

6 Ibid., p. 2.

7 Ibid.

8 Ibid.

9 Ibid.

10 Ibid., p. 3.

11 Ibid., p. 4.

12 Ibid.

13 Ibid., pp. 3-4.

14 Ibid., p. 4.

15 Ibid., p. 7.

16 Ibid., p. 6.

17 Ibid., pp. 5-7.

18 Ibid., p. 3.

19 Ibid., p. 3. He suggested six ranks—professor of five years, professor of less than five years, adjunct professor, assistant professor, instructor, and tutor. McBryde further suggested that the first four ranks—with professor some place in the title—constitute faculty, and that the last two be selected from the best graduates proposing to take graduate courses. In this respect, instructor and tutor appear analogous to modern graduate
teaching assistants.

20 Ibid., p. 4. Specifically, he recommended establishing professorships of mathematics and civil engineering; mechanical engineering; horticulture, entomology, and mycology; English, history, and political economics; biology; and veterinary medicine. Too, he recommended establishing adjunct professorships of modern languages; physics and electrical engineering; general chemistry, mineralogy, and geology; agriculture; and analytical chemistry.

21 Ibid., p. 5.

22 On April 19, 1904, President McBryde was unanimously elected president of the University of Virginia by its Board of Visitors, being the first president-elect of the university. McBryde, however, declined the honor, stating his reasons in full in a letter addressed to the board, extracts from which were published in the daily papers of the state. They were both personal and professional—all intimately tied to his allegiance to Virginia's budding polytechnic institute. It is of interest also to mention here that in 1893 U.S. President Grover Cleveland had offered to McBryde the secretaryship of agriculture, but he declined it, feeling that duty again required him to remain at VPI.

23 Annual Reports, 1891-92, 1892-93, University Archives, Virginia Tech, Blacksburg, Virginia, p. 1.

24 Catalog, 1891-92, University Archives, Virginia Tech, Blacksburg, Virginia, p. 11.

25 Catalog, 1895-96, University Archives, Virginia Tech, Blacksburg, Virginia, p. 11.


29 Ibid., p. 1. According to the 1915-16 Catalog, "A unit is the equivalent of five recitation periods per week during a full academic year of the preparatory school."
University Archives, Virginia Tech, Blacksburg, Virginia, p. 17.


32 Catalog, 1891-92, p. 70.

33 Various catalogs and reports.

34 Catalog, 1891-92, p. 11.


41 Jenkins Mikell Robertson, Historical Data Book, published as Bulletin of the Virginia Polytechnic Institute 65 (April 1972):14. As a matter of fact, it was his son, John M. McBryde, who was first awarded the degree in 1892.

42 Ibid.

43 "Opening Number, October 1908," p. 4.

44 Ibid., pp. 4-5.

45 Jenkins Mikell Robertson, Historical Data Book, p. 89.

46 Ibid.


48 Catalog, 1915-16, p. 14; J. M. Robertson, Historical Data Book, p. 76.
Reflected in catalogs throughout the period.

Quotation found in presidential papers, annual reports, and speeches/addresses.

Dean Campbell to President Eggleston, 14 December 1918, Campbell Papers, University Archives, Virginia Tech, Blacksburg, Virginia.


Ibid., pp. 1, 9.

Various catalogs throughout the period.

Ibid.


Ibid., p. 19.

Ibid., p. 45; J. M. Robertson, Historical Data Book, p. 49.

J. M. Robertson, Historical Data Book, p. 49. Also, E. A. Smyth, "A Brief History," p. 48. One suspects a bad reputation for mischief as the reason for denial, though no documentation exists.

Ibid., pp. 60-61.


Catalog, 1895-96; Annual Reports, 1895-96, 1896-97, University Archives, Virginia Tech, Blacksburg, Virginia, pp. 3-4.


Annual Reports, 1907-08, 1908-09, University Archives, Virginia Tech, Blacksburg, Virginia, p. 1.


68 J. M. Robertson, Historical Data Book, p. 76.


72 Ibid.

73 Miscellaneous Documents, Campbell Papers, University Archives, Virginia Tech, Blacksburg, Virginia.
CHAPTER VII

SAME OLD STRINGS IN AN INTENSIVELY STRENGTHENED
POLYTECHNIC INSTITUTE, 1919-1953

Introduction

And, how did the saga unfold? And, what was the man becoming? The third period of Virginia's distinct technical school, 1919-1953, realized an intensive strengthening of the college's technology mission--its leading object--as adopted in 1896 and reared through 1919. Too, though recognized as part of its land-grant heritage, in a new-found supportive sense, the college's liberal object appeared less and less an "object" of discussion and more and more an incidental (and seemingly ignored) aspect of the college's curriculum. In a more global sense, the relationship between the college's liberal and useful elements was again modified--strangely retaining the same, old strings of tension while altering only the music and words. As with the 1872-1891 period, an early presidential report provided the vision during this period for the saga to unfold . . . and the "man" to mature. With this early report as background for analysis, a tracing of Virginia Polytechnic Institute's 1919-1953 evolution of mission, curriculum, instruction, and faculty offers answers to the
two questions initially posed: "And, how did the saga unfold? And, what did the man become?"

**Burruss's Vision for a "Greater VPI"**

On September 1, 1919, Virginia Agricultural and Mechanical College and Polytechnic Institute received its tenth new president, Julian A. Burruss. Since Burruss did not begin his presidential stay until the commencing of the 1919-20 academic year, the college operated largely under the policies of the previous administration through Burruss's first year. Burruss himself used this time for surveying, discussing, and planning for future years. Out of these preliminary research efforts, he submitted two "special reports"—one on instruction and the other on organization and administration—to the Board of Visitors, April 23, 1920, and May 15, 1920, respectively. Together, they provided the vision for the polytechnic institute's evolution through 1953.

Burruss's concern with the college's administration and organization could best be summed up by saying that the college's form simply did not fit its function. In March 1919, William H. Allen, director of the Institute for Public Service, New York City, made a report on VPI to the Governor of Virginia. His conclusions were as follows:

> A thorough-going reorganization is needed top to bottom, including the condition of the halls, of the business offices, the roadways, etc. . . . that from top to bottom the present administrative procedure be challenged and be required to prove that it is up-to-date and is studying both itself
Approximately one year later, Burruss himself reached independently the same conclusions about the college's administrative organization. He called for and proposed a complete change in the structure of the administration, with clearly delineated job descriptions and a clear line of command. In his May 15 report, he drew an analogy to Woodrow Wilson's comment on government in Washington. Of Washingtonian government, Wilson once commented:

"It is rich in brains and in character. It is honest beyond any commercial standard. It wishes to do everything that will promote the public good... Ability is not lacking, but it is pressed to the point of paralysis because of an infinitude of details, and an unwillingness on the part of the great body of public servants to take responsibility."

Burruss thought the situation similar at Virginia Agricultural and Mechanical College and Polytechnic Institute.

His plan for administrative reorganization was developed around—to quote him—the "authority in a cabinet of six officials who are to be directly responsible to the president." Its primary purpose was to relieve the president of almost all contact with other officials and employees so that he could tend to the pressing duties of his position. The six officials consisted of three deans (of agriculture, engineering, and "the college"), a commandant, a health officer, and a business manager. Each
had specified and "important" functions with meticulously delineated duties and responsibilities. Figure 1 on the proposed organization depicts this administrative reorganization.\footnote{5}

An even cursory glance at the chart suggests several advantages to this proposal for change. Aside from the obvious advantage of a more tightly structured overall organization, it provided for several specific department or division improvements. In agriculture, the plan correlated the three phases of the agricultural work of the institution under one head, retaining the integrity of each phase under the direction of its own head. It also made the subject-matter in each branch a unit, promoting uniformity of instruction and mutual assistance among the various specialists. In engineering, it provided for an organization similar to agriculture—with a view to its future development along three lines. For the military department, it emphasized its value to the institution correlating it with the other agencies specifically maintained for social control. In a similar manner, it provided adequately for the control of health conditions, including the most valuable feature of athletics. From a purely business perspective, it combined the offices of the dean of the college and registrar, and placed the library under the general direction of the officer, bringing divisions necessary to both of the professional schools
Proposed Organization of the
Virginia Polytechnic Institute
by Function 1920-21

Fig. I.
under one head. Too, it placed all business activities under a business head, including all financial affairs and accounting. Now, one office controlled the auditing, accounting, recording, controlling, budgeting, contracting, purchasing, etc. of the entire institution. In short, this administrative aspect of Burruss's plan for reorganization, approved by the board unanimously, provided one dimension to the vision which guided the unfolding of the college's saga during 1919-1953.

The other dimension was provided by Burruss's month earlier special report on instruction. This dimension spanned all of the "instructional" aspects of the college—namely, mission, curriculum, instruction (as methodology), and faculty.

Burruss's primary goal was to review the college's mission, first in light of its land-grant roots. According to Burruss, the intent of the 1862 land-grant act was clearly to place scientific or practical studies "foremost" as the leading object, at all costs and regardless of any other curricular intent. He said:

Knowledge not for use may do for useless philosophers of whom the United States has, perhaps, too little appreciation, and postpones to a more convenient season; but here education embracing the largest numbers must have such scope as to practically fit the owner for his destined vocation.6

From his perspective, land-grant colleges were marked from the beginning by continuous struggle against the persisting
influence of traditional educational content. Of this, he commented:

Classically trained professors entering the faculties of the new institutions naturally brought over with them their classical background, and the curricula they formulated were naturally given a classical setting.7

Too often, he contended, agreeing with an 1890-91 report of the commissioner, too many "agricultural and mechanical schools" go beyond the limits of the law. Often, he lamented, they are too theoretical and follow too closely the model of the classical college. Like McBryde some thirty years ago, Burruss felt Virginia Polytechnic Institute should first and foremost realize the "mission" of the act which conceived it.

With the land-grant intent in mind, Burruss subjected VPI to a commercial or industrial analogy, suggesting that it must go about its task in much the same manner as a business enterprise. In other words, VPI (or any educational institution) must solve three basic problems: (1) the discovery of the job to be accomplished; (2) the determination of the number and kind of workmen, tools, materials, best organization, and process with regard to economy and efficiency; and (3) the calculation of the cost of providing all this and the means of supplying the funds.

In this sense (and in keeping with the analogy), Burruss identified the college's mission as follows:

The Virginia Polytechnic Institute is an enterprise in which the people of Virginia are the
shareholders, and the Board are the directors. The shareholders have invested about a million dollars in a physical plant, and have provided a working capital of about $400,000 per annum. This has been done because the public has recognized in a general way at least, that there is a demand for an education to be furnished largely at public expense for the training of our young men to enable them to develop our great natural and industrial resources.8

Thus, for Burruss, the college's mission was tied intimately to service "in those phases of agriculture and the mechanic arts which Virginia needs for the development of [her] resources."9 The focus quite definitely was on the 1862 act's "leading object"; the goal was quite ultimately service to the home state.

In his words (and without the analogy), the mission of the Virginia Polytechnic Institute was as follows:

... to meet Virginia's needs for scientifically trained workers for the development of her agricultural and industrial resources. The immediate objective is to meet the greatest of these needs. ... Above all, it must be kept in mind at all times that our first duty is to Virginia, to train Virginians to work for Virginia, and that this is intended to be along educational and industrial lines.10

For Burruss, then, the institutional mission he inherited required intensive strengthening with an even greater emphasis on technology and perhaps at greater expense to any previously held liberal intentions.

To realize this refined mission, Burruss put forth some very specific ideas about the other three aspects of his "instruction" dimension. The ideas called for curricular, instructional, and faculty modifications. Specifically, he
recommended that:

1. Entrance requirements be raised to fifteen initially and then to sixteen units, with a provision for conditional and special student admittance.\(^ {11} \)

2. The curriculum's content be revised to meet more directly the needs of Virginia.\(^ {12} \)

3. The curriculum's structure (especially, the minimum credit hours for programs) be revised to reflect the national norm or practices at "standard colleges."\(^ {13} \)

4. The concept of liberal education be more closely linked to the practical area of specialization.\(^ {14} \)

5. The instructional practices (especially with regard to grading quality credits) both within and among programs be standardized.\(^ {15} \)

6. The faculty be reorganized to meet all curricular changes.\(^ {16} \)

7. The physical plant be enhanced in both equipment and buildings to support the specialized focus of the curriculum.\(^ {17} \)

Thus, these two "special reports" on instruction, and organization and administration provided the vision for Virginia Polytechnic Institute's third period of evolution. While Burruss realized early on that neither reports' suggestions nor recommendations could be implemented in a year or several, he also felt a "vision for the future"—i.e., planning—was "essential to intelligent action now."\(^ {18} \) And, indeed, it was precisely this vision which directed the college's mission and accompanying components for the next thirty years and, in so doing, added but one more tale to the saga unfolding.
The Mission Refined

The mission which evolved out of Burruss's 1920 special reports was in fact largely just a refining of the 1891-1919 mission which already focused on technology. This third period of evolution served merely to sharpen the focus. As early as 1920, Burruss promoted the philosophy that VPI was a state college of agriculture, engineering, and applied science, created by Virginia, "primarily and specifically for the education of Virginians in those phases of agriculture and mechanic arts which Virginia needs for the development of Virginia's resources." Interestingly, it was precisely this unique aspect of technical service that was highlighted over and over again for the next thirty years, often at the expense of the liberal arts.

In 1927, Burruss directed his attention to the aims and the attitudes of VPI, which he described as follows:

The Virginia Polytechnic Institute is interested only in serving the State and fulfilling its obligations to the Federal Government, which are jointly responsible for its establishment and operation. It does not ask that anything be taken from any other institution and given to it; it does not ask that it be left with anything that is not needed by the State. . . . The Virginia Polytechnic Institute does not aspire to be a university, or a liberal arts college. It has no desire to enter into the recognized field of any other state institution. Its ambition has been, and now is, to develop a genuinely efficient technical school, offering instruction of standard college grade to resident students, conducting research in its own restricted fields, all to the end that it may forward in every way in its power Virginia's agricultural and industrial advancement. Agriculture, industry, and business
comprise the definite and generally recognized
division of human endeavor for this type of
college. We simply want to develop our present
field of service and to raise our work to the
highest possible standard.20

Indeed, the function of the college was not to expand into
the liberal arts field but was to develop an efficient
technical school, offering instruction and research of
"standard college grade" in the restricted fields of
agriculture, industry, and business. The notion was
repeated over and over again in official college
publications, in local newspapers, in speeches and inaugural
addresses, and even in the correspondence received from
parents. As one father put it in 1933-34:

This will be the third one of my children to take
a degree at a liberal arts institution, and I am
more and more impressed with the helplessness of a
young man starting life with only this kind of
preparation. Am almost convinced that he would
have a better chance going to work after the
sophomore year. Certainly he would have less to
overcome.21

For the next thirty years, the school was one of limited
objectives. Each objective clearly focused on technology,
technical training, and service. And each was a realization
of "land-grant democratization of higher education," to
borrow from Burruss, expanding only in the sense of serving
added "professions."22

Strangely, in the midst of this emphatically technical
mission, there was faint lip service to the liberal arts and
their supportive role as part of the mission. In 1934,
Burruss made a case for VPI as a college which emphasized
"preparation for the field selected" and offered "a liberal arts foundation." However, his next few sentences implied that if he had to relinquish an aspect, it would be the latter, especially in light of the four-year technical status. In the same year, college officials were sensitive to what several groups across the United States viewed as a "new deal" problem—of preparing people not only to earn a living but also to live, of developing within them not only a competency to serve but also one to appreciate and enjoy.

In 1919, Newman, in his inaugural address, explained that he did not believe that a "necessary conflict" was inevitable between technical and general education. And, the main address speaker reinforced the idea citing the likes of Alfred North Whitehead and Howard Mumford Jones and Mr. Justice Holmes and their eloquent philosophical pleas: If there be such a bifurcated view of knowledge in general and its educational applications in particular, it is illusory. The rhetoric, especially at auspicious occasions, was impressive.

Rhetoric aside, however, one cannot help but wonder if at times the citations were not just good politics or convenient afterthoughts—creating no harm in acknowledging but inappropriate material for incorporating into the emphatically technical mission statement. Indeed, one wonders: "Had the liberal arts—fifty years hence
unwittingly a kind of core—lost even the support service role into which they evolved between 1891 and 1919? And, in any case, where was the balance between the college's liberal and useful; and had it altered their relationship?" An unobtrusive analysis of this emphatically technical mission in light of its three visual manifestations—curriculum, instruction, and faculty—provides the response. **Its Curriculum Component**

The college's curriculum between 1919 and 1953 quite clearly reflected an emphatically technical mission, as it became increasingly "professional" in its realization of the mission. Seemingly, it was within this context that the college's liberal education was at once shunned and venerated.

Throughout the period, VPI officials joined other college officials around the United States in an attempt to define "profession" and "professional school" distinguishing each from "vocation" and "vocational school." In a 1930's publication, Abraham Flexner attacked the form which higher education was taking in the thirties. He assailed not merely vocationalism, which might have been charged against the early colleges designed to train young men for the skilled professions of the ministry, but the very modern idea of "service." In his first chapter entitled, "The Idea of a University," for example, he said:

... we should see to it somehow that in
appropriate ways scholars and scientists would be conscious of four major concerns: the conservation of knowledge and ideas, the interpretation of knowledge and ideas, the search for truth, the training of students who will practice and "carry on."28

Seemingly, it hurt Flexner's sense of proportion to find, for example, that a Columbia degree appeared to imply no discrimination, so far as credit for graduation was concerned, between, on the one hand, science, mathematics, language, literature, history, philosophy, and economics, and, on the other hand, "advertising research," "practical poultry raising," "elementary stenography," and "wrestling." To him, this seemed an appalling situation. The result, he contended, was no clear distinction between types of college courses, producing "neither a substantial secondary education nor a substantial vocational training."29

On similar grounds, Flexner criticized heavily the University of Chicago, the University of Wisconsin, and the University of Michigan. As history has recorded, each, in its own way, was quite strongly involved experimentally in attempts to harmonize increasing conflict between vocation and culture. For Flexner, these colleges, in particular, had crossed the fine line which, as he saw it, distinguished the two. Simply put, he argued, the difference between a "profession" and a "vocation" lies in the fact that the professions "have their roots deep in cultural and idealistic soil."30

Ironically, it was Columbia University's own president,
Nicholas Butler, who, a year earlier but within a similar context, identified five traits of an educated man. He said:

It is plain that one may gain no inconsiderable body of learning in some special field of knowledge without at the same time acquiring those habits and traits which are the marks of an educated gentleman.

For Butler, the five traits of an educated man were: (1) correctness and precision in the use of the mother tongue; (2) refined and gentle manners, which are themselves the expression of fixed habits of thought and action; (3) power and habit of reflecting, "... looking beyond the surface"; (4) power of growth, "... continu[ing] to grow and develop from birth to his dying day"; and (5) possession of efficiency or "the power to do."

In February 1931, Gordon Jennings Laing, dean of the Graduate School of Arts and Literature at Chicago, spoke at a Johns Hopkins commencement. He said:

We are suffering from a sort of riot in education.

And, riot it was. Some fought for the practical; others for the liberal. All struggled with the place of the professions in the collegial setting. All knew that somehow a balance between liberal and useful education components was essential. The question--for everyone--was, "How?"

Virginia Polytechnic Institute answered the question by sprinkling bits of the liberal into a curriculum
predominantly technical and professional. In 1920-21, a course in "orientation" for freshmen was begun. According to Burruss:

The course is intended to put the student at the beginning of his college career, into possession of certain information of a general character which may be considered as fundamental to successful study and to life in an institution for the training of scientific men and good citizens.34

In an indirect sense, the course attempted to give a "college" perspective to the student's particular area of specialization.

Too, in 1920-21, departments of physical education35 and social sciences36 were established. Interestingly, social sciences was composed of many of the same disciplines in 1983 being rejected as acceptable for the social sciences component of the college core—namely, agricultural economics, business administration, industrial economics, and citizenship. And, perhaps most symbolically, in 1920-21, the two-year foreign language requirement was dropped or "offered as elective" for most courses of study, and even then they (only French and German) were taught "with a view to giving students a reading knowledge of them as quickly as possible."37 Here, again, the implication was vague support in a practical sense, presumably for translating technical scholarship.

In 1929-30, the importance of students, again regardless of their field, developing a competency in
written and oral communication was reinforced with a placement mechanism being implemented to meet students at the appropriate entry level.\textsuperscript{38}

In 1930-31, a basic curriculum of core-required courses was suggested by Burruss, consisting of four divisions — namely, English, mathematics, science, and social science.\textsuperscript{39} The "core" formed the basis for the first two years of any student's curriculum. It was never officially implemented, though it was unofficially acknowledged.

Indeed, the liberal arts sprinkling was so irregular that the American Association of Universities in 1940 raised questions concerning the "cultural side" of VPI. The college responded as follows:

We feel that our cultural studies are keeping pace fairly well with our general progress in the technical fields. Naturally, in a technical institution such as this, technical subjects are more extensively represented, just as in a liberal arts college the classical subjects are given more attention. It should not be overlooked that the V.P.I. is neither a liberal arts college nor a university, it gives only a B.S. degree for its undergraduate work and an M.S. degree for its graduate work, except for a very few advanced graduate students who are working for the doctorate. Although we feel that our cultural offerings are adequate for a technological institution, we are doing what we can to develop further our non-technical departments.\textsuperscript{40}

Prophetically, the college at this time linked, at least partially, university-status with strong "cultural studies," a status that it evolved into during the next period of its development. Content and committed now to a strong and distinct technological mission, the college thought the
"cultural offerings" adequate. In 1944, Virginia Agricultural and Mechanical College and Polytechnic Institute became officially Virginia Polytechnic Institute—reflective of the rather lopsided balance between the liberal and the useful and so named for the next twenty-six years until, ironically, VPI achieved university status.

From 1919 through 1953, in the midst of refinement, Virginia Polytechnic Institute's curriculum grew increasingly technological and professional. Under a 1927-28 modified version of Burruss's 1920 organizational plan, the curriculum was revamped to meet more directly the agricultural and industrial needs of Virginia by preparing students for professional and specialized careers. Specifically, the preparation included: (1) "tool subjects," to use in advanced study; (2) "orientation subjects," to assist in choosing a field of specialization; and (3) "informational subjects," to supply background of world knowledge, experience, and interest. To this end, "major" courses spanned the entire four years of study but actual "specialization" was postponed until what is normally the third college year. Of this Burruss commented in 1931:

Even in the advanced and specialized instruction care should be taken to train soundly in fundamental principles and their application before undertaking comparatively minute and super-specialized divisions of any field, and to develop knowledge of sources and technique of study and investigation rather than to import a mass of information.
Year by year, courses of study were added or deleted based on their ability to contribute to the agricultural or industrial development of the state. By 1947, there were thirty-two courses of study offered at Virginia Polytechnic Institute, each with a technological or professional focus. They are listed below:

<table>
<thead>
<tr>
<th>Business Administration</th>
<th>Poultry Husbandry</th>
</tr>
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<tbody>
<tr>
<td>Biology</td>
<td>Rural Sociology</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Industrial Arts Education</td>
</tr>
<tr>
<td>General Science</td>
<td>Aeronautical Engineering</td>
</tr>
<tr>
<td>Industrial Physics</td>
<td>Architectural Engineering</td>
</tr>
<tr>
<td>Agricultural Economics</td>
<td>Architecture</td>
</tr>
<tr>
<td>Statistics</td>
<td>Light Building Construction</td>
</tr>
<tr>
<td>Agricultural Education</td>
<td>Ceramic Engineering</td>
</tr>
<tr>
<td>Agricultural Engineering</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Agronomy</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>Animal Husbandry</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>Dairy Husbandry</td>
<td>Industrial Engineering</td>
</tr>
<tr>
<td>Forestry and Wildlife</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>General Agriculture</td>
<td>Metallurgical Engineering</td>
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<tr>
<td>Home Economics</td>
<td>Mining Engineering</td>
</tr>
<tr>
<td>Horticulture</td>
<td>Mining Geology</td>
</tr>
</tbody>
</table>

These "courses," along with the college's overall technologically professional thrust, persisted through 1953.

This technologically professional thrust of the college and its curriculum was also evident in its extension services. Broadly speaking, this aspect of curriculum was defined in a Techgram 1937 article as follows:

..., that phase of the institution's life which carries the work of the college itself and its experiment station to the farms, the homes, the shops, the manufacturing and business establishments, and the communities of the state.45

By 1927-28, the college's Agricultural Experiment Station, Agricultural Extension Division, Engineering Experiment
Station, and Engineering Extension Division were all immersed in research projects and cooperative experiences. Each successive year brought with it increased funds, research, and projects for each of the extension services. Respect and recognition for their research efforts, utility, and expertise grew throughout the state. In early January 1930, an agreement was signed between the State Department of Agriculture and VPI to work cooperatively, thus eliminating any duplication in their activities. In 1939, VPI hosted the tenth annual Institute of Rural Affairs, thematically oriented toward "Planning for Rural Living," while at the same time celebrating the fiftieth anniversary of the founding of its Agricultural Experiment Station. News media coverage of both events was overwhelmingly positive. Indeed, so technologically professional had these extension services become that in 1947, still suffering the effects of World War II, a British business, Thames Plywood Manufacturers, invested some of its scarce American dollars ($800) for research at VPI in the college's Wood Research Laboratory. Truly, the college's technical focus, originally to meet the needs of its home state, had extended way beyond state boundary lines—in service seemingly to anyone who could benefit from it.

Interestingly, too, the land-grant college become increasingly more selective about who could benefit from it while simultaneously serving an increasingly larger student
body than it ever had before. From 1919 to 1953, the student body grew from 757 in 1919-20 to 3215 in 1952-53, a more than seventy-five percent increase. According to a 1926-27 general report, the growth was "without much effort." Too, in September 1921, the college opened its doors to women on a full-time basis, an amazingly controversial move in itself, indeed with much effort, but clearly a contributing factor to the unparalleled growth.

By 1939-40, the undergraduate student body had become quite the reflection of the college's technological mission. Fifty-four percent of the student body was in engineering, twenty-five percent in agriculture, fifteen percent in business administration, and six percent in the applied sciences (particularly, biology, chemistry, physics, and general science). Similar statistics pervaded throughout the entire second period. In short, the growth of the student body, limited only by physical plant constraints, reflected the expansion of curriculum, technological bent and all.

With the growth—and, too, much reflective of the college's technological thrust—came a concern with increasing the admissions standards. In a 1927-28 general report, the president offered the following assessment of the situation:

In view of the continual increase in enrollment it may not be inappropriate for me to state that in my judgment the important aim of this college should now be to secure better qualified students,
to improve the instruction offered them, and to raise the standard of the accommodations furnished them. To my mind the qualitative side of college education is far more important than the quantitative side. For this reason I ardently hope that VPI is definitely and permanently out of the group of educational institutions seeking numbers. Despite our increase in enrollment at the opening of the year, it may be noted that this is not one of the colleges which has proclaimed in the newspaper that "all attendance records have been smashed," and similar statements. As a matter of fact, we have exceeded all previous years in the number of students enrolled; but we should prefer to direct attention to the more careful selection which we have made in admitting them, and to the considerable number denied admission on qualitative grounds.54

Indeed, by 1929-30, the college's general report was proclaiming: "Entrance requirements were rigidly enforced, and as a result a number of applicants were denied admission, although practically all of them were eligible for most of the colleges."55

Indeed, from 1919 to 1953, the college experienced a steady rise in entrance requirements—centered primarily on high school preparation. In 1920-21, the requirements were raised to fifteen units, with faculty considering abolishing conditional admission. The general report for that year read:

All former students were required to make written application for readmission this year and we declined to accept a considerable number of applicants whose records had been poor in studies or behavior during previous times. . . . An institution suffers no permanent loss by tightening up on its requirements for attendance in the manner indicated, but it greatly benefits in the long run.56

In the same year, Dean Campbell wrote to President Burruss
that he has for some time thought it wise "to come to a flat fifteen-unit requirement."\textsuperscript{57} By 1926-27, entrance requirements were raised to sixteen acceptable units, with no conditions allowed "in quantity."\textsuperscript{58} Indeed, in the 1927-28 general report, college officials reported that admittance requirements were stricter than ever. Even upon admission, students were administered an English placement test—"on the basis of which the students were divided into sections for work in the English Department"—as well as American Council of Education psychological tests during orientation and registration.\textsuperscript{59} Thus, by 1953, entrance requirements included: (1) satisfactory completion of all high school courses equalling sixteen units, with four in English, two in algebra, one in plane geometry, one in history, and one in science; (2) average grade in high school of 83, or a satisfactory grade on prescribed VPI tests; and (3) evidence of good character.\textsuperscript{60} Clearly, the college's technological mission and its corresponding curriculum impacted upon the land-grant college's service to the industrial class and, in so doing, told but another tale of the college's saga. Again, surreptitiously almost, the college's liberal education was at once shunned and venerated—all, however, subservient to that 1862 child and its leading object.

**Its Instruction Component**

Virginia Polytechnic Institute's second visual
manifestation of its technological mission was instruction. Like the curriculum manifestation, instruction also reflected the mission, primarily through an increasing professionalism and adoption of standard college practices. This trend was evident in the college's grading system, extracurricular activities, and methodology throughout the entire third period.

From 1919-1953, the college's grading system slowly evolved to reflect more the norm at other colleges and, in so doing, professionalized the technological thrust. Through a special Committee on Incentives to Scholarship, Marking Systems, Quality Credits, and Distribution of Grades, such matters as specified in the committee's title were addressed in 1920-21. The committee's findings, with minor modifications, formed the grading system used during the next thirty years.

After studying the "marking systems" of 187 colleges and universities, the committee found that most schools surveyed used A,B,C,D,E (or F) as well as a symbol for incomplete.61 By the end of 1920-21 and upon the recommendation of the committee, the college adopted an A,B,C,D,E,F, and I grading system for consistency with most other institutions. The E grade was a "condition removable by passing a re-examination and becoming a D"; the F was for failure and required a repetition of the course; the I was for incomplete, with the work to be completed by the end of
the term following the one in which the grade was given or otherwise to be converted to an F.

Too, based upon committee recommendation and for the sake of collegial professionalizing, the college adopted the following grading scale:

\[
\begin{align*}
A &= 90-100 \\
B &= 80-89 \\
C &= 70-79 \\
D &= 60-69 \\
E &= 50-59 \\
F &= \text{below 50}
\end{align*}
\]

Related to this scale and based upon committee findings and recommendations, the college looked for a "bell-shaped" general distribution of the grades—i.e., grades of \(A\) and \(B\) would constitute twenty-five percent of the total, grades of \(C\) and \(D\) fifty percent, and grades of \(E\) and \(F\) twenty-five percent.

Finally, the college adopted a quality point system—based, again, upon the recommendation of the Committee on Incentives to Scholarship, Marking Systems, Quality Credits, and Distribution of Grades. In its research, the committee found that more than one-half of the colleges surveyed expressing an opinion approved of a quality credit system; "that is, a system in which it is impossible for a student to graduate by securing barely passing grades on all subjects."62 The system adopted by the college assigned three quality points for an \(A\) grade, two quality points for a \(B\) grade, one quality point for a \(C\) grade, and zero points
for any grade below C.

Thus, by 1921–22, each aspect of the college's grading system was, for the most part, in place for this third evolutionary period. Each aspect, be it scale, distribution, or quality point conversion, suggested the professionalizing of the mission in a standard collegial setting. The 1921–22 general report, in announcing the new system of grading, explained that the more stringent system provided "valuable incentives for better classroom work."63 In the 1930 annual report of the Association of Colleges and Secondary Schools of the Southern States, VPI was reported as having more failures than any other college in the state, except the University of Virginia.64 Too, it was reported, VPI's percentage of failures was "far above" the totals for all thirty-one universities, eleven schools of technology, sixty-two colleges, and twenty teachers' colleges in the association. More specifically, according to the accrediting association, VPI had the second highest percentage of failures in English (32.8 percent) and in French (37.5 percent) as well as a moderate percentage in history (14 percent), mathematics (25.5 percent), and science (23.2 percent).65 This trend, with all its mechanical aspects, continued through 1953. While one might entertain the notion that the high failure rates reflected truly a land-grant industrial class student body regardless of the technological mission, one might also see the rate as
a necessarily natural part of Virginia's distinct technical school's evolution to collegial status. Either way, the college's technological mission gave form and function to this instructional manifestation.

The college's extracurricular activities also served to reflect its technological mission in an evolving collegial setting. By 1921-22, an honor system was well administered. In the same year, the two literary societies, curiously reflecting again a collegial standard, for the first time in fourteen years put on a public program at commencement. The general report noted:

These societies, which have been practically dead for many years, have after three years of effort to revive them apparently taken on new life and their future is promising.

In 1935, James Southall Wilson, noted Poe scholar from the University of Virginia, spoke on two separate occasions to the entire student body—first on "American Life and American Literature" and second on "The English Novel of Yesterday and Today." Indeed, through 1953, the general extracurricular activities developed an increasingly collegial bent despite or perhaps because of the college's distinct technological mission.

But, perhaps, under the college's extracurricular instructional aspect, it was the controversies surrounding athletics and military training which measure the greater significance. By 1930-31, with athletics in general and football in particular much a part of the college's
extracurriculum for almost forty years, concerns surfaced about the "place" of athletics, especially football, in the collegial setting. Of the criticism levied against the sports, Burruss was quoted as follows:

Shall we not seek to eliminate over-emphasis by improving our teaching methods in all our departments, and by making our courses as attractive and appealing as the training of the athletic coach? If one of our science departments were to win an outstanding place for itself, surely we would not tear it down because other departments were surpassed, but we would try to build up the others to the higher level. Why find fault with athletics because of what it has accomplished; why not accept the challenge to step up to its level of efficiency?69

Indeed, in true collegial fashion, the issue had clearly become the relationship between the curriculum versus the extracurriculum—particularly on the football field. Indeed, Virginia Polytechnic Institute's evolution into a standard college was becoming evident even here.

The military "activity" of the college also endured waves of attack in the early 1930's. Burruss saw the ROTC plan as the most productive, efficient, and economical scheme for providing a reserve corps of trained officers. Too, he saw it as valuable to any technical institution such as VPI. He said:

This college is not a West Point; yet we should continue to maintain our military department on the present high plane. This does not mean that all of our students must, should, or may enroll for military training, and the number of non-military students will continue to increase.70

By 1949, military training and the corps of cadets were
still seen as "inseparable parts of our tradition"—but the
groups automatically excused from all military requirements
at the time of registration continued to rise. As with
the other extracurricular components, here, too, evolution
into a standard college was taking place. Again, the
technological mission was advanced through the hidden agenda
of a collegial setting.

Finally, from an instructional perspective, the
teaching methodologies served to support the technological
mission, again through a similar "collegial" hidden agenda.
The methods continued from the previous stage of the
college's evolution to combine theory with practice. During
this period, however, the focus was increasingly on a
standard college plane. Practicums in agriculture, field
work in engineering, lab assignments in the sciences, and
written exercises in English, history, foreign languages,
and the like were the norm. Attempts were even made to have
the more experienced teachers conduct freshman classes,
though most other colleges had then (and still have today)
the tendency to do just the opposite. Indeed, each
methodology employed had evolved to meet directly the needs
of its particular manifestation of the college's
technological mission.

Thus, Virginia Polytechnic Institute's second visual
manifestation of its mission, instruction, succeeded in
providing at least partial standard college form. Indeed,
even the college catalog was completely rewritten to reflect more a collegial norm. First, instruction supported the technological thrust—directly in its methodology and indirectly in grading practices and extracurricular activities. Second, it used the same old strings—be they literary societies, guest lecturers, athletics, or lab exercises—to adjust the simultaneously evolving tension between useful and liberal. Curiously, in each case, the end was not to promote the liberal arts nor to recognize a need for balance between general and professional education; unwittingly perhaps, instead it was to offer standard college legitimacy and credibility to the whole product that was Virginia Polytechnic Institute.

**Its Faculty Component**

The college's third and final visual manifestation of its technological mission was the faculty. Like the curriculum and instruction manifestations, the faculty also reflected the mission—again, primarily through an increasing professionalism and adoption of standard college practices. This trend was evident in three basic faculty issues between 1919-1953—namely, credentials, duties, and salaries.

From the perspective of credentials, the college worked toward mirroring or exceeding the collegiate norm. Report after report through this 1919-1953 period devoted at least one section to this goal. Since 1920, faculty standards
were identified and discussed within the context of traditional professorial ranks—professor, associate professor, assistant professor, and instructor. And, in general, the period gradually reflected a concern with academic qualifications for each rank from a comparative perspective.

Signs of this concern were often subtle, but they were there. As early as 1923-24, Henry F. Holtzclaw, dean of students, wrote a letter to Burruss explaining that a friend of his recommended R. M. Mikesell for a teaching position in history and economics at the college. The candidate supposedly had a B.A. degree plus four courses short of the M.A. Holtzclaw wrote:

I feel sure that Mr. Mikesell could do our work and would do it creditably, but I am not sure that it would be wise to put a man on the staff with only the A.B. Degree.74

Already, in the early twenties, college officials were sensitive to the faculty image as well as faculty ability or potential. Indeed, the college had come a long way from those early years of classically trained faculty "making do" in agriculture and the mechanic arts.

By the mid-twenties and the span of the next two decades, the concern for collegial faculty credibility centered on meeting the standards as prescribed by the Association of Colleges of the Southern States. The college's greatest achievement during this period might very
well have been recognition by this accrediting agency in 1924. Indeed, the tendency in the United States was to standardize the requirements for faculty members. The accrediting association set up the following standard for the training of faculty:

The training of the members of the faculty of professorial rank should include at least two years of study in their respective fields of teaching in a fully organized and recognized graduate school. The training of the head of a department should be equivalent to that required for the doctor's degree, or should represent a corresponding professional or technical training. A college will be judged in large part by the ratio which the number of persons of professorial rank with sound training, scholarly achievement, and successful experience as teachers bears to the total number of the teaching staff. Honorary degrees are not recognized as a qualification for teachers.

VPI simply attempted to meet these standards. In 1927-28, the college prescribed to the following standards. Department heads needed a doctorate plus five years experience or a Professional Engineer degree (P.E.) plus nine years experience. A full professor was required to have either a doctorate plus two years teaching or occupational experience, one year of post-graduate master's work plus four years experience, or a Professional Engineer degree plus six years experience. Associate and assistant professors needed either a master's degree with one year teaching experience or a P.E. degree with one year experience. Instructors needed bachelor's degrees only.

By 1933-34, adhering to these standards, the faculty
consisted of thirty-seven (25.3 percent) full professors, twenty-four (16.4 percent) associate professors, forty-three (29.5 percent) assistant professors, and forty-two (28.8 percent) instructors. Of these, twenty-three (15.8 percent) had doctorates, sixty-one (41.8 percent) master's, seven (4.8 percent) bachelor's, forty-four (30 percent) VPI degrees, two (1.4 percent) certificates, and nine (6.2 percent) no degree or certificate at all. Of the nine with no academic credential, six were army officers. In addition, though not a part of the official faculty, but certainly of note here, there were some forty-five assistants, consisting of part-time fellows and graduate student assistants—not atypical when considering the technological mission in general and its corresponding instructional methodology in particular.

By 1939-40, some interesting comparative faculty statistics were computed through a study with five other land-grant institutions—Purdue, Iowa State, Penn State, Michigan State and Texas A&M. The study considered specifically three basic areas—agriculture, biology, home economics; engineering; and chemistry, economics, geology, languages, mathematics, and physics. In combined areas, VPI was found to have the lowest percentage (25 percent) of faculty with doctorates. Curiously, though, the college was also found to have the highest percentage with master's only (68 percent) and the lowest percentage with bachelor's only
(5 percent). Not too surprising given the rapid growth of the curriculum during this third period, VPI also had the highest percentage (40 percent) of faculty holding a bachelor's degree from their own institution, the fourth highest (32 percent) of faculty holding a master's from their own institution, and the second highest (21 percent) of faculty holding no other degree except from their own institution. Based on these comparisons, one might safely speculate that by 1953 Virginia Polytechnic Institute was moving closer and closer to a standard college norm in faculty credentials and qualifications.

Faculty duties and expectations also reflected a concern with professional image and collegial status. Of course, the primary duty of the faculty was classroom instruction; and seemingly this responsibility was considerable. According to a 1924-25 U.S. Bureau of Education study, the teaching load of VPI faculty was significantly heavier than that of the average for all of the state institutions. Despite the teaching load, faculty professional obligations did not end in the classroom. From 1920-21, faculty in all areas were expected to attend department meetings, serve on faculty committees, advise major students, recommend major students for graduation, revise existent curricula, formulate new curricula, act as liaison to the public, participate in extension services, conduct continuous self-inquiry, and in
general advance the interests of the institution. The list of duties evolved throughout this third period to resemble quite closely present collegial faculty duties in general and at Virginia's land-grant institution in particular.

However, the faculty duty of most interest during this period was research and publication. According to a 1927-28 general report:

... a college faculty in which there is little or no interest in research and in productive publication, may hardly claim to be professionally alive; and that a college which does not encourage such activities on the part of its faculty is missing what is perhaps its greatest opportunity for service to the people who support it.

In the same report, to emphasize presumably the importance of this faculty duty, college officials opted for a reduction in teaching loads and for clerical research support. Their goal, as stated in the general report, was "... to develop the research activities of this institution as rapidly as possible to meet the needs of both agriculture and industry in Virginia." Indeed, through this new-found commitment to faculty research, Virginia Polytechnic Institute moved even closer to a standard college norm—and surreptitiously a realization of its technological mission.

And, of course, in the midst of professionalizing a faculty and mirroring a standard college norm came the issue of salaries. Proverbially speaking, one must be willing to
pay the price. As early as 1919-20, college officials reported: "If we are to keep our staff up to the necessary high standard, we must increase salaries all along the line." And, in 1920-21, the salary issue was linked even more directly to the push for standard college norm:

If V.P.I. is to be an agricultural and engineering college of equal rank with standard colleges in other states, if it is to give as high a standard of work as other institutions in our own state, the type of officers and teachers must be as high as at the other institutions, and this means that the salaries paid here must be commensurate with the salaries paid elsewhere.

And, in 1927-28, the issue was linked more directly to the technological mission:

... we must provide large salaries if we are to induce strong men in technical fields to join our staff.

And, so the argument went--from 1928 through 1953--largely the same one, with a few modifications, made today for basically the same reasons. Standard college status, in the midst of a technological mission, was becoming reality.

Thus, this third manifestation of Virginia Polytechnic Institute's mission, faculty, was both supportive of the mission and an evolutionary branch of the making of a standard college with decidedly land-grant roots. The support and evolution were evident in faculty credentials, duties, and salaries.

Conclusion

And, so the circle is completed: The tracing of Virginia Polytechnic Institute's 1919-1953 evolution of
mission, curriculum, instruction, and faculty ends where it began. The questions still remain: "How did the saga with the land-grant roots unfold? And, what was this "man" named Virginia Polytechnic Institute, fathered by the "child" named Virginia Agricultural and Mechanical College, becoming?" Surely, Burruss's 1926-27 "vision for a greater VPI" had been realized. The mission was of a technological bent, with its visual manifestations of curriculum, instruction, and faculty all in service to it. And, too, these aspects reflected a standard college with professional direction and focus.

Indeed, by 1953, the college's liberal and useful relationship had undergone yet another metamorphosis. With an intensive strengthening of the college's technology mission, no longer was the curriculum even remotely classical; unintentionally or intentionally, the focus was on the professions as outgrowths of the land-grant act's leading object. No longer was instruction even vaguely medieval; methods were developed to meet the specific needs of the professional curricula and quickly were put into practice. No longer was the faculty technically unaware because of classical training; their credentials served to meet specific curricular, professional needs and were tickets to professional research and publication of their own. No longer, indeed, was the land-grant's other object, "classical studies," even acknowledged—except in lip-
service fashion and on auspicious occasions—as necessarily important. And yet somehow, it, in its contemporary form of liberal arts, survived.

Herein, so it seems, lies the Shakespearean "rub"! Partially out of overzealous commitment to the technological mission and partially out of narrow vision of the greater VPI college, officials attempted to ignore (by simple unknowledgement) the liberal object in order to highlight the useful. In the process, however, they found unwittingly that one could not have a greater VPI with a technological mission in a standard collegial setting without the liberal element. For better or worse, it appeared to be what gave the college its "standard college" status. Thus, surreptitiously, the liberal always found a place—bordering on a bastardized kind of "professional" core—in the visual manifestations of the college's technological mission.

The strings of tension between the college's liberal and useful elements were the same, old strings. Only now they were strumming a background tune barely audible, if audible at all, to the primary players, but oh-so-essential to their seemingly subconscious vision of their college being more than a distinct technical school in Virginia. Plainly, Virginia's polytechnic institute was "becoming" a standard college—but with a saga still all its own. Another chapter begs to be written.
Notes to Chapter VII

1Duncan Kinnear in The First 100 Years: A History of VPI & SU (Blacksburg, Virginia: Virginia Polytechnic Institute Educational Foundation, 1972), pp. 253-54 recounts Burruss's background as follows: "Julian Ashby Burruss... was born in Richmond, Virginia, in 1876. He entered VPI in the fall of 1894 and received a B.S. degree in civil engineering in 1898... In 1906, he received his A.M. degree from Columbia University after studying at Richmond and Harvard. At the time of his election to the presidency of VPI, he was in the midst of his program for the Ph.D. degree, which he received from the University of Chicago in 1921. His earliest professional work was at Normal College, Waleska, Georgia, and at Searcy (Arkansas) Female Institute. He also taught for a short period at Speers-Langford Military Academy. In 1901, he returned to Richmond as principal of the Leigh School. In 1904, he was appointed director of manual arts for the Richmond City public schools; and in 1908, he was elected first president of the Normal and Industrial School for Women (now Madison College) at Harrisonburg, Virginia."


3Woodrow Wilson, quoted in "President's Special Report on Organization and Administration," 15 May 1920, p. 82.


5Ibid., p. 109.


7Ibid., p. 55.

8Ibid., p. 43.

9Ibid., p. 44.

10Ibid., p. 48.

11Ibid., pp. 75-76.
Burruss saw too much congestion, especially in the form of electives, and not enough relevancy in the curriculum (pp. 56-57).

Apparently, in a study of American agricultural colleges by Jarvis, VPI was criticized for requiring too many credit hours per degree program and maintaining too low a standard (p. 51). Burruss asked, "Can we afford such notoriety?" (p. 54)

According to Burruss, "By a liberal education is now meant that type of education which contains the best culture material of the life for which it is designed to prepare. The engineer or scientist who is so equipped, with a knowledge of the fundamental sciences underlying his specialty that he is a master of them, is liberally educated. There is no subject or group of subjects which may be interjected into a curriculum and by a mysterious alchemy transform it into a means of culture."

Ibid., p. 63.


Duncan Kinnear, The First 100 Years, p. 256.

Ibid., p. 285.

Quoted in Open Letter by Burruss, 23 August 1934, Burruss Papers, University Archives, Virginia Tech, Blacksburg, Virginia, p. 1.


"President Newman in His Inaugural Address Discusses Proficiency in the Professions, Better Research, Adult Education, Military at VPI, Continued Close Relationship

26Ibid., pp. 3-4.


28Ibid.

29Ibid.

30Ibid.


32Ibid.


34Campbell Papers, 1920, University Archives, Virginia Tech, Blacksburg, Virginia.

35Ibid.


37Campbell Papers, 1920.


39Julian A. Burruss, "Some Waves on the Educational Sea," *The Techgram*, 17 March 1931, p. 2 of suggestion appendix. This speech was originally delivered to the VPI Science Club.

40"Questions Raised in Connection with the Inspection of Virginia Polytechnic Institute," 29-30 April 1940, Burruss Papers, University Archives, Virginia Tech, Blacksburg, Virginia, p. 2. This paper was the college's response for AAU accreditation.
This plan arranged the curriculum under three schools—namely, the School of Agriculture, the School of Engineering, and The College. The College consisted of Business Administration curricula, applied science curricula, pre-professional curricula, and "other" (i.e., economics, English, history, education, foreign languages, mathematics, military science and tactics, and physical education). Catalog, 1927-28, University Archives, Virginia Tech, Blacksburg, Virginia, pp. 42-43.


Ibid., p. 3 of suggestions appendix.

"Information for Prospective Students," Bulletin of the Virginia Polytechnic Institute 40(March 1947):13. This work was prepared by the Office of Admissions.

"295 Receive Degrees; Dr. Eggleson Speaks," The Techgram, 15 June 1934, p. 10.


Roanoke Times clipping, 1 April 1947, Miscellaneous Faculty Files, University Archives, Virginia Tech, Blacksburg, Virginia.


"Questions Raised in Connection with the Inspection of Virginia Polytechnic Institute," p. 5.


"Annual Report, 1929-30, p. 11."

57 Letter to President, 8 April 1921, Burruss Papers, University Archives, Virginia Tech, Blacksburg, Virginia.

58 Catalog, 1926-27, University Archives, Virginia Tech, Blacksburg, Virginia, p. 27.


60 "Information for Prospective Students," pp. 6-7.

61 Campbell Papers, 1920.

62 Ibid.


67 Ibid.

68 Roanoke Times clipping, 20 April 1935, Miscellaneous Faculty Files, University Archives, Virginia Tech, Blacksburg, Virginia.


70 Ibid.

71 "President Newman in His Inaugural Address," 1 May 1949, p. 3; "Information for Prospective Students," 1947, p. 11.


74 Letter to Burruss, 23 April 1924, Holtzclaw Papers, University Archives, Virginia Tech, Blacksburg, Virginia.

76 Ibid., p. 38.


78 Association of Colleges and Secondary Schools of the Southern States, "Standards for Colleges of Arts and Sciences: VPI," 1 September 1933, University Archives, Virginia Tech, Blacksburg, Virginia, p. 5. Date submitted by the college for Commission data gathering purposes.

79 "Questions Raised in Connection with the Inspection of Virginia Polytechnic Institute," pp. 7-8.


83 Ibid., p. 37.


CHAPTER VIII

THE POLYTECHNIC INSTITUTE BECOMES A UNIVERSITY . . .
AND SO DO THE STRINGS OF TENSION, 1953-1979

Introduction

"Do I contradict myself?/Very well then I contradict myself...."¹ The line, from nineteenth-century American poet Walt Whitman's "Song of Myself," speaks to one of the many curious ironies of human nature—the tendency to alter convictions and discard beliefs in the midst of personal growth and development. Like the whole poem, the line boldly sings a "song" in celebration of this and countless other ironies, capturing the humanness of man in general and his sometimes uncharted paths in particular.

While perhaps not as bold and certainly not as poetic, Virginia Polytechnic Institute "celebrated" its own kind of contradiction in this last period of its evolution to present status, 1953-1979. Intent on being "a genuinely efficient technical school" and with no aspiration "to be a university"—to highlight the mission statement formulated by Burruss in 1927 and espoused by numerous college officials through 1953 over and over again—the fact of the matter is that Virginia's distinct polytechnic institute became Virginia's distinct land-grant university in name and
mission by 1971.

As a result, the relationship between the college's liberal and useful elements was altered; their strings of tension were once again adjusted. Indeed, in this contradictory realization of university status, the liberal arts themselves achieved a new-found professional recognition and distinctiveness of their own. And, indeed, the land-grant distinction itself was no longer cast in a purely technical mold, bound only to the leading object which conceived it and the standard college apparatus which housed it. An intensive analysis of eight steps of mission statement revision during this period and their impact on the college's curriculum, instruction, and faculty unfold the saga that has become Virginia Polytechnic Institute and State University.

**Mission Revision in Eight Steps**

From 1953 to 1979, the college encountered eight steps of mission revision. Each step brought it closer and closer to realizing a university status. Too, each step adjusted the relationship between the college's liberal and useful elements.

The first step of revision came in 1953. Since the turn of the decade, Virginia leaders began to realize that a land-grant institution could and perhaps should do more than offer work in agriculture, engineering, and business. More significantly, by around 1950, it began to become obvious to
many that the meeting of the needs for scientifically trained workers was being hampered by inadequate offerings in the liberal arts. Finally, on August 18, 1953, in his report to the Board of Visitors, President Newman made the pitch for an expanded mission but still with continued focus on science and technology. He said:

... Much of the responsibility for disseminating information and finding new information in educational institutions. The advanced phases of this endeavor reside principally in the colleges and universities. It has several components signified by such words as art, science, social study, religion, etc. These designations at once connote qualities and a division of labor. They can scarcely be set up in a hierarchical order of importance. A new scientific principle or a more enlightened religious tenet may both have untold consequences, glorify man and please Him who would have us understand perfectly if we would seek the truth and that only.

Research and instruction in science and its offspring, technology, constitute the main areas of activity given to and accepted by VPI. Since isolation can never be achieved, isn't even desirable because separate is not possible, a moderate amount of supporting work in other areas must be carried on.2

While this mission revision reflected a continued view of VPI as primarily a technical and scientific institution and, in so doing, highlighted a research emphasis along these lines, it also planted seeds for a university status that was to follow some twenty years later. Too, it suggested the need for an adjustment of the relationship between the college's liberal and useful elements. Quite clearly, by 1953, the groundwork for a broadening of institutional purpose had been laid.
The second step of mission revision came in 1959. Although this revision did not involve directly the college's Board of Visitors, it too suggested a broadening of institutional purpose, clearly with university undercurrents. In 1956, Dr. L. A. Pardue, the college's vice-president, appointed—with the approval of the president—a Faculty Committee on Instruction. The purpose of the committee was to make an exhaustive analysis of the college's aims and objectives, and, in the process, to specify the best means of achieving them. The committee consisted of nine specialized committees and one general committee. The specialized committees included committees on aims, objectives, and functions; recruiting and maintaining an outstanding faculty; improving the present faculty; instruction in the classroom and laboratory; evaluation in education and teaching facilities; the improvement of graduate level instruction; evaluation of VPI academically; and a program for students of superior ability at VPI.

In the final written report entitled, "V.P.I. ... Its Aims, Needs, Future--A Faculty Report," and released July 1959, the faculty first and foremost acknowledged from an historical perspective a three-fold function for all higher education institutions—namely, the dissemination of knowledge, the extension of knowledge, and the cultivation of taste and manners. Using this historical perspective as
background, the faculty identified the duty of "universities" as follows:

... to transmit to their students as much as may be possible of the vast accumulated body of knowledge which is the chief component of this culture ... [to] make every effort to implant in the minds of their students a respect for the traditions of Western culture on which our civilization is based.4

Out of this rather back-door delineation of university duties in general, the faculty continued to emphasize VPI's particular 1953 focus on technical and scientific training—but not without passing reference to the liberal education.

The committee reported:

In promoting education in professional fields, this institution fully recognizes the necessity of developing within the student the professional competencies of his chosen vocation. At the same time, it also recognizes the necessity of developing within the student an understanding and appreciation of his moral and ethical responsibilities as a technically trained person and as a conscientious and informed citizen in our complex society.5

Further, again backhandedly, to tie the idea of a broadened institutional purpose more directly to the relationship between the college's liberal and useful elements, the committee suggested:

No dichotomy between general education and training for specific vocational tasks is intended. The pressures for more general education which are being exerted upon the technical schools by the representatives of the specialized professions themselves are recognized. These pressures underscore the responsibility of this school to provide equally sound course offerings in both the technical and the non-technical aspects of the curriculum. This school
must not allow the demand for technical competence to exclude understanding and appreciation of man's role in society and in the history of which he is a part; nor must it permit the education of its students to be so general that they are unable to fulfill the increasing technical needs of a complicated industrial culture. It is realized that a balance between these two facets of our educational job must be delicately determined and maintained and that this balance must be constantly re-evaluated in light of changing circumstances.

Thus, with this second step of mission revision came not only an implied commitment to a broadened purpose of Virginia's land-grant college but also a philosophical and practical understanding of both the essential nature of the liberal arts in a collegial setting and the need for a "balance" between the liberal and useful elements in the evolving land-grant setting. By 1959, the university undercurrents were becoming stronger; the liberal-useful relationship was being prepared for adjustment.

The third step of mission revision came in 1961. In this year, VPI made one of its first open pleas for recognition of university status. It did so to the Board of Visitors in its February 14 annual report. The method college officials used for this plea was a comparative approach to other land-grant colleges in other states and a self-analytical approach implying that in practice Virginia's land-grant school was already a university. The report noted:

Of course, College is not available at present since VPI itself is publicly and affectionately, but apparently not officially, known as a College.
In this latter connection it might be observed that a change of name, if justified, might require only Board action and possibly approval by the Virginia Council of Higher Education. In many states the status of an institution is spelled out in the charter by legislative action. Apparently this is not true at VPI. In the last two years seven separate land-grant colleges have changed [their] name to university in the following states. . . . In earlier recent years six land-grant have made the changes in these states. . . . VPI is in fact a university-type institution. 7

Now, for the first time, Virginia Polytechnic Institute's officials had taken the broadened institutional purpose of the 1950's and given it an open university cast. From a land-grant perspective anyway, they reasoned, VPI warranted university recognition.

Too, college officials approached this plea to grant university status to VPI from the hidden perspective of programs. Specifically, in another report to the board, this one in August, university status was tied to proposals for major programs in English, history, and political science. College officials explained:

VPI is numbered among the small and rapidly dwindling minority of land-grant institutions not yet accorded full university status by their states. A very important segment of a university is a strong liberal arts college or school. The great and swelling majority of land-grant institutions already have flourishing programs in the liberal arts, not only as service courses but as majors. 8

After lengthy consideration of this report and all of its implications, the board approved the following motion: "That majors in English and history and political science be approved effective September, 1962 in the School of Science
and General Studies at VPI . . . ." No official statement of change or expansion of purpose was made at this time. In February of 1963, however, the name of the School of Science and General Studies was changed to read the School of Arts and Sciences. These actions on the part of the board, without de-emphasizing in any way the role of the sciences, definitely broadened the purpose of the institution to include programs in the liberal arts area as majors.

Perhaps, more significantly, the liberal arts themselves were cast in a different perspective: For the first time, they were acknowledged as program entities in their own right, deserving of major status and recognition. Clearly, the relationship between the college's liberal and useful elements was being altered. At the August 7 Board of Visitors meeting, the college's statement of purpose was discussed in light of these two reports. Though action was not immediately forthcoming, changes were recommended.

The fourth step of mission revision brought the action. It came in 1964—under a new administration. Indeed, the new mission statement eventually issued by the Board of Visitors in October of that year was largely a result of T. Marshall Hahn, the college's new president, and his rapid advancement of the characteristics of Virginia Polytechnic Institute as a university begun in Newman's administration. In his 1963 inaugural address, he used specifically the phrase "land-grant university" six times, with countless
other references to "university" through synonyms of one kind or another throughout. For example, he opened his address as follows:

[I hope to] give the quality of leadership the fine citizens of Virginia are entitled to expect and require for their land-grant university, with its programs of instruction, research, and extension so vital to the continued forward progress of the Commonwealth.

Constantly, throughout the address, he equated quality plus land-grant university plus excellence with the institution he had begun to lead. Boldly, he defined Virginia's land-grant university mission as one of "outstanding programs of instruction, research, and extension." Subtly, he began to use the words "Virginia Tech" to identify his institution and, perhaps, its evolving mission.

The new mission statement which finally did evolve out of all of this by 1964 made for the first time in the history of the college a commitment toward developing programs and facilities for a quality "university" education rather than a technically oriented one. Indeed, when the Board of Visitors reviewed the college's current mission statement, it concluded that "since the legislative directives of the various land-grant acts defined the role of a land-grant school, VPI's basic mission must include a quality resident instruction program for the youth of Virginia, coupled with supporting research and extension activities." The board felt that as the social and
economic progress of the Commonwealth continued, and as Virginia's educational system sought to prepare larger numbers of people for more meaningful and productive roles in an increasingly complex society, the number of qualified students seeking higher education would continue to grow very rapidly.

In response to the growth and with an allegiance to the land-grant act which conceived it, the Board of Visitors adopted the following statement of policy for VPI on October 5, 1964:

The VPI Board of Visitors recognizes that the mission of VPI is to provide the best possible resident instruction for the qualified youth of Virginia and strong research and extension programs to serve the needs of the Commonwealth. The Board desires to develop the facilities to accommodate students from Virginia high schools who have the ability to complete successfully a quality university education.

In light of the new mission, the board further saw a need for the college to meet the needs of increasing enrollment, to meet the needs of women educated at VPI, and to strengthen the graduate programs "in all areas where need is demonstrated," especially the non-science ones. Indeed, the evolution into a university was taking place, but still with a distinctiveness of land-grant purpose. Indeed, the saga was unfolding.

From 1964 to 1966, this new mission pervaded the college's very being—both internally and externally. In catalog after catalog during this period, VPI's status as a
university and its service to the Commonwealth were constantly highlighted. For example, the 1964-65 catalog noted:

Today, VPI is more than a university as it serves the state, the nation, and the world in the three important fields of instruction, research, and extension. . . . Through the years, VPI has kept to the letter and to the spirit of the Morrill Land-Grant Act. Instruction is now offered in six academic colleges and almost fifty departments on the undergraduate level. Master's and doctoral degrees are offered in many departments through the Graduate School. . . . VPI strives to provide an educational center second to none in the nation and to provide the best university facilities that this technological age may require. 13

Too, Boards of Visitors' subsequent actions were influenced by the mission. At a February 23, 1965, meeting, for example, the board passed two resolutions which emphasized "a quality university education," both in terms of instruction, research, and extension as well as support facilities. Further, at this same meeting, the board also reached the conclusion that without the loss of recognition of the importance of strengthening the undergraduate program, greater emphasis should be placed on strengthening the graduate programs and offering graduate degrees in all areas where there was demonstrated need. 14

Indeed, in 1965, even a Virginia Higher Education Study Commission agreed with the concept of VPI's expanding its programs through doctoral level in non-science as well as in its more traditional areas of concern. In fact, the commission recommended that the word "university" be
incorporated in the institution's name. Specifically, it recommended:

that the authorities of VPI give attention to the choice of a better designation for the institution, one that will indicate its historic importance as the land-grant university of Virginia.15

In a slightly more critical vein, the institution's first self-study addressed the university status, particularly as it impacted programs:

Education rather than technical training is the mission to which this university should be dedicated. . . . Several colleges and departments joined in expressing the feeling that expansion of the liberal arts is the key to the problem.16

Indeed, in this sense, according to this self-study report, many faculty and staff felt that a more "definitive statement" of purpose needed to be made. From their perspective of purpose, two major problems existed. The first was "charting the now recognized role of a university instead of the previously limited role of a scientific and technological institute."17 The second problem was the "apparent lack of an intellectual atmosphere [on campus] commensurate with the status of a major university."18

And, promotional pamphlet after promotional pamphlet always related the college's mission back to Virginia needs always within the land-grant concept. As a 1966-67 report put it:

As Virginia seeks to broaden and strengthen its educational system, more adequate and diverse educational opportunities will be made available
for its young people. The land-grant university's basic role in this effort is clear; the university has no choice but to respond to the state's growing educational needs.19

Summatively, perhaps, most significant of this new mission which pervaded the college's being from 1964 through 1967 was the Southern Association of Colleges and Schools Committee's assessment of it. In a general sense, the committee appraised the college as follows:

VPI for the past several years seems to have undergone more change than in the preceding quarter century, and it is hard to imagine a more dynamic institution.... There is no doubt that VPI is a better institution than ever, and is headed upward, steeply and rapidly.20

With specific regard to the new mission of VPI, the committee found it to be "valid and accurately describ[ing] the new directions of the university."21 In particular, the committee mentioned the evolution of the college into "a complete university" and its development of fundamental disciplines of sciences and arts. The committee noted that "this fundamental change in institutional purpose...is being accomplished efficiently and rapidly."22 As conclusion, the committee reported that VPI was both recognizing its "enlarged role as an educational leader of the state and region" and was well on its way to "becom[ing] one of the outstanding universities of the nation."23

Indeed, by 1966, Virginia Polytechnic Institute was intent on answering the call to plant university roots in its already very fertile land-grant soil.
The fifth step of mission revision began in 1967, culminating in 1970. The following revised mission statement—approved by the Board of Visitors—appeared in the 1967-68 catalog:

The purpose of Virginia Polytechnic Institute, Virginia's Land-Grant University, is to provide the intellectual atmosphere, the scholarly guidance and the modern facilities for the education of men and women of the Commonwealth, the region and the nation.

In addition to the basic obligation to provide appropriate educational opportunities for the qualified youth who seek admission, the university, through a balanced program of resident and off-campus instruction, extension activities, and research, both fundamental and applied, projects its scope of activities to anticipate and fulfill the intellectual needs of the state and the nation.

The explosive growth and expanding demands of a modern technological society require a breadth and flexibility of purpose not heretofore necessary.

A university must seek to pioneer new routes and rapidly adopt to new situations if it is to stimulate the young inquiring mind and remould the older well-established concepts of graduates who find the need for further education.

The statement in general constantly referenced VPI as a university—more so than in any of the other previous mission statements. Furthermore, this 1967-68 statement of purpose emphasized three basic aspects of the institution which would shape its sense of purpose for years to come. These aspects were (1) the institution's "university" status; (2) its service to "the Commonwealth, the region, and the nation"; and (3) its three-sided face of research, instruction, and extension. Indeed, this revised mission statement moved the Virginia Polytechnic Institute even
further along to becoming Virginia's land-grant university in both form and function, and, in its own words, to "anticipate and fulfill the intellectual needs of the state and the nation."

This mission revision impacted upon various aspects of the college from 1967 to 1970. First, the self-identity of the institution reflected the influence. References abounded to VPI as Virginia Tech, most especially in the yearly catalogs. For example, in the opening pages of the catalog, what was once "The VPI Story"—the introduction to the school—became "The Virginia Tech Story." Second, student activities external to the formal curriculum showed an influence. Most interestingly, in this regard, was a 1969-70 report, which examined the issue of student protest. Of it, the report said:

If a university is to remain a place of free inquiry, a community in which a liberal education is possible, the freedom of all members of the community must be protected. The University must assure each member of the community that he is free to express himself in any appropriate manner, as long as he does not impose on the freedoms of others. This is the best assurance that scholarly pursuit and intellectual debate will flourish, and that the University will continue to maintain the environment essential for education. It is also vital to the University's service to the Commonwealth.25

Again, the university status, complete with its traditional pursuits and ideals, contributed to institutional policy on issues non-curricular in nature. Third, the very name of the institution was affected by the revised 1967 mission
statement. Legislation was introduced and passed by the state legislature in 1970 officially designating the institution "Virginia Polytechnic Institute and State University," effective July 1, 1970. While no one of these aspects in and of itself suggested earth-shattering change, collectively they demonstrated the pervasiveness of the 1967 revised mission in VPI's metamorphosis into a state university.

The sixth step of mission revision came in 1971, with yet another mission refinement. In May 1971, college officials proposed and the Board of Visitors subsequently approved a new statement of mission for submission to the State Council for Higher Education in Virginia. The statement finally recognized Virginia Polytechnic Institute and State University as "Virginia's land-grant university with an extensive commitment to graduate as well as undergraduate instruction, research, and statewide continuing education and extension." In the process, the statement also acknowledged the institution's adding of "contemporary programs required of a comprehensive university," particularly in the non-science areas, while simultaneously maintaining "many of the land-grant university traditions." Thus, the new statement, for the first time, placed equal importance on instruction (graduate and undergraduate), research, and extension services in both its evolving land-grant setting as well as its new-found comprehensive
university setting. The university status was achieved, the liberal and useful "strings" once more adjusted.

The seventh step of mission revision, occurring in 1972, served to introduce the aspects of accessibility and balance into the 1971 mission refinement. On November 2, 1971, a faculty Task Force on Instruction issued a comprehensive final report addressing the university's triune mission, but with particular emphasis on instruction. Though the report subjected much of the university's being to close scrutiny, for purposes here, it most significantly added two dimensions to the 1971 mission.

The first was one of greater access of education to all students but not at the expense of quality. The task force said:

As the American society continues to be diversified, the University must reach out and offer its resources to many more people. Traditional educational patterns must change in order to be consistent with the concept that education for education's sake is beneficial to the individual and society; as we make additional efforts to reach the socially and culturally handicapped, innovative concepts in education must be developed and accepted as a pattern for the educational process.

Our University must establish its own character and identity as it fulfills its instructional mission, which is to provide abundant educational resources for all citizens desiring quality learning experiences. The fulfillment of this mission does not imply, however, that every citizen should be admitted to a degree program. Rather, it means that every citizen should have access to the educational program most suited to his needs and abilities, and that he should have the opportunity to pursue that program at various locations and times.
With this dimension of accessibility in mind, the task force suggested an "open university" plan similar to the one in the United Kingdom with a "community college network" as an integral part of it. Thus, with this dimension, the task force highlighted the land-grant roots of its university.

The second dimension added to the 1971 mission refinement, which received the attention of the task force, was one of balance. According to the 1972-73 catalog, the basic functions and purposes of the university were as follows:

... to provide the intellectual atmosphere, the scholarly guidance, and the modern facilities for the education of men and women ... [and] to anticipate and fulfill the intellectual needs of the state and the nation through a balanced program of resident and off-campus instruction, extension activities, and research, both fundamental and applied.

Using this statement as a basis, the task force defined the program balance. Philosophically relating the dimension to a larger whole, the task force said:

Our belated awakening to environmental problems forces us to recognize the integrity of the natural system. The wisdom of the ancients looms anew: all is unity, everything is interrelated. To continue useless categorization and functionless divisions in the face of conspicuous needs for synthesis and integration is to court charges of irrelevance, inefficiency, and perhaps eventual disaster. What are needed are new mixes of ideas, tools, methods, and arts.

On a more practical level, the task force identified for its university another goal:
Virginia Tech must strive continually for a healthy and harmonious balance of these different components [research, extension, instruction]. Fortunately there is no essential conflict between them. Research can and frequently does contribute to more enlightened instruction; extension is a form of adult instruction. Virginia Tech, traditionally identified by the excellence of its extension program, has made a major effort in the recent past to gain national recognition for its research productivity. The time is now ripe for a reassertion of the importance of the instructional mission.32

Thus, on both philosophical and practical levels, the task force outlined the need for greater equality within and among the triune mission. In so doing, it highlighted the comprehensiveness of its university structure and the evolving relationship of the liberal and useful components.

By 1972, the new statement of mission was in place. The job, then, became a matter of rekindling—with modern modifications—two fundamental dimensions of the founding land-grant act. The 1862 act's charge to train the industrial class became the 1972 task force's plea to educate the masses. The 1862 act's stipulation to include classical studies became the 1972 task force's recognition of a need for greater balance of liberal and useful elements within the total university structure. In both cases, the seventh step of mission revision as captured in the 1972 Task Force Report on Instruction was a matter of turning attention to two of the ramifications of a land-grant school evolving into a state university at once land-grant in origin and comprehensive in purpose.
The eighth step of mission revision addressed what might be considered the third ramification of the evolution. Throughout 1977 and 1978, college officials at Virginia Tech addressed the dimension of quality, particularly in light of its land-grant roots and evolved comprehensive purpose. On May 6, 1977, the Board of Visitors approved yet another revision of statement of purpose. A report of that statement is excerpted below:

The University strives for excellence in fulfilling all three missions of a comprehensive land-grant institution. Achievement of this goal depends on concentrating efforts of those activities that the University is uniquely qualified to pursue, and on effectively planning and adopting programs in teaching, research, and extension to the changing needs of society and to the University's evolving capabilities. Above all, attainment of excellence depends on the quality of the people who constitute the University, and on the extent to which they contribute cooperatively to its general purposes. Deserving high priority among the University's aims are attraction of the best potential students and increased emphasis on recruiting and developing faculty of the highest quality. Also crucial are enhancement of the intellectual atmosphere, continued improvement in instruction and extension programs, vigorous support of research and graduate studies, maintenance of critical standards in all areas, and provision of adequate support services. A steady movement toward all of these proximate goals will help to attain the ultimate goal of excellence.33

Here, for the first time, Virginia Tech included in its mission statement a commitment not only to a university-type education in touch with historical land-grant roots but also to excellence in the tangible and intangible manifestations of that education. On April 11, 1976, then-Provost Wilson
suggested a similar commitment when, in a general summary statement, he saw the need for the university to focus energy in the 1980's principally "on the qualitative advancement of all of its programs."34 In delineating this advancement, he explained that the institution's pursuit of excellence should be guided by three premises—namely, that "outstanding professional performance is nurtured in an atmosphere maintaining individual opportunities, while simultaneously fostering cooperative relationships among individuals within the various academic units"; that "VPI&SU must be sensitive to the needs and best interests of the people it serves . . . develop[ing] the sophistication to identify those programs that have high promise"; and that "the University must encourage each instructional, research, extension, and service unit continuously to evaluate its mission . . . insur[ing] its compatib[ility] with . . . the entire University."35 Wittingly or unwittingly, a month later, President Lavery, in the 1977-78 annual report to the board, emphasized the three premises as well as the overall commitment to quality, especially from the perspective of atmosphere. He said:

Our primary concern during the past year has been the strengthening of the quality of the intellectual environment, and the compromises and decisions made in seeking that objective do much to delineate the basic values of the academic community.36

Thus, by 1978, Virginia Polytechnic Institute had so evolved in mission that it indeed had become Virginia
Polytechnic Institute and State University—still land-grant in origin but intently comprehensive in purpose. Dealing with four key ramifications of this eight step revision—mission, accessibility, balance, and quality—the institution had also adjusted the relationship of the liberal and useful elements of the entire institution. Visual evidence of the adjustment reached the areas of curriculum, instruction, and faculty. The saga had indeed unfolded.

Its Curriculum Component

The curriculum reflected in both its form and function the evolutionary comprehensive university status of the institution as well as its decided adjustment of the relationship between its liberal and useful curricular components. Manifestations abounded in the admissions policy as well as the formal curriculum itself.

Throughout this entire period, 1953-1979, VPI's admissions policy evolved to reflect the state university designation. First, admissions standards became increasingly competitive and steadily selective. In a 1964-65 report, college officials reported that "it is, of course, necessary to raise the academic level of the university to match the technological and social changes which are occurring so rapidly." In 1968-69, college officials reported that the university's academic standards had been raised significantly in recent years and that the
level of student performance had been increased correspondingly.\textsuperscript{38} By 1977-78, according to an annual report, nearly 13,000 would-be students sought admission as undergraduates and almost as many were denied admission as were enrolled.\textsuperscript{39} Indeed, the same report boasted that Virginia Tech had been the first choice of a larger number of Virginia high school graduates seeking college admission than any other institution in the Commonwealth for more than a decade.\textsuperscript{40} The result of this combined state university status and increasing admissions standards was a "more highly qualified student group."\textsuperscript{41} True, however, to its land-grant heritage also came "cause for concern" over serving the masses. The 1979-80 annual report put it as follows:

With the increasing competition for admission, the University is attracting more highly qualified students; the University, however, seeks to provide educational opportunities for a broad cross section of the population.\textsuperscript{42}

Thus, the admissions standard itself became increasingly selective and, in so doing, much in line with the comprehensive university status of the institution while still sensitive to the land-grant act which conceived it.

A second aspect of admissions policy also reflecting the university status was the actual requirements themselves. In 1959-60, the SAT was instituted as requirement for all entering freshmen. Prior to this, for a long while, the requirement was made of only out-of-state
students. In addition, by 1979, before being formally admitted to the institution, a student must have graduated from an accredited high school or private preparatory school with a minimum of eighteen units. Of the eighteen units, the minimums for any curriculum were four units in English, two units in algebra, one unit in geometry, one unit in history, and one unit in a laboratory science (biology, chemistry, or physics). Thus, again, the university status of the institution was reflected in the evolved admissions policy--this time, from the perspective of the actual admissions requirements themselves.

A third aspect of the policy in tune with the university status of the institution revolved around profiles of those who applied for acceptance and those who were actually accepted. In 1961-62, VPI for the first time boldly proclaimed:

Beginning with the fall quarter, 1962, VPI will not accept students in any quarter of the regular session who do not meet entrance requirements in preparatory mathematics.

In 1964-65, the college reported that those admitted tended to rank near the top in pre-college achievement. The reasons for this were seemingly two-fold. One, of course, was the university status. The other, though, equally as important, revolved around the sheer number of applicants--5375 in 1965-66, for example. In a report to the State Council in 1965, college officials explained the situation
as follows:

With the increasing quality of its programs, VPI is receiving much larger numbers of qualified applicants. In this type of situation, admission is actually controlled by the availability of faculty and facilities. By admitting the most deserving students first, the facilities are filled before all qualified applicants can be taken. Unless cognizance is taken of this fact and increasing facilities are provided, it will be necessary to turn away increasing numbers of Virginia students who are qualified to complete an education at nearly any good educational institution in the country.48

Speaking perhaps more bluntly to the trend, a 1965 Virginia Tech article simply stated that the growth in the number of applicants "permits a rapid increase in the quality of the entering student body."49 Apparently, this trend was so much the case that in that same year college officials feared that though the high standards were not rigidly unreasonable, they have probably closed down doors to those who could benefit. They said:

This trend, if permitted to continue, ultimately would negate the university's basic mission as a land-grant university.50

Once again, sensitivity to the land-grant "mission" was evident in the midst of new-found university status and recognition.

But persist the university status did. In 1964-65, Graduate School admissions standards were also increased and a twenty percent mixture of students from out-of-state and out-of-country was encouraged to create "a highly successful environment" and to attract an excellent faculty.51 In
1965-66, only about one of every three applicants for admission could be accommodated.⁵² Too, in 1965-66, the median SAT score was 514 verbal, 598 mathematics, and 1112 total, with some forty-four percent of the freshman class ranked in the top first or second of the high school graduating class.⁵³ Indeed, between September 1963 and September 1964, the entering class advanced from fifty-five percent to seventy-three percent above the SAT combined verbal-math score of 1000.⁵⁴ Further, the SAT median total for entering freshmen enjoyed a more than eleven percent increase from 1960 to 1965. Indeed, report after report through 1979 marveled at the increase in the quality of the entering student with, in 1976-77, more than eighty percent of the entering class enrolling from the top thirty percent of their high school classes and with, in 1978-79, 238 of the 348 outstanding merit scholarship students from fifteen states electing Virginia Tech and with, in 1979-80, greater than forty-three percent of the entering freshmen ranked in the top ten percent of the high school graduating class.⁵⁵ And, again, as gesture to the founding land-grant act, college officials were sensitive to service to Virginia—but this time with a different rationale. In 1977-78, college officials reported that while eighty percent of the university's undergraduate enrollment was reserved for Virginia students, the remaining spaces were allocated to out-of-state students—"to provide a diversity of student
population essential to the University's educational objectives." The university status and its corresponding mission had clearly become the priority. Everything, even the land-grant ideal, was in service to it.

The institution's formal curriculum also reflected an evolving university status and commitment to an expanded mission. In so doing, it became one more piece of visual evidence for a new sense of balance between the institution's liberal and useful components. An analysis of the curriculum from three perspectives—structure, programs, and issues—lends credence to the assessment.

From 1953-1979, Virginia Polytechnic Institute structurally became Virginia Polytechnic Institute and State University. In 1953, VPI was instructionally centered on three units, called "schools." These three units were the School of Agriculture, the School of Engineering, and the School of Applied Science and Business Administration. The structure reflected the strong technical orientation of the institution and its rather narrow view of the 1862 land-grant act with its two leading objects of agriculture and the mechanical arts. Too, it reflected the sole support function of the liberal arts, identifying the relationship of liberal and useful curricular elements and defining, again rather narrowly, one of the other two secondary objects of the act.

From 1953 to 1963, VPI saw a subtle change in
orientation and land-grant view by adding two more schools to its structure and expanding two of its existent schools. In 1960, Home Economics became a separate school itself and Architecture became a part of the School of Engineering. And, in 1961, the School of Applied Science and Business Administration became the School of Business and the School of Science and General Studies. The former consisted of departments of economics, accounting, and business administration. The latter included the departments of history, government, English and foreign languages, philosophy and religion, biology, chemistry, mathematics, military and air science, physical and health education, physics, statistics, and a part of vocational education. All four alterations suggested a subtle broadening of institutional purpose and a subconscious distinctiveness of the liberal component of the institution's curricular structure.

Clearly, though, the most dramatic structural change denoting a university status evolution came in 1964. By the close of 1963-64, the Board of Visitors had changed the designation of all five instructional units from school to college. Too, the board altered the full name of the School of Science and General Studies to the College of Arts and Sciences. Indeed, by January 1, 1964, the curricular structure of VPI consisted of six colleges, the five just delineated plus a separate College of Architecture.
Enrollment in these six undergraduate colleges was distributed as follows:

- College of Engineering: 45 percent
- College of Arts and Sciences: 20 percent
- College of Business: 18 percent
- College of Agriculture: 10 percent
- College of Architecture: 5 percent
- College of Home Economics: 2 percent

This enrollment accounted for eighty-eight percent of the total college enrollment, with the remaining twelve percent in the Graduate School. As the year's annual report explained: "All of the colleges are sustaining substantial growth, although Architecture, Arts and Sciences, Business, and the Graduate School are expanding most rapidly." Even more significantly, the report noted, approximately one-half of the teaching responsibilities of the university now fall within the College of Arts and Sciences. Indeed, the curricular structure (and its distribution) was illustrative of an evolution of mission to university status.

Also, illustrative of the evolution of mission to university status were some 1970's curricular developments from the structural perspective. Perhaps the most interesting development is the growth the College of Arts and Sciences enjoyed. By the 1970-71 academic year, the College of Arts and Sciences accounted for fifty-seven percent of the 12,000 student enrollment—the highest percentage of any single college and approximately equal to a combined percentage of Agriculture (thirteen percent) and Engineering (forty-three percent). As the enrollment
continued to increase (to some 20,000-plus in 1978-79), the distribution pattern also continued to reflect a strong College of Arts and Sciences—as both a support entity and more importantly, a professional entity in and of itself. From a structural perspective, at least, university status had been realized through a strong liberal component—but hardly at the expense of the useful component.

Lesser 1970's curricular developments included an additional college, a revision of an existent college, and evolving national/regional recognition of individual colleges. Effective July 1, 1971, the university added one more college to its curricular structure—namely, the College of Education. A month later, the College of Agriculture changed its name to the College of Agriculture and Life Sciences. Both of these developments suggested that even the land-grant's two leading (and revered) objects had been adjusted for a "greater good." Still, however, struggling with the balance, in a 1973-74 report, college officials proclaimed that each of the seven academic colleges had a "unique focus." More specifically, they highlighted engineering and agriculture as being the two oldest with concentration on "preparing highly qualified professionals capable of managing and manipulating the complex technology of industry and agriculture." And, they saw the College of Arts and Sciences as the largest college "providing instruction in the arts, humanities, and
sciences for all of the University's students as well as for its own majors. By 1974-75, college officials were boasting about the College of Architecture being ranked seventh in a survey of professional schools published in Change magazine. And, by 1976-77, the College of Agriculture and Life Sciences was being identified as "already one of the ten largest agricultural colleges in the United States . . . [and] rapidly becoming a world center for research and instruction in animal nutrition." Again, the liberal and useful balance was, if not tipping toward the liberal, at least trying to equalize the liberal with the useful.

Thus, from a curricular structure perspective, the institution had undergone a metamorphosis—from polytechnic institute to comprehensive university. In 1972-73, within the seven academic colleges, there were 134 individual departments or other academic subdivisions, offering programs in sixty-one undergraduate and sixty-five graduate fields of study, plus a variety of interdisciplinary programs. Structurally, Virginia Polytechnic Institute had indeed become Virginia Polytechnic Institute and State University.

Too, the curricular programs and course offerings reflected VPI's evolution to university status, and again the evolution redefined the relationship between liberal and useful curricular components. Throughout the 1953-1979
period, the institution continued to refine existent and develop new "useful" programs of study—on both the undergraduate and graduate levels—while introducing liberal programs of study into the land-grant school's curriculum. In 1951, a regional daily newspaper reported that courses in philosophy and Christian ethics would be taught for the first time at VPI in the fall of that year. In 10 years later, in August 1961, college officials recommended and the Board of Visitors approved the establishment of majors in English, history, and political science. Degrees were actually offered in these fields for the first time the following academic year. In the 1962-63 catalog, thirty-eight undergraduate curricula leading to a B.S. degree were listed, covering agriculture, engineering, architecture, business, home economics, science, and general studies. Indeed, by 1964-65, even the graduate work had risen to fifty-three master's programs, with twenty-five programs in twenty-one departments at the doctoral level.

From this point, the development of the curriculum in light of its evolving university status is perhaps best indicated by a simple recording of new degree programs approved by the Board of Visitors after 1963.

1964 . . . . Ph.D. in Materials Engineering

1965 . . . . Department of Psychology and Sociology established; B.S. in Health and Physical Education; Department of History and Political Science split into two departments; Department of English and Foreign Languages
split into two departments

1966 . . . . M.A. in History; M.A. in English; B.A. in Philosophy; University-wide Extension and Research Division established

1967 . . . . Ph.D. in Industrial Engineering; B.S. in Psychology; M.A. in Political Science; elimination of undergraduate major in Business Administration and addition of majors in Finance, Management, Marketing, and General Business in the Bachelor of Business degree; B.A. in Art; Department of Psychology and Sociology split into two separate departments, effective July 1, 1968

1968 . . . . B.S. in Nuclear Science; M.B.A. degree; B.S. in Mathematics Education; Master of Forestry; Ph.D. in Geophysics; Baccalaureate program in International Studies; B.A. in Elementary Education; B.S. in Biochemistry; M.S. in Business with Economics major changed to M.S. in Economics; Ph.D. in Economics; M.S. in Business with accounting major became Master of Accountancy (but not a new degree)

1969 . . . . Master of Engineering degree; B.A. in Economics; Ph.D. in Nuclear Science and Engineering; B.S., M.S., and Ph.D. in Food Science and Technology; B.S. in Biochemistry in College of Arts and Science

1970 . . . . B.S. in Computer Science; B.A. in Theater Arts; Bachelor of Landscape Architecture; Ph.D. in Human Nutrition and Foods; M.S. in Psychology; M.S. in Health and Physical Education; B.S. in Urban Affairs; Department of Computer Science approved; Department of Performing Arts and Communication approved; B.S. in Science Education--existing program leading to B.S. in General Science discontinued; B.A. in Chemistry

1971 . . . . Doctor of Education

1972 . . . . Bachelor of Technology

1973 . . . . B.A. in Music; B.A. in Geography; Ph.D. in Computer Science and Applications; Ph.D. in Psychology

1974 . . . . Ph.D. in Environmental Design and Planning;
Off-campus graduate work became increasingly important, with research efforts dramatically expanded

1975 . . . . . . . . . . . . . . . . . . . . . . . . . . B.A. in Communications; Ph.D. in Management, Housing and Family Development; Center for the Study of Public Choice established; Certificate of Advanced Graduate Studies; D.Ed. in Administration and Supervision of Special Education

By 1979, Virginia Polytechnic Institute and State University offered 185 baccalaureate and graduate degree programs in all. Indeed, the curriculum and its formal programs reflected a university status—with curricula of study in both the useful and liberal areas, each a professional entity in itself and some simultaneously in service to others.

Almost naturally, with this evolved university curriculum and its professional standing came concerns and issues directed mainly at a balance of liberal and useful curricular elements. The College of Engineering's early 1960 curriculum study representatively illustrated the concerns from the useful perspective. In 1961-62, through a grant from the Ford Foundation, the College of Engineering conducted an intensive and extensive study of its curricula. Engineering college officials reasoned:

The foremost objective of an engineering curriculum should be to educate and train students so that they can practice their profession proficiently soon after graduation. . . . [In light of this focus on training and education] the question then remains as to how this balance of more science and technology on the one hand, and more humanistic and social studies on the other can best be achieved.
During this time, at VPI, approximately sixteen percent of the curriculum was devoted to the humanities, including freshman English and public speaking (thirteen percent if the two were excluded). The Engineer's Council for Professional Development (ECPD) and the American Society for Engineering Education (ASEE) in 1961-62 had a twenty percent accreditation requirement, which, according to the VPI study, "... practically no engineering schools meet... ." Presumably as gesture to the accreditation requirement, a number of major universities adopted a "two-year common core" approach for the lower division of engineering. The engineering committee which conducted the VPI study recommended that VPI's College of Engineering adopt a similar approach. More specifically, the committee proposed the following "liberal" component for all engineering programs:

- **Freshman Year:** Western Civilization Sequence and Freshman English.
- **Sophomore Year:** Literature Survey in a "traditional academic sense on esthetic considerations rather than on ideas."
- **Junior Year:** Sequence of courses in a "single humanistic or social discipline selected by the student."
- **Senior Year:** Readings selected to "synthesize the student's knowledge."

The study resulted in some course changes and curricular structure changes through 1979—each attempting to effect a
better balance of liberal and useful curricular elements.79

From the liberal perspective, the College of Arts and Sciences also wrestled with this issue of balance during this 1953-1979 period. More specifically, the issue became one of identifying or redefining the college's role in the university as a support service and a professional entity itself. The 1966 SACS report perhaps best captured the issue's essence:

The total College of Arts and Sciences is participating in the present extraordinary institutional growth at VPI. Not only is it expanding rapidly in size, but it is also beginning to assume the central institutional role that a liberal arts college normally occupies in a major state university.80

VPI's 1966-67 annual report echoed similar sentiments, characterizing the liberal arts college's metamorphosis from both perspectives, growth and role, as "dramatic."81 In light of the changes, the SACS report and VPI's annual report saw the need to direct major attention to the non-science areas of the institution.

The major attention resulted in impressive statistics for the College of Arts and Sciences as a support entity and a professional entity. In 1968-69, the college awarded 541 undergraduate degrees and one hundred graduate degrees, including twenty-four Ph.D.'s.82 By 1974-75, the college enrolled approximately one-third of the university's undergraduate students and was responsible for around seventy percent of its introductory level courses and one-
half of the university's graduate and undergraduate teaching load. Indeed, so intricate a part of the whole university had the College of Arts and Science become that the president highlighted it in the 1974-75 annual report. He said:

    The continued strengthening of the college has generated greater emphasis on academic excellence for the entire University.

Thus, the College of Arts and Sciences mirrored the evolution of the institution. As VPI became VPI&SU, so too did the college realize an institutional role: The issue surrounding the realization had liberal and useful undercurrents. Slowly, university and college officials grappled with what came to be recognized as two essential functions of the liberal arts college—namely, support service and professional standing.

From a more global or holistic perspective, the issue of balance also surfaced under the guise of "instructional mission" in a university setting. In September 1972, a Task Force for Innovation in Instruction released a report examining the university's instructional mission. The committee addressed its version of the balance issue as follows:

    . . . there is widespread feeling that the instructional mission has not received its proper share of attention in recent years. As we sought to emerge as a prominent university, we adopted the values of prestigious institutions and followed them into an unintentional neglect of teaching.
Of course, the implicit comment here was that as VPI became a state university, it concentrated on its research and service missions often at the expense of its teaching mission.

To balance better this shift in values, in general terms, the committee called for a reaffirmation of the instructional mission of the university. In more specific terms, the committee made ten recommendations to effect this reaffirmation. Treating different aspects of the university, each recommendation attempted to integrate liberal and useful elements of a university curriculum irrespective of a particular college or program of study. The committee reasoned:

Rather than separating general and pre-professional education (e.g., consolidating general education into the first two years), this University should seek a greater degree of interconnection and interaction between the two types of education.86

Five years later, one visual manifestation of a "greater degree of interconnection and interaction" was the organization of the Center for the Study of Science in Society.87 The center's purpose was to look for interdisciplinary approaches to society's problems. From this global or holistic perspective, the issue of balance centered on the university mission itself. The concern was still for achieving a better balance of liberal and useful elements. The vehicle for achievement, however, was the instructional mission itself, in both liberal and useful
settings.

The concern for the instructional mission was perhaps justified in light of, if nothing else, the rapid growth and extent of the research and extension missions. In 1963 T. Marshall Hahn, in his inaugural address, called for an enhancing of VPI's basic and applied research efforts. He said:

VPI's programs of both basic and applied research not only must provide the instructional experience required for developing the next generation of research workers on whose efforts will depend the continuing advancement of our technology and growth of our economy, but also must provide the growth of our knowledge capital on which today's industrial growth can be based. . . . Our research programs must emphasize not only applied research answering the immediate problems of technology, but also basic research on which all applied research is based and without which we should deplete our reservoir of fundamental knowledge.88

In response to these research needs, the college's Research Division was established in 1966, pushing back the frontiers of knowledge along many fronts and recording additional facts on many recognized problems. Annual research funding exceeded nine million dollars by the end of the 1960's.89 By 1978-79, the overall research funding exceeded thirty million dollars, approximately half of which came from direct appropriations for research focused on Virginia needs and half from grants and contracts awarded by federal agencies, corporations, and other business firms on a competitive basis.90 The work of the division, reported in
considerable detail in its official reports, and on a much smaller though more popular scale in *The Techgram*, deserves to be brought together in a popular form and placed before the people of Virginia.

Such a publication would be voluminous; it would depict wide ranging, dedicated, painstaking research and exciting scientific adventure carried out on an ever-widening front. Among the many activities of just one year, for example, it would include such diverse projects as the investigation of the potential effects of an oil pipeline across Alaska, the economics of crime, the freshwater algae in the Antarctic, the elementary particles of protons, the wind measurements near the earth's surface, and even the feasibility of producing catfish in Pittsylvania County. It would include a four-year research project on the nation's energy development and supply situation and a sophisticated computer energy modeling system. It would include four university centers involved in the planning, budgeting, and guidance of interdisciplinary and multidisciplinary research programs--namely, the Virginia Center of Coal and Energy Research, the Virginia Water Resources Research Center, the Center for Environmental Studies, the Industrial Center, and the Center for Systematics Collections. 91 Indeed, the publication would reflect a university commitment to the research of its mission.

As the Research Division matured through 1979, the
emerging relationships within the university and within the division frequently made it possible to pool the resources of several colleges to develop a major laboratory or to assemble interdisciplinary teams to work on significant problems. The division also cooperated with research workers at other universities on the investigation of complex and significant problems.

The research effort increasingly involved the talents of groups and teams. Traditional departmental and collegiate lines became less important as research projects became more complicated and sophisticated. Pooled resources often made it possible to purchase equipment and machines costing enough to have operated the early Virginia Agricultural and Mechanical College for decades. Success generated elements of further success as more foundations and private industry began to look with favor upon VPI as a place for investing their funds. Thus, in a sense, a liberal-useful balance within the research realm was at least attempted. But, as at many other institutions, lack of funds often prevented the undertaking of research in many pressing areas. Similarly, the question of proper balance between research and teaching still lurked in the background—and remains unanswered even to this day.

The institution's extension efforts also reflected rapid growth and, in so doing, impacted upon the liberal-useful balance from a more global or institutional
perspective. In the 1964-65 annual report, college officials noted:

A land-grant university necessarily must operate as a statewide institution: its extension activities extend into virtually every community in the state. VPI's long history of effective farm and home extension work is well known. The university's extension services now are being adopted to the basic changes apparent in Virginia's economy.92

In response to this university commitment to extension, VPI's extension programs were reorganized into a new university-wide Extension Division in 1966. The division's activities included work in business, engineering, architecture, arts and sciences, and education.93 In many respects, the division itself was one of the highly significant developments in making the university's facilities and personnel available to more and more of the off-campus public. Indeed, particularly since 1966, the thrust of extension work has been toward organizing and using the resources from all colleges in the university in the economic and social development of the state.

The operation of the Donaldson Brown Center for Continuing Education, with its new wing completed in 1968, under the direction of the Extension Division brought people to the campus from business, industry, agriculture, and professional organizations for courses and conferences specifically adapted to their needs. The center also provided a comfortable meeting place for the off-campus
extension faculty when they returned to the campus for conferences and in-service training programs. The availability of the facility along with the quality of the programs provided for extension workers had a beneficial effect not only on the extension program, but also on the morale of the off-campus faculty.

The on-campus redirection of extension work was not unrelated to off-campus developments. The branch colleges were incorporated in the community college system when Virginia began the development of a statewide system of two-year colleges for both academic and technical training. Without Hahn's support, in fact, it is unlikely that the 1966 Community College bill would have won legislative approval. Too, in 1972-73, under the auspices of the Extension Division, the Northern Virginia Educational Consortium was organized. It consisted of Virginia Tech, the University of Virginia, George Mason University, and Northern Virginia Community College. Graduate programs were also developed at centers in a number of sections of the state. In the early seventies, off-campus enrollment in graduate courses expanded dramatically. In spring 1973, more than 1,500 graduate students were enrolled in off-campus classes, an increase of nearly fifty percent from the same quarter a year earlier. By 1978-79, off-campus graduate instruction involved more than 500 courses and some 8,000 course enrollments by part-time graduate students at
locations throughout Virginia. Advanced degrees were awarded to 241 in June 1979.

In the academic year 1968-69 alone, the combined off-campus credit enrollment increased by more than 250 percent over that of the preceding year. The non-credit enrollment also saw large increases. As Virginia continued the trend toward greater industrialization and urbanization, the university's extension services were adapting to new demands for service in urban and suburban areas. In keeping with the changing nature of the program, the titles of country agent, farm agent, and assistant county agent, names long familiar to thousands of people in the state, were changed to a single title, extension agent.

The new direction of the Extension Division emerged so rapidly that many Virginians remained unaware of it through the early-to-mid-seventies. In the late sixties, the thrust of the extension effort was not diminished in rural Virginia, but it began to have an impact on urban areas as well. Even the 4-H enrollment, which in the last four years of the sixties more than doubled, shifted from eighty-five percent to forty percent rural. By 1978-79, creative educational programs in 4-H clubs for rural and urban young people expanded 4-H membership to some 202,000 and involved 11,000 volunteer workers throughout the state; more than $14 million in gifts and contributions were generated for 4-H centers, all of which would be in full operation by 1984.94
In 1975-76, extension personnel estimated that they made more than 1.7 million instructional contacts with citizens throughout Virginia during the year, through seminars, short courses, individual contacts, and a variety of other educational programs.\(^9\)\(^5\) Certainly, by the end of the seventies, the plea uttered more than half a century earlier by the father of extension work in Virginia, Joseph D. Eggleston, for extension to contribute to the improvement of the total life of the people was in the process of fulfillment.

In short, extension was indeed yet another manifestation of the evolving university status from 1953-1979. And, as with extension's companion object research, in its own way, it grappled with the proper liberal-useful balance from an institutional perspective.

And so the institution's curriculum—both narrowly from the aspect of formal programs and more broadly from the aspect of research and extension—unfolded the saga of a polytechnic institute that had become a comprehensive state university. In both form and function, the curriculum reflected a mission no longer confined to the letter of the 1862 land-grant act's two leading objects but still very much in touch with what now had become the act's spirit of distinct service to the state and nation. Of course, the relationship between liberal and useful curricular elements had been altered. Liberal no longer meant just support;
useful no longer meant just practical. From the perspective of curriculum, both elements had undergone professionalization and, in the process, the university status was realized.

Its Instruction Component

The second visual manifestation of the polytechnic institute's new-found university mission was instruction. Clearly, it too reflected a professionalization in both form and function. In so doing, liberal and useful components meshed, adjusting once again their delicate balance. An analysis of instruction from four of its components—namely, overall methodology, extracurricular activities, military tactics, and physical facilities and atmosphere—lend credence to the assessment.

From the perspective of overall methodology, the visual evidence of university professionalization took primarily the form of faculty reports and their corresponding recommendations. In 1959-60, a specially formed faculty Committee on Instruction outlined key steps involved in ensuring good instruction. In its final faculty report, the committee developed such items as "preparation and use of a course syllabus," "preparation and use of notes," and "delivery of material prepared." For the first time, the faculty treated these items as an integral part of their instructional task and their professional duties as faculty members. The same report—again for the first time—also
recommended a comprehensive system of evaluation for programs of study. More specifically, the faculty committee recommended evaluation of instruction from three perspectives—namely, the evaluation of the student, the evaluation of the alumni, and the evaluation of the instructor. As the committee reported: "Evaluation is one of the important links in the entire process of modern education." Again, faculty for the first time began to look to professionalizing the "form" of the college's "function." Indeed, by as early as 1959, VPI's instructional aspect, from purely a methodological perspective, had begun to "fit" the university mission and corresponding professionalization that was evolving.

The remaining years in this evolutionary period of institutional saga, 1960-1979, merely served to refine the methodology and polish the professionalization introduced in the 1959 faculty report. For example, in 1963-64, the college's grading system took on more of a university quality with the deletion of the E or conditional grade altogether. Later, in 1979-80, the grading system became even more reflective of a university by following the lead of several other universities in denoting plus and minus.

But, perhaps most notably, another faculty report on instruction was issued—this one in September 1972 under the guise of the Task Force for Innovative Approaches to Instruction. This task force, formed by President Hahn in
March 1972 was charged with "making recommendations for the development of new academic methods, ideas and programs to serve the university's needs for the rest of the 1970's, . . . giving new stimulus to the academic development of the University, . . . " Rather explicitly, Hahn identified his purpose for the task force as increasing the high rate of academic development of the college from a military agricultural and mechanical school of 132 to a comprehensive state university with an enrollment of nearly thirty percent women. In so doing, he rather closely linked instructional methodology to the pursuit of university excellence and encouraged greater professionalization.

The task force's efforts resulted in a report eight months later which succeeded in presidential purpose: It examined existent methodology and assessed methodological innovations. In a general sense, the committee called for a renewed emphasis on creative and innovative teaching. Within this context, it noted Albert Einstein's comments when he reflected on his experience at Harvard:

"One had to cram all this stuff into one's mind, whether one liked it or not . . . It is in fact, nothing short of a miracle that the modern methods of instruction have not entirely strangled the holy curiosity of inquiry." In an effort to encourage "the holy curiosity of inquiry," the task force more specifically suggested further application of new instructional techniques, e.g., autotutorials, CCTV, programmed instruction, computed-assisted
instruction, and tele-lectures.\textsuperscript{104} Again, the attention to refinement, polishing, and fine-tuning of the quality of instructional methodology suggested an evolving professionalization and a university mission.

Thus, well with William Shakespeare, the historian might proclaim: "The play's the thing." For from the perspective of instructional methodology, it was the process of professionalization as manifested in two key faculty reports on instruction which most reflected a university mission in form and function. The recommendations, while certainly supportive, became almost incidental. It was that process of inquiry and institutional assessment which characterized the Jeffersonian idea of the university in the abstract and VPI's concrete manifestation of it. Fittingly, throughout this entire period, the university remained in a constant state of becoming. From the instructional perspective, the question was no longer whether the liberal or useful element should dominate; the intrinsic and extrinsic values of theory and practice were assumed. Rather, the question was how to best mesh the two to support the university VPI had become.

The extracurricular component of instruction also illustrated the university's evolution. In so doing, the extracurriculum reflected an attempt to balance liberal and useful elements. Throughout the 1953-1979 period, the college's extracurriculum became increasingly diverse and
increasingly collegial. The 1961 "Information for Prospective Students," for example, placed a much greater emphasis on extracurricular opportunities than did the 1947 one. In the 1965 Virginia Tech pamphlet, there was a highlighting of a seemingly recent commitment to intercollegiate athletics. Of this activity, President Hahn remarked:

As Virginia Tech continues to emerge rapidly in national distinction, it is our desire that the development of the intercollegiate athletic program keep pace with the total development of the university. ... Our objective for Virginia's land-grant university is a balanced athletic program with high academic standards and one that is nationally competitive. This objective is evident both from our record of recent years and from the athletic schedules now developed for the years ahead.105

Later, in 1972-73, the Board of Visitors approved a fraternity/sorority system, ending an official ban on the campus social organizations which had been in effect for almost a century.106 Indeed, by 1972-73, the university cultivated an exceptionally diverse range of student activities, including concert series, theatrical productions, classical/popular films, study abroad programs, lecture series, visiting scholars programs, and honors programs. Even more importantly, in 1976-77, a local chapter of Phi Beta Kappa (the prestigious honor society for the liberal arts) was inducted, the university's performing arts programs drew national attention with the production of Beckett's Waiting for Godot at the American College Theater.
Festival at the John F. Kennedy Center for Performing Arts in Washington, D.C., and a university team placed thirteenth in the William Lowell Putnam Mathematical Competition. In short, from the instructional perspective of extracurricular activities, 1953-1979 reflected an evolving university mission. Again, the issue was not whether such activities were appropriate to the training or professionalizing aspect of the institution. Rather, it was how best to achieve a balanced collegial experience for each student that was representative of a university education and characteristically a delicate balance of both liberal and useful elements.

Perhaps, the most significant extracurricular sign of VPI's evolution into a university was the de-emphasis of military tactics as the polytechnic institute was metamorphosed into a university. In 1964, for the first time in the history of the school, membership in the Corps of Cadets became voluntary for all male students, beginning with the 1964-65 session. Needless to say, this radical departure from tradition produced an almost immediate crisis when it was announced by the Board of Visitors on May 18, 1964. In one way, however, the departure should have been expected. By 1964, the polytechnic institute was well on its way to achieving university status. In this sense, the decision became less a commentary upon the corps and more a commentary upon the institute's evolution into a university.
It reflected not only a commitment to a more comprehensive purpose but also a better balance of liberal and useful elements. It was a natural part of the unfolding saga that was to become Virginia Polytechnic Institute and State University. As further testimony of both the commitment and balance, in 1966, the cadets and civilians united to form one student government. From that point through 1979, the military element of the institution—even in its voluntary form—was under constant scrutiny, fluctuating in enrollment and seemingly trying to fit comfortably, or at least unobtrusively, into the evolving university's reason for being.

The physical facilities and institutional atmosphere also reflected the evolving university mission and characteristic university balance of liberal and useful elements. A brief analysis of the physical plant, architectural design, and academic climate provides insight into the instructional aspect.

Without a doubt, during the 1953-1979 period, the physical plant itself experienced the greatest period of expansion and refinement in the history of the institution, and, in so doing, reinforced its university status. Between 1953 and 1962, for example, more than $20,000,000 in additions to the physical plant were made. Dormitory spaces were increased from 1,976 to 3,904. Several major academic buildings were constructed. Athletic facilities expanded
dramatically during this period, including the baseball field (1954) and the golf course (1958). The tremendous rate of physical expansion continued in 1962-1979, with still more dormitory space; more academic buildings; and more athletic facilities, including a 207,848 square foot academic building to house some of the liberal arts (1967), and a 190,357 square foot stadium (1969), and a 71,189 square foot field house (1971) to house intercollegiate athletic events. Figures 2, 3, and 4 reflect this dramatic expansion in pictorial map form 1945, 1964, and 1971, respectively. Indeed, from just the perspective of the physical plant itself, the evolving university status and characteristic university balance of liberal and useful elements were evident.

The architectural design of the physical plant also reflected the university status. Throughout the university's evolution, the architecture has been gothic. Though one suspects this design initially was perhaps accidental, by 1973-74 college officials were consciously attaching symbolic significance to it—again with "university" undercurrents. According to the 1973-74 report:

The individual is the aim of education. At Virginia Tech, the attention to the individual is reflected in its buildings. The gothic architecture is silently adorned with many sculptures that symbolize the attention to detail so necessary on a larger campus. . . . The heritage . . . in the diminutive architectural detail incorporated in the stone buildings has a
strong parallel in the day-by-day operations of the University. One of the most important essentials of the University's management, as Virginia Tech evolves as a major state university, is to ensure that as a moderately larger institution it does not become insensitive to the concerns of its individual students, as well as those of the men and women who serve on the faculty and staff. The day-by-day activities of those who serve as teaching faculty, as counselors, as administrators, as student personnel leaders, or in any capacity, necessarily must be sensitive to the emotional and social components of student life, as well as to the University's academic responsibilities. . . . As the diminutive artwork wrought in stone softens the massive scale of large buildings, appropriate concern for the needs of the individual student can ensure that students, faculty, and staff relate effectively to one another as individuals. 109

Thus, purely from the perspective of architectural design, the institution had consciously adopted a university status. The architecture at once came to reflect both the comprehensiveness of institutional mission and balance in institutional purpose.

In similar fashion, the academic climate of the institution reflected an evolved university status. By 1972-73, college officials were concerned not only with physical facilities and their components but also with the college's atmosphere itself. In the fall 1972 Task Force on Instruction Final Report, the faculty committee made the following recommendation:

One of the overreaching recommendations of the Report is that the University climate as perceived by all concerned must be brought into alignment with what the climate should be for educational excellence. 110
In the same report, the committee expressed uncertainty about an *espirit de corps* of the university— as the committee put it, "spirit and tone which characterizes the whole and gives the University its sense of identity." The task force further suggested that the university community

"... can and should strive to move more decisively than before in the direction of that intellectual atmosphere traditionally associated with the great universities: the spirit of free and open rational inquiry, creating a context in which the great issues of our time can be intelligently debated."

In more specific terms, the task force recommended creating a stimulating intellectual climate which both tolerates and appreciates the diversity of the faculty and student body.

In yet another fall 1972 faculty report—this one on instructional mission—this faculty committee recommended an expansion of efforts to "beautify the campus and provide settings which facilitate informal learning." The committee said:

"... a university campus should be aesthetically inspiring and designed to enhance informal exchanges and learning experiences."

More specifically, this committee saw a need for benches dispersed over the campus in attractive locations to provide places where members of the university community could sit and talk. Too, the committee encouraged more widely dispersed and pleasant snack-bar facilities to serve as
informal meeting places.

In both reports, the focus was on creating a university atmosphere conducive to and expressive of the university mission. In a sense, this instructional aspect was acknowledging that a university is more than the sum of its tangibles. It is, in part, spirit, feeling, climate which gives it both form and function. In this respect, the liberal-useful balance again meshed. By 1979, the campus looked like a university campus. More importantly, one suspects that by 1979, it also felt like one.

Thus, instruction was a second visual manifestation of the polytechnic institute's evolution into a university. Slowly, from 1953-1979, care was taken by college officials to tailor the institution as a university with a distinct university mission and instructional sense of professionalism. Overall methodologies merely served to polish and refine the university "act"--with faculty committees examining intently and deliberately the university's instructional mission. Extracurricular activities came to project a "balanced" university image, seeking to develop and enrich the whole person--culturally, socially, physically, and professionally. Indeed, even the college's military element took on the university image by becoming optional rather than mandatory as it had been for some ninety-two years. And, perhaps most notably, the campus itself began to project the revered university
image—not only in how it looked but also in how it felt. While the physical plant expanded at a dramatic rate, the climate or atmosphere grew increasingly university in spirit. Clearly, in this second visual manifestation of mission—instruction—was mirrored in letter and spirit the university Virginia Polytechnic Institute had become.

Its Faculty Component

The third and final visual manifestation of the institution's evolving university mission was the faculty. As with instruction, the faculty's evolution reflected a growing sense of professionalism, mirroring the institution's rise to university status. This evolving sense of professionalism and accompanying institutional rise to university status are perhaps best traced chronologically, in five basic periods.

The first hint at an evolving professionalism and rise to university status in terms of faculty came in the early 1950's. In 1952-53, the Southern Association of Colleges and Secondary Schools criticized VPI for not having a formal statement on academic freedom and tenure. In response to this criticism, the college developed one in 1953. The statement is excerpted below:

The Virginia Polytechnic Institute considers the "1940 Statement of Principles" on academic freedom and tenure of the American Association of University Professors a reasonable statement of policy for assuring the rights and responsibilities of its faculty members. Because of the fact that V.P.I. is Virginia's land-grant college, its faculty members must maintain
constant awareness to all the obligations and responsibilities attending performance of official duties. 116

At the same time and as part of its Academic Freedom and Tenure Policy, VPI also established a "Faculty Advisory Committee on Academic Freedom and Tenure and Its Functions"; its purpose was to signify "the desire of the school as a whole to be absolutely fair and just with members of the faculty and to protect them from abuse and prejudice." 117

With both academic freedom/tenure-related actions, the faculty as an institutional whole realized a budding sense of professionalism. Too, while timing was not yet ripe to identify VPI as Virginia's land-grant "university," the actions reflected a budding rise of the institution to university status.

The budding sense of professionalism in the faculty began to reach fruition in the late 1950's, still reflecting the gradual rise of the institution to university status. In 1959, the faculty Committee on Instruction delineated in its July report the functions of a faculty member, including his intellectual and community responsibilities. As a kind of rationale for the delineation, the committee noted the following:

The practical and the ultimate responsibility for realizing the goals and objectives of an educational institution rests upon its faculty. 118

Based on this rationale, the committee further listed seven recommendations with regard to "recruiting and maintaining
an outstanding faculty." Among them were included:

1. Salary adjustments, including a recognition of current economic standards.
2. Promotions based on merit without competitive offers.
3. Teaching loads based on type and level of courses taught, other assigned duties and responsibilities.
4. College objectives, administrative policies, and faculty responsibilities clarified in a handbook published for the faculty.

Additional recommendations treated the "improvement of VPI's Present Faculty." They included fixed teaching loads, sabbatical provisions, and specified fringe benefits. Again, though perhaps not consciously, with these recommendations, the faculty moved a little closer to a university sense of professionalism. Interestingly, too, this time the move was internally motivated and directed—commentary in itself upon the evolving university status of the institution.

The early 1960's advanced the university sense of faculty professionalism even further along. In May 1961, the Board of Visitors, along with college officials, examined the salary situation at VPI. In so doing, they cleverly equated VPI as a "university type institution" with the need for more competitive faculty salaries. More specifically, they said:

It is useless to speak of southern regional averages and unrealistic to consider the salary scale of VPI in terms of the scales of State Colleges and Teachers Colleges. VPI is a land-
grant college of the university type and at the beginning of the 1961-62 session, will probably be among the last four of fifty-two land-grant institutions which have not recognized the fact by a change of name. VPI is in keen competition for qualified faculty with all land-grant universities in all fields except agriculture throughout the nation. She is, indeed, in competition with the University of Virginia—and of course comes out a very poor second.122

With this delicate interweaving of mission and faculty salary, the board and college officials proposed two faculty salary scales for each professorial rank—one "critical," making the college "competitive with other land-grant institutions in the nation"; the other "basic," making the college "competitive with other land-grant institutions in the South." For purposes here, the most important point to be made is the advancing sense of faculty professionalism in a university clearly in its own state of becoming. Increasingly, the faculty became a visual manifestation of the institution's evolving university mission.

The mid-to-late 1960's brought to fruition the university sense of faculty professionalism—both internally and externally. The following facts serve to illustrate this generalization. In 1964-65, the college catalog characterized the faculty as an "excellent faculty [that] holds advanced degrees from colleges and universities throughout the world."123 The institution's 1965-66 self-study, an institutional newspaper article, and the subsequent SACS 1966 Visiting Committee report provide the basis for an analysis of this characterization.
From a scholarly perspective, the self-study categorized "excellent faculty." In 1965-66, the institutional self-study reported that several departments—particularly in agriculture and engineering—had felt increasingly pressured to do research and publish the results to the point that "teaching has become a necessary but distracting chore." The self-study further reported that the proportion as well as the number of faculty holding the Ph.D. or equivalent had increased in each college, with the total institutional change from 32.8 percent to forty-eight percent, or from 157 to 329 individuals in the past ten years. Conversely, the self-study reported that the number of faculty with only bachelor's degrees had decreased from 18.6 percent to 10.7 percent, or from eighty-eight to seventy-three individuals in the past ten years.

From a less critical perspective, a 1965 Virginia Tech issue noted that legislative action in 1964 equated the college's average faculty salary with the average of land-grant universities in the United States and removed arbitrary steps within the ranks, better enabling the college to attract high-calibre faculty. The same issue also noted an increasing competence of the faculty as manifested in the degree levels, the institutions granting the degrees, publications, and recommendations from renowned leaders in various academic fields. The issue cited "well over one hundred faculty members" holding degrees from
distinguished institutions added to the faculty since 1963.

By the time of the 1966 Southern Association's visiting committee report, the calibre and corresponding professionalism of the faculty had reached a level clearly approaching a university standard. Indeed, most of the committee's faculty comments were favorable, suggesting a university sense of faculty professionalism. For example, the committee was pleased to find that more than two-thirds of the staff members had doctoral degrees and that more than fifty percent of the teaching faculty held doctorates.\textsuperscript{122} The committee acknowledged that VPI was engaged in major faculty expansion designed to staff new programs and upgrade the quality of faculty throughout the institution.\textsuperscript{129} On the positive side, in general, the committee reported that the academic preparation of the faculty "clearly meets" the Southern Association standards, with "its quality ... rapidly improving."\textsuperscript{130} By their decidedly professional connotation, the committee's recommendations also spoke to the evolving university status of the institution. The committee's recommendations included an urging to produce a faculty handbook and a "university-wide" faculty organization.\textsuperscript{131} Thus, by the end of the 1960's, the faculty had clearly come to reflect the new-found university mission of the Virginia Polytechnic Institute—complete with all of the prestige and laurels as well as all of the controversies and paradoxical values.
The 1970's served as a time to enhance the professional quality of the faculty, as visual manifestation of the university mission. According to the 1975-76 Statement of Purpose:

A university can be no better than its faculty. The reputation of a higher educational institution is based on the teaching, scholarship, and service efforts of its faculty.

With this statement as a background for analysis, the 1975-76 University Self-Study highlighted the academic qualifications of the faculty and made recommendations for an enhanced professional quality of the faculty. Of professional competence and development, the study noted:

Two important components in building and maintaining a faculty of high quality are: recruitment of highly qualified persons to fill new and vacant positions; and, perhaps more important, establishment and maintenance of a climate within the University that promotes and encourages the continuing professional development of the faculty. Without such an environment, it is unlikely that a faculty of high quality can be maintained.

Thus, by 1975-76, the university had cultivated a professional sensitivity and commitment to enhance both the calibre of its faculty as measured by academic qualifications and the overall intellectual climate for its faculty.

From the perspective of academic qualifications, the enhancement of the faculty had been achieved. For example, more than two-thirds (sixty-eight percent) of the 1975-76 faculty held doctoral degrees, compared with slightly fewer
than one-half (forty-eight percent) of the faculty ten years earlier. Too, the percentage (twenty-seven percent) of the faculty whose highest earned degree was a master's had decreased, although the actual number (399) had increased. Finally, during the 1966-1976 decade, there was a reduction in the number of individuals with a baccalaureate as the highest degree earned from seventy-three (10.7 percent) to sixty-six (4.5 percent).  

From the perspective of intellectual climate for the faculty, the enhancement was in evolutionary stages. The 1975-76 University Self-Study profile of the faculty portrayed the faculty as "busy people, actively engaged in teaching, research, and extension; in other scholarly activities and in the committee work essential for the effective functioning of the University." As a matter of fact, in the self-study questionnaire, most of the faculty (thirty-eight percent) perceived the academic environment of the university as conducive to their scholarly growth. Yet, many thought greater attention to this particular aspect of their professionalization—collectively and individually—needed to be paid. Recommendations to this end included an expanded study/research leave program, a greater use of the visiting professor program as a means of professional development, expanded use of faculty exchange and faculty enrichment programs, a modified consulting policy to encourage professional contact and development, and a
modified scheduling of classes and other assignments to provide faculty members a greater amount of time for scholarly activity. Other recommendations revolved around improving communication within the university at all levels, defining more clearly the function of faculty associations, providing faculty members with annual evaluations of performance and improving bookstore services. The overall feeling of the faculty about the university's intellectual climate and each recommendation directed at enhancing it strongly reflected a faculty quite clearly professionalized as part of a mission quite clearly of university status. By 1979-80, the university's annual report boasted of a total faculty of 1800--each in some way contributing to a realization of the university's triune mission of instruction, research, and extension.

Thus, the faculty during the 1953-1979 period was a visual manifestation of the institution's evolving mission. As VPI moved closer and closer to university status, so, too, did the faculty become increasingly professional, both collectively and individually. Their academic qualifications came to be those of a university faculty. Their concerns, duties, and interests came to reflect a university's raison d'être of instruction, research, and service. Indeed, by 1979, the faculty of Virginia Tech was one aspect of the university the polytechnic institute had become.
Conclusion

And, so, the saga ends much where it began in Chapter IV, telling the story of an institution clearly land-grant in purpose and totally in service to the state and nation. In the last period of saga, 1953-1979, the institution gradually realized, in name and in mission, full university status. The curriculum was comprehensive in purpose and scope, with a competitive admissions policy, formal graduate and undergraduate programs of study spanning seven academic colleges, including a College of Arts and Sciences, and nationally recognized research and extension divisions. The instruction was diverse and innovative. The faculty was professional—as both scholars and teachers, on both an individual and collective level. Indeed, evidence of a university mission and identity pervaded the entire institution.

In the process, the liberal-useful balance also reached university heights. In addition to their support role, the liberal arts achieved a professional recognition all their own. The useful arts too achieved a new-found professional recognition with the incorporation of theoretical principles to already existent practical ends. Granted, there were Walt Whitman-like contradictions in this evolution to university status with liberal-useful university balance. No longer was Virginia's distinct land-grant school exclusively technical in focus. Nor was it subscribing to
the letter of the 1862 land-grant act which conceived it. The agricultural and mechanical arts were not the only "leading objects" while "classical studies" became more than secondary objects. "Military tactics," while not excluded, were extracurricular in nature and hardly central to the institutional mission. Indeed, the 1862 act's letter of intent had succumbed to a greater spirit of maturation. And herein lies the supreme paradox: Through this spirit, the Virginia Agricultural and Mechanical College became the Virginia Polytechnic Institute and State University and, ironically enough, continued the land-grant saga of service to the state and nation.
Notes to Chapter VII


4Ibid., p. 5.

5Ibid., p. 6.

6Ibid.


10Minutes of Board of Visitors, Meeting of 5 October 1964, p. 61. Minutes are preserved on microfilm and are paginated consecutively, Records Management, Virginia Tech, Blacksburg, Virginia.

11Ibid., p. 62.

12Ibid., p. 63.


15Ibid., p. 47.

16Virginia Polytechnic Institute Self-Study, 1965-66,
352


18Ibid., pp. III-13, III-14.


21Ibid., p. 6.

22Ibid.

23Ibid., p. 73.


27An "amplifying statement" issued on 29 December 1972 served to address the question of "how" with regard to the 1971 mission statement, giving the specifics of its implementation. The 1972 statement was developed by President Hahn and his administrative staff at the request of the State Council for Higher Education in Virginia. Each specific presented reinforced VPI&SU as both a comprehensive and land-grant university.


32 Ibid., p. AC-4.


34 "Virginia Polytechnic Institute and State University General Summary Statement," Prepared by John D. Wilson, Provost, for IPAC work of ad hoc sub-committee, 11 April 1978, Provost's Files, Records Management, Virginia Tech, Blacksburg, Virginia, p. 3.


40 Ibid.

41 Ibid.


43 Catalog, 1959-60, University Archives, Virginia Tech, Blacksburg, Virginia.

44 Catalog, 1979-80, University Archives, Virginia Tech, Blacksburg, Virginia.


49 News Clipping, Virginia Tech, 1965, President's Files, Records Management, Virginia Tech, Blacksburg,
Virginia.


[57] All structural changes noted are taken from miscellaneous reports, catalogs, unless otherwise noted.


[61] Ibid., p. 10.


[63] "Event" cited in several sources, annual report, Board of Visitors' meeting minutes, and various promotional publications.


[65] Ibid.


[67] "Annual Report, 1976-77," University Archives,
Virginia Tech, Blacksburg, Virginia.

68"Annual Report, 1972-73."

69News clipping, Clifton Forge Daily Review, 25 August 1951, Miscellaneous Faculty Files, University Archives, Virginia Tech, Blacksburg, Virginia.

70Minutes of Board of Visitors, Meeting of 7 August 1961, p. 117.


72"A Study of Engineering Education at the Virginia Polytechnic Institute," Bulletin of the Virginia Polytechnic Institute 54 (September 1961). This study was supported by a grant from the Ford Foundation.

73Ibid., p. 19.

74Ibid.

75Ibid.

76Ibid., p. 36. Five institutions which adopted the two-year core were Cornell, Ohio State, University of Connecticut, California Institute of Technology, and the University of California at Berkeley. Of these five, the first two had five-year curricula.

77Ibid., p. 55.

78Ibid., pp. 21-22.

79Throughout the period, the College of Engineering experienced continued growth, constantly strengthening and revising its curricula to reflect the changing needs of industry and society. Simultaneously, though, it became increasingly sensitive to the liberal element. In a 1966 Southern Association report, the SACS committee noted:

With the establishment of the College of Arts and Sciences, the College of Engineering has become more receptive to working out a high quality system of liberal studies in all curricula. (p. 47)

Too, in 1968-69, engineering faculty created a series of interdisciplinary interest groups designed to increase interaction between traditional departments through college reorganization. ("Annual Report, 1968-69."
356


82 "Annual Report, 1968-69."

83 "Annual Report, 1974-75."

84 Ibid.


86 Ibid., p. 8.


88 T. M. Hahn, Jr., "Inaugural Address," p. 6.

89 Duncan Kinnear, The First 100 Years, p. 449.


91 Ibid., p. 14


93 Extension efforts information taken from miscellaneous reports and pamphlets, unless otherwise noted.


97 Ibid., pp. 26-32.


100 Catalog, 1979-80.

101 T. Marshall Hahn's Introductory Remarks on the New

102 Ibid.


104 Ibid.

105 Appears to be a promotional pamphlet on Virginia Tech, dated 1965. Miscellaneous Faculty Files, University Archives, Virginia Tech, Blacksburg, Virginia.


107 Figures taken from various reports.

108 In the university's response to the SACS visiting committee's report, the following acknowledgement of space needs was made:

The need for more space was one of the most recurrent themes of the University Self-Study. It appeared in practically all of the University-wide, college, and department self-study reports. The problem is universally recognized throughout the entire University and occupies a top priority position on the agenda of problems to be solved. (pp. 2-3)


111 Ibid., p. AC-1.

112 Ibid.

113 Ibid., pp. AC-2 - AC-4.


115 Ibid.

117 Ibid., p. 6.
119 Ibid., pp. 8-15.
120 Ibid., pp. 16-23.
122 Ibid., p. 14. Also appeared in the minutes of the corresponding Board of Visitors' meeting.
123 Catalog, 1964-65, p. 5.
126 Ibid.
129 Ibid., p. 57.
130 Ibid.
131 Ibid., pp. 57, 82.
133 Ibid., p. 140. All statistics taken from this page.
134 Ibid., p. 144.
135 Ibid., p. 147-49.
CHAPTER IX

VIRGINIA TECH AS THE POST LAND-GRAIN UNIVERSITY

Introduction

It is quite fitting in many respects that this story concludes very much where it began. "In my end," as the poet T. S. Eliot was wont to say, "is my beginning."¹ For here, the continuing land-grant saga of service to the state and the nation finds itself back in that Miltonic state of in medias res—this time, however, with an evolutionary sense of the past. Indeed, the 1872 land-grant agricultural and mechanical college of 132 students had evolved into a comprehensive post land-grant university of some 22,000 students. Here, four chapters later, Milton's opening lines to Paradise Lost seem ever so more meaningful:

What in me is dark
I illumine, what is low raise and support:
That to the highth of this great Argument
I may assert Eternal Providence,
And justify the ways of God to men.

That the petition has been answered and the "great Argument" illumined, there can be no doubt. Without question, the institutional thread of continuity has been the land-grant spirit itself. Subsequent adjustments of curricular, instructional, and faculty components have provided for the institution's evolution. Together, the saga that has become
Virginia Tech thrives.

Of course, as ends tend to lead to new beginnings, specific answers have a way of begetting larger questions. One is still looking for the forest in the midst of the trees. Less figuratively, one is still left asking: "What are this case study's recommendations for the post land-grant university in the abstract and its balance of liberal and useful elements?" Or, returning to the research question posed at the onset of the study: "What is the relation of the liberal arts and the professional curricula in the evolution of the comprehensive American university?"

A synthesis of the evolution from the three constituent parts shall provide part one of a three-part answer.

The Four Hypotheses

Such a synthesis is perhaps best approached by returning explicitly to the case study and corresponding hypotheses tested. According to the research model advanced by Cheit, the schools for such new fields as agriculture, engineering, forestry, and business started out as peripheral second-class citizens—satellites around the core of the established "arts and sciences." Over time (1900-1970), he contends, the "new profession" schools grew rather unobtrusively in size, support, research activities, and stature within the university structure. Thus, he concludes, by the 1970's, they ceased merely to be peripheral satellites and became full citizens with the
historic core. From the perspective of Virginia Tech, Cheit was for the most part accurate—but with two significantly far-reaching "rubs."

The Curriculum's Evolution

The four evolutionary periods of the university quite clearly reflect a curriculum initially clothed in classical content having little to do with the actual needs of American agriculture and industry and slowly coming to represent a dual purpose meeting both the scientific and practical needs of its constituencies. In the first period, 1872-1891, the curriculum for Virginia Agricultural and Mechanical College was heavily weighted toward the classical side in formal content, with bits and pieces of the useful smattered here and there. The curriculum was structured predominantly around three departments—literary, scientific, and technical. Within this structure, the curriculum consisted of two basic courses or "branches" of study—one for "farmers" and another for "mechanics." In both courses, most (at least eighty percent) of the work was in the liberal arts. Granted, there was increasing attention to the technical aspects of the curriculum throughout this period—largely visible through an ongoing debate over manual labor as an experiential curricular component and the establishment of the Virginia Agricultural Experiment Station in 1886. Regardless, the curriculum remained largely liberal, clothed predominantly in classical attire having
little to do with the actual needs of American agriculture and industry to 1891.

It was during the second period, 1891-1919, that the college's curriculum began to move toward an increasing focus on specialized, useful content. Largely through the efforts of John McBryde, the college's fifth president, and his ambitious 1891 reports on reorganization and instruction, the college began its evolution into a polytechnic institute in form and function. In 1896, rather symbolically, the college became officially known as Virginia Agricultural and Mechanical College and Polytechnic Institute. The curriculum's organizational structure by 1915-16 consisted of five departments—agriculture, applied science, engineering, graduate studies, and the experiment station—each with its own faculty and dean. The curriculum itself by 1919 consisted of fifteen possible courses of study leading to a Bachelor of Science degree. Each course of study was marked by an emphasis on more election and specialist work—commencing as early as the sophomore year by 1915-16. Too, in as early as 1892, the college had introduced a program of graduate study leading to a Master of Science. By 1919, the college offered five graduate degree programs leading to either the Master of Science, the Civil Engineer, the Mechanical Engineer, the Electrical Engineer, or the Engineer of Mines. Indeed, by 1919, the curriculum had so significantly begun to move increasingly
toward the technical that the liberal arts or classical curricular component, which unwittingly comprised the core in the first period, evolved into a support service role, no longer predominant and often sacrificed for a perceived greater good of practicality and new technology. Thus, this second evolutionary period clearly came to represent an evolving of a dual purpose to meet both the scientific and practical needs of the polytechnic institute's constituencies.

The third period, 1919-1953, served to strengthen and expand the curriculum to meet more directly the evolving dual polytechnic institutional purpose. Through the efforts of the president, Julian A. Burruss, and his vision of a "greater VPI," the college achieved full-fledged recognition as a polytechnic institute—with a name change in 1944 to Virginia Polytechnic Institute, eliminating officially and somewhat symbolically, the rather limiting "agricultural and mechanical college" identity. In the process, the institute's curriculum donned professional accessories to complement its already technical clothing. Steadily throughout the whole period, year by year, courses of study were added or deleted based on their ability to contribute to the agricultural or industrial development of the state. By 1947, there were thirty-two courses of study offered at VPI—each with a technological or professional focus. Too, the professional thrust was evident in the college's
extension services. By 1927-28, the college had fully operational agricultural and engineering experiment stations and extension divisions. Perhaps most significantly, however, during this period, the college examined seriously the support role the liberal arts had assumed within the professional, technical curriculum. This examination effected a re-affirmation of the liberal arts' philosophically valuable but practically secondary "place" in the curriculum. Too, it produced several statements highlighting the technical school nature of the curriculum and its distinctiveness from other "literary," "university" institutions of higher learning in Virginia. Countless times, in defending the secondary role of the liberal arts in the technical curriculum, VPI officials exclaimed that VPI was not, would never be, did not want to be a university—rightfully, though perhaps unwittingly, linking a strong liberal arts program to a university character. Thus, this third period of evolutionary development of Virginia Tech's curriculum reflected an intensively strengthened polytechnic institute, clearly responding to the scientific and practical needs of agriculture and industry—often at expense to any liberal needs of its constituencies.

The fourth period of development, 1953-1979, represented the turning point for the institution and its curriculum. For, despite constant protests throughout the
previous period, Virginia Polytechnic Institute achieved recognized university status by 1971. The curriculum reflected this evolution. Simply put, it became comprehensive in function and university in form.

The curriculum's content and structure came to reflect the university status by developing and organizing programs in both the liberal and useful areas—with each a professional entity in itself and some simultaneously in service to others. As a matter of fact, so conscious was the evolving university of liberal professional weaknesses that this area was often highlighted and emphasized. In 1953, a local newspaper article reported that the institution was offering courses in Christian ethics and philosophy for the first time. In 1961, the Board of Visitors approved undergraduate major programs in English, history, and political science. And, by 1964, the curricular structure of the institution consisted of six undergraduate colleges, including a separate professional College of Arts and Sciences, a rapidly expanding Graduate School, and extensive research and extension activities of both applied and theoretical bents. Indeed, this fourth period of evolution brought the curriculum of Virginia Tech to a university, professional comprehensive level of 185 baccalaureate and graduate programs in all, spanning all six colleges and the graduate school. This level continues in medias res its evolution of meeting both scientific and
practical needs of the state and nation.

While the above treatment of Virginia Tech's evolving curriculum deals in an indirect sense with a cultivated dimension of public service, a brief but more direct handling appears in order before moving on to the institution's second major component of instruction. Indeed, all four periods of institutional development suggested a gradual gaining in stature for the land-grant programs through extension and research efforts. Although a worthwhile research topic in itself, for purposes here, a brief delineation of key organizational events serves to demonstrate this point. In 1886, the institution's Agricultural Experiment Station was legally established. In 1914, the Agricultural Extension Division was established. Engineering followed a similar pattern with the founding of its own experiment station and extension division in 1921 and 1923, respectively. In this respect, the public service institutional dimension paralleled the curriculum's evolving polytechnic thrust in the second and third periods of the institute's evolution. Finally, as a means of bringing the dimension to a university height, in 1966, a university-wide Extension Division and a university-wide Research Division were established to both house and direct the university's heavily funded, diverse range of extension and research activities. Thus, the specialized dimension of public service paralleled the institution's evolution to university
Instruction's Evolution

Like the curriculum component, the instruction within the land-grant programs began with elements of classical education, gradually moving to incorporate a methodology suited to fit the "useful" subject matter. Again, a tracing of this instructional evolution through the institution's four periods of development provides the details.

Instruction during the first period, 1872-1891, was clothed in classical garb, complementing directly the curriculum it "delivered." Learning activities revolved primarily around the traditional ones inherited from non land-grant colleges and universities. Based heavily upon a medieval university prototype, they consisted of lectures and recitations. Although there was increasing debate over the value of manual labor as an instructional tool, and by 1886 there was a laboratory requirement in chemistry, physics, engineering, mechanical arts, and technical drawing, such "hands-on" activity was never placed on the same level with the classical likes of lectures and recitations throughout this period. Evaluation methods also reflected the traditional focus of non land-grant institutions with daily, monthly, and general examinations, the questions of which were based on textbook assignments and lectures. Extracurricular activities mirrored a similar tradition, revolving around literary societies and various
"religious opportunities." Indeed, the only significantly tangible evidence of the distinct technical nature of the Virginia institution was the military requirement (in fulfillment of the 1862 land-grant act) and repeated pleas for academic facilities consisting of both lecture/recitation rooms and "illustrative" rooms and apparatus. Thus, in this first evolutionary period of Virginia Tech, instruction was clothed in the elements of classical education.

The second period of development, 1891-1919, saw the cultivation of a new "technology" mission and an increasing technological collegial focus. Instruction evolved to support and reflect the new-found emphasis. Perhaps, most dramatically, methodology combined "theory with practice"—a recurrent phrase in countless catalogs, reports, and pamphlets. For the first time, classroom recitation/lecture work was placed on equal footing with laboratory, shop, or field work. A student's weekly schedule consisted of sixteen hours in the former and fifteen hours in the latter. Even the military dimension was given a technological emphasis. College officials no longer justified the requirement solely in terms of the land-grant act's letter; rather, they saw it as serving to reinforce the dramatic methodological revision. From an extracurricular and physical plant perspective, further evidence of the instructional evolution to fitting the collegial aspect of
the polytechnic institute was seen. During this period, the institute organized an athletic association, adopted school colors, formed a football team, composed a college "yell," formalized a motto, established various discipline clubs and a Corps of Cadets, and tolerated officially banned social fraternity organizations. Too, the physical plant itself projected a collegial image, with numerous building improvements and additions, including an infirmary, mess hall, chapel, auditorium, and several dormitory and academic buildings. Thus, instruction during 1891-1919 gradually but quite deliberately began moving to incorporate a "form" suited to fit the "useful" subject matter at the heart of its evolving mission.

The third period of development, 1919-1953, served to refine the instructional "form" by increasing professionalism and adopting even more standard college practices. The overall methodology continued to combine theory with practice, but with an increasing standard collegial thrust. In the early 1950's, attention was turned to the grading system, interestingly by the faculty. Through the efforts of a faculty committee, the college's grading system by 1953 came to reflect the norm at other colleges. The system consisted of the standard A, B, C, D, E (conditional), F, and I (incomplete) with a successive ten-point scale and a three-point quality crediting (i.e., A=3; B=2; C=1; D, E, F =0). Extracurricular activities also
reflected the refinement of instructional form. College officials established an honor system, revived the literary societies, and held series of lectures by literary scholars. Like most other colleges of the time, VPI engaged in much debate about the proper "place" for athletics in the collegial setting. And, while the military requirement was still billed as an "inseparable part of the tradition," the number of groups excused from the requirement upon admittance rose. Thus, this third period of development ushered in an instruction component reflective of both the institute's increasingly technical curriculum and evolving collegial professionalism.

The fourth period of development served to bring the college's instructional form to its present state of evolution. From 1953-1979, instruction's professional image and "useful" focus adopted a university mold. Faculty committees in 1959 and 1972 continued the professionalizing of methodology which was begun in the early 1950's. The earlier committee examined such issues as preparation and use of course syllabi and notes, delivery of material, and comprehensive systems of evaluation. The latter committee investigated new methodologies and teaching innovations, linking both with the institution's "university" pursuit of excellence.

Extracurricular activities also took on a university quality. In fact, the extracurricular dimension in general
was constantly highlighted in university public relations and informational brochures. More specifically, in 1964, the military aspect of the extracurriculum was made an option rather than a requirement for all students. In 1965, college officials began to look to enhancing VPI's role in intercollegiate athletics. And by 1972, the university itself was consciously providing a diverse and balanced range of student activities, including lecture, concert, and film series as well as quality theatrical productions, a visiting scholars program, and study abroad opportunities.

As a final evolving university touch, the physical plant and institutional atmosphere adopted a university mold. During this period, the institution experienced the greatest physical expansion in its history with the renovation and construction of every type of "university" building imaginable--from athletic to dormitory to academic. More significantly, however, from this perspective, the very atmosphere of the institution assumed a distinct university character. For the first time, attention was paid to that hidden aspect of educating, which often finds itself in architectural design, campus setting, and intellectual air. Thus, this final period of development completed the evolution of the institution's instruction component, bringing it from a purely classical form to one suited to fit both the "useful" subject matter and the evolving university status.
The Faculty's Evolution

Like Virginia Tech's curriculum and instruction, the faculty experienced an evolution. They moved from classically trained, technically unaware, status-lacking teachers to expertly trained, research-oriented, influential professors. The four periods of development demonstrate the transformation.

The first period, 1872-1891, presents a faculty classically trained, technically unaware, and status-lacking—clearly representative of the institution's classical curriculum and classical mode of instruction. Throughout the period, faculty were credentialed in areas other than their teaching one. Too, throughout the period, there was much combining of teaching "disciplines," with little attention to technical expertise and an abundance of "professorships" in the liberal arts. Indeed, it appeared to be a spirit of commitment on the part of the faculty rather than any technical training which nurtured Virginia's land-grant saga during the school's founding evolutionary period.

During the second period, 1891-1919, the faculty began to reflect the polytechnic institute's evolution in general. They became gradually more credentialed representatively within the curriculum and more professional across it. For example, in 1895-96, college catalogs began to list faculty credentials. In 1903, department deans were appointed, with
a graduate department dean added in 1907. In 1905-06, the
traditional professorial ranking structure was implemented.
Within this structure, one found doctorates at any rank
rare, master's as the norm at both the full and associate
professor ranks, and deviations from the norm in expected
areas such as dairying, animal husbandry, and mechanical
arts. Also reflective of the faculty's evolution to
professional standing was their expanded "vision" of their
teaching duties. For example, they began to view research
and committee service as areas of academic responsibility.
Too, the number of academic leaves of absence rose,
particularly in the extension faculty ranks. Thus, this
second period of development clearly pointed to a faculty
metamorphosing into expertly trained, research-oriented,
influential professors.

In the third period, 1919-1953, the faculty
metamorphosis inched further along, with increasing
professionalism and the adoption of standard college
practices. As early as 1920, the college became exceedingly
sensitive to the external image of the faculty. By 1924-25,
the college met and, in some cases, surpassed the faculty
ranks standards set by the Association for Colleges and
Secondary Schools. Too, in the midst of the collegial
standardization, faculty "teaching" duties were expanded to
include classroom teaching as, of course, primary, with
attending department meetings, serving on standing and ad
hoc committees, advising major students, recommending major students for graduation, formulating new curricula, acting as public liaison, participating in extension services, and conducting research as an equally essential secondary litany. Finally, perhaps as an outgrowth of all the professionalization and collegiality, the college began to exert external political pressures to raise faculty salaries to at least a competitive level with other land-grant colleges and business/industry organizations. Thus, by the close of the third period of the college's evolution, the faculty had cultivated an image of respectability and professionalism much in line with the college's technically evolving "standard college" curriculum and instruction components.

The fourth period of development, 1953-1979, brought the faculty to their present and still evolving university stature. During this period, the faculty experienced a growing sense of professionalism, mirroring the institution's rise to university heights. For example, in 1953, the institution developed a formal statement on academic freedom and tenure and established a faculty advisory committee to ensure fair implementation of the new policy. In 1959, the faculty representatively, through a special committee on instruction, turned its attentions to such issues as promotion based on merit; salary commensurate with credentials, professional accomplishments, and
experience; teaching loads based on type and level of courses taught, and concurrent responsibilities; and development of a faculty handbook reflecting all aspects of professional life. In 1966, the SACS visiting committee labelled VPI's faculty as university credentialed, with roughly half of the entire teaching faculty holding doctorates. By 1976, the proportion of faculty holding doctorates had risen to two-thirds and the triune mission of teaching, research, and extension was as much at the heart of Virginia Tech's faculty component as it was at its curriculum and instruction components. Thus, by 1979, the faculty reached their present and evolving university status of expertly trained, research-oriented, influential professors.

The Four Hypotheses and the "Rub"

In short, the four hypotheses forming the basis of this study were accurate, reflecting both the overall evolution of Virginia Polytechnic Institute and State University and the particular corresponding transformations of the three institutional components of curriculum, instruction, and faculty. The land-grant programs initially clothed in classical content having little to do with the actual needs of American agriculture and industry slowly came to reflect a dual purpose of meeting both the scientific and practical needs of their constituencies. In the process, with the inception of professional organizations and the support of
practitioners, the land-grant programs gained in stature through a cultivated dimension of public service. Similarly, instruction within the land-grant programs began with elements of classical education, gradually moving to incorporate a methodology suited to fit the "useful" subject matter. Finally, the faculty evolved from classically trained, technically unaware, status-lacking teachers to expertly trained, research-oriented, influential professors. Thus, Cheit's "model" of new professional schools' development holds up—but, as was implied at the onset of this chapter, not without two powerful "rubs." Both "rubs" revolve around the larger framework of the institution and its liberal and useful balance. Both "rubs" suggest rather forcefully that an institution, particularly a university, is more than the sum of its professional schools.

The first rub concerns the underlying rationale or philosophy governing the institution's mission. Clearly from the onset, the issue was never what Virginia's distinct school should be; it should be land-grant in spirit, serving both the agricultural and industrial needs of the state and the nation. Rather, the issue was how to best realize this land-grant spirit. Repeatedly, year after year, administration after administration, college officials distinguished the institution from other Virginia colleges and universities, particularly of the "literary" type. Indeed, as early as 1873, college officials, after an
exhaustive perusal of types of technical schools, realized that, as one board member put it: "Every successful school must have an idiosyncracy—a life of its own—into which everything else about it is absorbed." Each year since saw a development of such idiosyncracy, nurturing the land-grant saga of service. Ut pro sim, fitting as it has been as the institution's motto since 1896, has become more than just a motto, assuming symbolic significance for each evolutionary step Virginia's land-grant school has taken—first as Virginia Agricultural and Mechanical College, second as Virginia Agricultural and Mechanical College and Polytechnic Institute, third as Virginia Polytechnic Institute, and presently as Virginia Polytechnic Institute and State University. The first rub, therefore, is service in the spirit of the 1862 land-grant act.

Necessarily, such a rub qualifies Cheit's model slightly—at least as far as Virginia Tech's professional schools evolution is concerned. Granted, the professional schools at Virginia Tech—be they in agriculture, engineering, or elsewhere—developed slowly with definite classical roots. And, granted the historic liberal arts—particularly during the founding evolutionary period—became a kind of curricular core. However, the roots were classical and the liberal arts a core because of some reasoned, conscious decision to make them so. Rather, such was the case only because of inexperience and uncertainty in
carrying out the how of what long ago had been decided to be the what of the land-grant spirit which determined the institutional mission. The mythical balance between the liberal and useful was at best an evolving tension, with neither side ever overpowering the other and each side always aware of the other. Thus, from this rub's perspective, Cheit's model holds up only when one analyzes the trees and ignores the forest. In its evolutionary rise to university status and professional standing, Virginia Tech never really had an historic arts and sciences core in the pure classical sense implied. What it had was curricular, instructional, and faculty components struggling to effect a realization of land-grant service to a state and nation.

The second rub is simply an outgrowth of the first, concentrating on the mythical liberal arts core and the core's own evolutionary rise to university status and professional standing. First, the liberal arts moved from an inadvertent "core" during the founding evolutionary period of the institution, to a sole support function throughout the second and third periods, to a struggling professional college in its own right with its own majors and some sixty percent of the course offerings for the whole institution by the fourth period. In this sense, it is difficult to measure any new field's professional stature by the stature of the liberal arts--at least in the Virginia
Tech setting. Second, it is more than interesting to note that the final aspect of the liberal arts' evolution occurred during the last period of the institution's evolution to university status. Indeed, such a parallelism seems to be more than coincidence, linking rather closely the institution's rise to university status with the development of the liberal arts as both entities unto themselves and institution-wide support back-bones for other professional curricula. In this sense, regardless of professional school evolution or land-grant intent, it is ultimately a strong liberal arts core which created the university quality and distinction—or, at least, such seems to be the case at Virginia Tech. Therefore, from this rub's two-pronged perspective, Cheit's model again falls short when viewing the new professional schools within the university structure and calculating the university to be more than the sum of its schools or colleges. For Virginia Tech, rather than providing an historic stature to emulate, as Cheit advances, the liberal arts struggled for their own professional recognition and full citizen, equal place in the land-grant setting. Once again, the mythical balance was in practice an evolving tension with both the liberal and the useful in search of their just share.

And, so, the past that was Virginia Agricultural and Mechanical College gave way to the present that is Virginia Polytechnic Institute and State University. Overall,
Cheit's model and its accompanying "rubs" provide adequate explanation of the evolution. Indeed, the Wordsworthian land-grant child of 1872 fathered the university man of 1983, sincerely with an eye toward service to the state and nation. Indeed, so steadfast has the service been that one is left wondering what it might become. Once again, answers beget yet another question—namely, what about the future of Virginia Tech? This response shall provide the second part of the three-part answer to the question posed at the onset of this chapter: "What are this case study's recommendations for the post land-grant university in the abstract and its balance of liberal and useful elements?"

The Future for the Land-Grant University

The future, as President Lavery notes, is "difficult to describe when you are not adding lots and lots of buildings." Indeed, although the opportunity is there, practical realities for at least the next five years will most likely prevent the university from expecting any drastic increase in enrollment. Much too much, according to Lavery, depends upon society, the economy, and the role of higher education in light of both society and the economy. Seemingly, then, one suspects that the university will turn introspective for at least a short while. According to Dean Steger:

Any university must decide on its strengths and understand that it can't excel at everything. Virginia Tech will have to make some choices as will other schools in the state.
Even more concretely, Provost Hall speculates that for the next two years, the university's primary thrust will be looking at both what it has and what it can use.\textsuperscript{4}

In the midst of such institutional self-inquiry, one suspects, Virginia Tech's future will be shaped by the same evolving land-grant saga which determined its present—but from a primarily qualitative rather than quantitative orientation. In other words, the focus for at least the next decade will be on enhancing the quality of the triune university mission of teaching, research, and extension rather than on increasing the quantity of the mission. This growth of quality, as Lavery labels it, is perhaps best analyzed from the three familiar perspectives of students, faculty, and programs.

The quality of students will most likely continue to increase. Since the institution plans to operate in a zero-enrollment growth mode, one can safely assume that the number of undergraduate applications will continue to exceed the number of students Virginia Tech can handle. Presently, the number of applications so well outstrips the student openings (in 1981-82, for example, only 5,000 of 15,200 applicants—or thirty-three percent—were admitted) that even if the Carnegie Council estimate\textsuperscript{5} of a five-to-ten percent decline in full-time equivalent undergraduate enrollment by the year 2000 comes to pass, Virginia Tech would still have more applicants than it could possibly
admit. Such being the case, one can expect greater selectivity—almost out of necessity and fairness. Entrance measurements, like SAT scores and high school ranking, will no doubt create a university-wide student profile of increased quality and calibre. Indeed, a like selectivity is expected on the graduate level—in light of, if nothing else, the Carnegie Council projection of a slight rise in graduate enrollments by 2000 in relation to undergraduate enrollments, despite the gloomy predictions about the value of the Ph.D. More specifically, Virginia Tech's recent addition of so many graduate programs—especially in the arts and sciences—gives credence to this prediction. In a similar qualitative sense, one expects, the "mix" of students on both the undergraduate and graduate levels will change slightly. In response to the university focus on a pursuit of excellence in general and a particular excellence directed toward the College of Arts and Sciences, an increase in the humanities on both levels seems inevitable. Such an increase will again enhance the quality of the university student body. Of course, such quality enhancement or increasing selectivity meshes rather tensely with the land-grant letter of intent. This issue, however, will be treated separately later in the chapter. For now, it will suffice to say that, from all indications, the future for the Virginia Tech student—collectively and individually—holds an enhanced quality and increased
selectivity.

So, too, does the future for the faculty. Openly and consistently, university official after university official speaks of enhancing the quality of the faculty—interestingly, from the perspective of instruction. For example, Provost Perry ties the quality of the faculty not to research per se but to "someone who is doing what he teaches." Perry reasons that the chemist who teaches chemistry (Perry's own pre-administration field) must also do chemistry, else in time (say four or five years), he would no longer be a good teacher. Perry says:

It stands to reason that if he [a faculty member] is thinking about what he is doing, if he is growing in his teaching, then the best way to measure the growth is by what he displays to others—be it publication or exhibition.

Other administrators from the president on down share Perry's sense of faculty quality as inextricably linked to research. Too, university officials tie faculty quality to a general "quality of mind" that must be passed on to the student. Again, to quote Perry representatively, it is a matter of wanting "students exposed to good faculty in a broad sense." Finally, officials link faculty quality with an overt attempt on the part of the university to achieve more national prominence. This last linkage, not surprisingly, brings the future quality of the faculty back to research. As Perry explains:
Prominence means research. No prominent institution has become known for [its] good teaching. The reality is that it became prominent because of the contributions to knowledge that its faculty made.

Perry contends that Virginia Tech has moved in such a direction "very deliberately over the past twenty years." And, again, other administrators concur. While teaching faculty at Virginia Tech—like faculty at other comprehensive public universities—question the "official" reasoning behind and the hidden motivation for such connotations of "faculty quality," for Virginia Tech, one can see in the future faculty recruited and tenured with increased emphasis on research and publication and national notoriety.

Virginia Tech's programs will also contribute to the quality enhancement thrust for the future. Such enhancement will be seen in both a general "program" sense and a particular program sense.

In the general sense, programs at Virginia Tech are for the most part set. As President Lavery puts it, "Virginia Tech is a cost efficient, manageable institution. With resources as they are, it is unrealistic to think of Tech being much larger than it is." Thus, while Lavery suspects that a few programs—especially in the liberal arts at the graduate level—will be added "down the road," he places future emphasis on refining existent programs. To this end he plans to create a task force of faculty, administrators,
and alumni to address such issues as enrollment, tuition, and discipline limitations—particularly as each relates to the strengthening of university programs. In this general program sense, then, the focus for the future is much in line with student and faculty foci, sharpening quite clearly to qualitative enhancement.

In a particular program sense, the Colleges of Engineering, Agriculture and Life Sciences, and Arts and Sciences provide representative clues for future direction. According to Dean of Engineering Torgersen, his job for now and the future is to make the College of Engineering the best in the country—"independent of the rest of the university." With this in mind, Torgersen views his college as involved in both research and teaching, but with a resounding instructional mission "to prepare people who are going to be at the forefront of technology . . . [and] are going to contribute to society." He explains:

The reason we exist is to educate and train a student rather than prepare a student against some demands of industry. The "customer" is the student rather than the employer.

In this particular program sense, then, for engineering, the future will consist of continuing with what is already in progress—with perhaps just a slightly added attention to both an internal competition for limited university resources and the student-customer as engineer and person.

The College of Agriculture and Life Sciences foresees its future more from the general university perspective of
quality enhancement. Assistant Dean of Agriculture Ford characterizes his college as paralleling the university itself in gaining strength every year as a "recognized university because of increased strengths in graduate programs and research."9 Too, he characterizes the college as settling in to refining existent programs rather than looking to add any new ones. Thus, in this particular program sense, for agriculture, the future will consist primarily of polishing what is and contributing to a general university sense of enhanced program quality.

Perhaps, it is the College of Arts and Sciences which will provide the greatest challenge and holds the most excitement for the university's future. Here, too, the focus is on an enhancement of quality, but from perspectives as diverse as they are numerous. For purposes here, it is useful to concentrate on two perspectives—namely a general philosophical liberal arts perspective and the more tangible arts and sciences program perspective.

From the philosophical perspective, the liberal arts at Virginia Tech will most likely undergo an adjustment paralleling the institution's development. According to President Lavery, they will try "to adjust to a 'high tech' environment versus a 'smokestack' environment versus an 'agrarian' environment." And, in this sense, he sees the post land-grant environment as the perfect place for the liberal arts, putting them in the context of an "everyday
meaning." Yet, Lavery hopes that this seemingly inevitable adjustment will not change "the essence of what the arts are." As he explains it:

We [Virginia Tech] need and want it [the liberal arts] for its value to the greater universe and not necessarily just within our own little cubicle.

Interestingly, it is precisely this sense of essence which Dean Steger highlights as encompassing the minimal competencies that university students must acquire during their sojourn at Virginia Tech. Specifically, he defines this liberal arts "essence" around four basic objectives—namely, that a student embody certain behavioral patterns embracing the concept of lifelong learning; that he develop an ability to conceptualize, reason, analyze, and formulate a vision on how he sees himself in relation to society; that he embrace the concepts of beauty, goodness, truth, liberty, equality, and justice; and that he cultivate the "pleasure of knowing [and] understanding painting and the arts, and see in them more than what is superficially there."

Not surprisingly, however, despite the overall philosophical commitment to the liberal arts at Virginia Tech, the practical realities—particularly from the more tangible arts and sciences program perspective—suggest a less pastoral. In Steger's words, "The liberal arts, especially the humanities, have a long road to go because of all the emphasis on high technology." Henry Bauer, dean of
the College of Arts and Sciences, explains the reality as follows:

One of the things that is different about Arts and Sciences from other colleges is that you can't talk about it as a whole. It doesn't have the same sort of cohesiveness or uniformity as the other colleges.\(^{10}\)

Thus, from this more practical perspective of programs, the future for Arts and Sciences has a much greater diversity than that of the other two individual colleges already discussed.

For example, Lavery identifies a need for more graduate programs in the liberal arts in general, seeing its realization as leading to an enhancement of the institution's quality. More specifically, Bauer offers an assessment of some of the individual programs within his college—catalog style, of course. In the sciences, he projects the following:

1. Chemistry will be even stronger.
2. Geology will also be stronger and will continue to be "the most distinguished department" the college has.
3. Biology will grow, primarily as the faculty itself gets older.

In short, in the sciences, Bauer projects that the sciences as a whole will grow stronger. As a matter of fact, Bauer notes that, in a recent study conducted nationally, all of the science departments at Virginia Tech showed "enormous improvement" over the past five years.

Bauer is uncertain what will happen in the social
sciences. Currently, for example, he identifies political science and sociology as "having a difficult time, partly because of the state of the disciplines." On the other hand, he projects that psychology will be better known and respected. In this sense, he mentions that the clinical psychology program received full accreditation on the first visit, an action he describes as "simply unprecedented."

Bauer projects "some of the biggest changes" in the humanities. Philosophy, he contends, already is generally known nationally. And, history and English will become better known. Bauer bases each projection or "stride" on faculty publications, an increased visibility of programs nationwide, and the recently formed University Center for the Study of Sciences and Society.

In short, the future for the College of Arts and Sciences as a liberal arts whole, as well as its individual programs, will be challenging and diverse. Its diversity appears to be governed by an enhancement of reputation and image, collectively and individually; an increased visibility of programs; and a concerted attempt to move toward an interdisciplinary view of course content and style. More notably, its challenge appears to be converting the good intentions of an overall philosophical commitment into a practical reality.

Perhaps, the good intention closest to becoming a practical reality and surely focusing on a qualitative
enhancement of university mission is the proposed University Core Curriculum, scheduled for full implementation Fall 1985. Individual projections for the core cover the spectrum of idealism and practicality.

The most global projection for the core is that it will give a university seal to the education students receive at Virginia Tech. Currently, while each college of the institution has a core of its own, there is no university core. Although agriculture students, for example, may take courses in economics, philosophy, and history, there is no distinct collective university mark assigned to the bachelor's degree the institution confers upon those agriculture students. The problem, as the university's former provost and the core's prime mover John D. Wilson says, is that the institution does not have that special focus of relating the university to the college to the department. As Wilson puts it:

[A university curriculum must] build a student's work . . . by first of all having university values stated, then [giving] the college its professional or non-professional focus, and then [having] the department with the major field of specialization [as] properly the pinnacle on that with intensive work, etc.

From this perspective, then, it is a strong arts and sciences core that is the distinguishing mark of a university, separating it from a purely professional school and forming its base. Thus, in the most global of ways, the most hoped for effect of the University Core Curriculum when
it is fully implemented is that it will establish a relationship among the university, its colleges, and their departments and, in so doing, become visual proof of a qualitative enhancing of the university mission—land-grant roots in tact—which has evolved.

Of course, in some senses, such philosophical longings are best realized in the more concrete and less global. In a practical sense, the projections for the core revolve around faculty attitude and specific course content. Quite possibly, the core will encourage faculty to move beyond their disciplinary view of knowledge, which more often than not creates a bifurcated image of the world. The core has the potential to force faculty members to be less protective of their own turf and more willing to unearth commonalities and interrelationships under the guise of the creative act itself, irrespective of its particular disciplinary manifestation.

Too, as an outgrowth of this faculty metamorphosis, there is hope that faculty will look to developing courses specially geared to giving the university focus the core is intended to provide, again embracing interdisciplinary cohesiveness and larger wholes as more than the sum of their parts. Indeed, the point here is that spatterings of liberal arts courses do not in themselves create a core curriculum. There is needed thematic focus and continuity of thought. With this "premise" as a given, one hopes that
the content of the courses which comprise the core will be examined. More specifically, one hopes that these specially designed core courses will be non-liberal-arts-major-oriented and sequential in offering; that they will educate the whole person; and that they will provide students with a world dimension of space and time, giving them something of a notion of the world in which they live and how it got there. As Wilson projects, these new sequences should be first rate, "genuinely introducing these young people [Virginia Tech students] to important parts of their heritage." Too, he hopes that the courses will be designed for the liberal education of all undergraduate students and taught by those faculty interested in teaching. In short, in the practical sense of course content, the core's implementation has the potential to encourage innovation in curricular development and, in so doing, to realize an enhanced quality, a more unified and cohesive university mission. Time will determine the post land-grant university's success.

The University's Land-Grant Roots

Indeed, one is left wondering what has happened to the post land-grant university's land-grant roots. Have they been a guiding force behind the evolution of the agricultural and mechanical college into a comprehensive university? Are they even compatible with the university's new core curriculum? While it does little good to dwell on
the past (especially in a dissertation chapter about the future), such questions seem best answered by projecting the founding 1862 act's two "leading" and two "other" objects into the future. In this sense, without doubt, this act's intent will continue to be realized through its spirit.

Of course, the question becomes here: "And what of the spirit? Of what does it consist?" Not surprisingly, the 1862 land-grant act's spirit mirrors the act's explicit intent—namely, service to the state and nation. Also not surprisingly, the manifestation of this service must constantly evolve to meet the needs of the state and nation. One can trace the evolution of Virginia's land-grant school with its four symbolically distinct changes in name to the evolution of the Commonwealth of Virginia and the nation. The names, in other words, reflect an expansion of both institutional mission and state/national orientation and realities. Virginia Agricultural and Mechanical College in 1872 turned Virginia Agricultural and Mechanical College and Polytechnic Institute in 1896 turned Virginia Polytechnic Institute in 1944 turned Virginia Polytechnic Institute and State University in 1971 parallels the growth of the state and nation—from agrarian to industrial to technical to technological. Each stage ushers in a slightly different set of needs, requiring modified means of meeting those needs. However, each stage gives visual evidence of a spirit of service long ago identified as heart and soul of
the land-grant legislation.

Thus for Virginia Tech's future, this spirit of land-grant service to state and nation will continue to be realized in the act's "leading objects" and not to the exclusion of its other objects—but increasingly with a university cast. In the 1983 Founders Day Address delivered at the university, Ernest Boyer marveled that Virginia Agricultural and Mechanical College was founded "when the word mechanical held as much awe and hope as the word high technology does today." 12 Indeed, the point he was making with this statement pervaded the entire speech. For example, he said, "Higher learning and the nation have always been in service to each other" and the "legacy of democracy and learning [have always been] intertwined" with more, not less education, being required and more, not less, professionalization being experienced. In other words, the agricultural and mechanical arts may have given way to the "new" professions, but still they will remain the institution's distinctive focus within the state. Similarly, classical studies and compulsory military tactics may have given way to the liberal arts as manifested in a university core and a military option as realized in a Corps of Cadets and ROTC program, but still they remain distinctive secondary land-grant objects. Indeed, as founding college officials stressed over one hundred years ago, the Commonwealth of Virginia does not need another
University of Virginia or College of William and Mary.

Increasingly, however, the Commonwealth has come to need the comprehensiveness of the university cast with land-grant objects distinctly in tact. Herein, lies the projected evolution of land-grant service to the state and nation. The three-pronged mission of instruction, research, and extension has become essential to a development of professions such as agriculture and engineering. High technological needs cannot be met in an environment which focuses on one mission prong at the expense of or to the neglect of the other. Neither can such professions be developed without an awareness of a larger whole, preparing budding professionals not only for their profession but also for their life. And, clearly, the delicate balance between these two liberal and useful components creates the post land-grant university Virginia Tech must continue to become.

Of course, with such an evolutionary spirit of land-grant service inevitably will come paradoxes and land-grant discrepancies. How, for example, can an institution land-grant in spirit be increasingly selective in admissions? How can it justify the intent to expand the number of undergraduate and graduate degree programs in the liberal arts, especially the humanities? How can it be in pursuit of excellence—as its current mission statement announces—and the people's college—as its founding act legislates? How can it strive for an institutional cohesiveness or
university whole through a core curriculum and not diminish the technological dimension which is it raison d'etre? Such questions are not readily answered, nor are such paradoxes reconciled. Clearly, they will cause Virginia Tech to continue the constant adjustment of the mythical balance of its liberal and useful components.

Its Liberal and Useful Balance

While such adjustment has been continually evident—and, in some ways, itself characterizes the distinctiveness of the land-grant spirit of service—one cannot help but project a need for further adjustment in future years. First, actual implementation of the university's core curriculum will no doubt cause further adjustment of the university balance between liberal and useful. Of course, even when the astrisks are marked in the university catalog by the Fall of 1985 clearly denoting acceptable core courses and officially identifying a core curriculum, the core's success will be qualitative—not quantitative—resting with the faculty and students and their perceptions about it. In this sense, the process of the core will be most important; much like the institution did not evolve to university status overnight, most likely the core will experience similar evolution—so gradual that it might not be readily apparent. Regardless of how well or how poorly the core is received by faculty and students, one can be reasonably certain that it will demand that attention be paid to the
liberal as both a profession unto itself and as a general education component of other professions. Too, one can be certain that because of this new focus of attention on the liberal, the balance of it and the useful ideally will be more equally weighted. However, such balancing will most likely not decrease the tension between the two elements. If anything, one suspects, it will increase it; perfect or near perfect balance is always infinitely more difficult to maintain than an acknowledged lop-sided balance. In short, from the perspective of the university core curriculum's implementation process, further adjustment of the liberal and useful balance seems certain.

A second string of adjustment will be the external influences of society and its view of education in general and the professions and their view of non-professional curricular aspects in particular. National and state reports on education released within the past two years forthrightly have called for attention to the five areas traditionally identified as comprising education—communication skills, the humanities, the social sciences, the natural sciences, and mathematics.13 In this sense, then, external pressure is demanding that the liberal and useful balance as it exists in education be examined and subsequently adjusted. Similarly, the professions themselves are exerting pressure for an examination of the mythical balance by calling for non-technical skills. For
example, in a recent issue of the College of Engineering's *Engineering Now*, eight executive engineers were asked what advice they have for a class of engineering freshmen regarding their non-major courses. The eight, including the chief executive officers of the Raytheon Company, Exxon Corporation, and American Electric and Power Company, presented varying points of view—but all with one common thread. The thread revolved around the professional's need to communicate effectively and to be exposed to a diversity of courses for well-rounded and macrocosmic perspective. Even more illustrative of this point, the College of Engineering for years has required its students to take a one-credit course entitled, "Liberal Studies in Engineering Curricula," exposing them in introductory and cursory fashion to the liberal arts disciplines and requiring them to attend cultural events. The focus, as the Fall 1982 syllabus explains it, is on engineering education as "four years of opportunity" with the social sciences and humanities as one of the opportunities. Thus, from both aspects of external influences, the liberal and useful balance at the university is destined to adjust.

Also a part of this second string of adjustment and still from the external side is the increasing call from all ends for better theoretical foundations and increased technical skill of students in all professions. According to Engineering Dean Torgersen, when one asks an employer
what he wants from an engineering graduate, he responds—almost too quickly—"immediate skill." Indeed, so typical is the response that Torgersen was led some six years ago to write an article portraying the student as the university's "customer," not the potential employee. In this sense, he defined it as in the student's best interest "to be well-rounded and not just someone who can do a good job." Thus, the external pressures of the need for students to absorb as much of the increasing technological knowledge introduce further adjustment to the balance of liberal and useful elements.

Evidence of such projected adjustments is already unwittingly being gathered. In curriculum data reported by Virginia Tech to the State Council of Higher Education in Virginia in 1975, 1977, 1979, and 1981, one can trace patterns of the balance and corresponding tension. Consistently, the percentage of liberal arts courses taken by students majoring in engineering and agriculture is higher in their first two years, though the liberal element is represented in the last two years. Of all the liberal arts areas, natural sciences is the heaviest concentration. Perhaps, though, the most significant pattern in terms of the liberal-useful balance is the gradual percentage increase of students taking philosophy, art, and theater courses. This pattern, coupled with a curious decrease in the overall percentage of liberal arts courses taken,
captures the evolving tension between the liberal and useful—at once demonstrating a pressure to develop non-technical, liberal skills and to keep pace with the increasing rate of technological knowledge. Surely, such tension causes one to pause and reflect upon where the sympathies really lie and how much commitment there really is. Surely, such tension will necessitate yet further adjustments to the university's liberal and useful balance.

Thus, the future for Virginia Tech will be both challenging and promising. The challenge will revolve around the university's need to be at once land-grant in spirit and excellent in manifestation of that spirit. The promise will rest with particular curriculum, faculty, research, and extension efforts. Indeed, even the institution's unofficial name—Virginia Tech—suggests the hopefulness for the balance, symbolizing a kind of integration of polytechnic and comprehensive university missions. For the future, the land-grant service to state and nation as manifested at Virginia Tech will most likely continue to evolve.

Once again, answers beget another question—namely, what does this case study of Virginia Tech suggest about the larger whole? This response shall provide one final answer, leading directly back to the research question posed at the onset of this study: "What are the recommendations for the post land-grant university in the abstract and its balance
Case Study Recommendations

The recommendations point right back to the spirit of service that is the 1862 land-grant act. More specifically, they center on a refining of the basic land-grant objects. Broadly speaking, they embrace philosophical and practical aspects of both the post land-grant university and its liberal and useful balance.

Regardless of any new clothing donned, Morrill's land-grant act still provides the post land-grant university's raison d'être. According to the act:

. . . 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.

Like the Declaration of Independence almost a century earlier, this act was itself filled with powerful glittering generality. As Thackrey so aptly put it in 1971, it is one of "the most beautifully vague pieces of legislation in the history of education, and therein lies its greatness; . . . [it] may be regarded as a broad charter similar to the U.S. Constitution, emphasizing certain major principles, rather than providing a detailed prescription."17 In other words, the Morrill Act offered in substance only an idea. It was up to the individual colleges to develop in character and program in concert with the developing nation. Thus, as President Kerr of Oregon State University summarized in
1933, the four-fold spirit of the land-grant institutions is of "initiative for pioneering," of "growth for progress," of "opportunity for all for democracy," and of "helpfulness for service."18

This four-fold spirit effects eight basic characteristics of land-grant colleges, still very much evident in the post land-grant university—so much so that all universities, land-grant or not in origin, appear to think that they initiated them. The first characteristic is one of "public" character, with institutional support by society via low or free tuition. The second is a comprehensiveness of scope and subject matter. The spirit, in other words, does not seek to eliminate or denigrate existing disciplines, or areas of professional emphasis, but to open up higher education to new disciplines, new professions. The third characteristic is the spirit's "open door policy" or democracy in access to higher education. In this sense, access to higher educational opportunity, spanning a wide range of economic, cultural, scholastic, racial, and religious backgrounds, is a hallmark of the movement.19 The fourth characteristic is of quality, standard setting, and educational leadership. It embraces the attempt to reconcile the old problem of quality with open access. In true land-grant spirit, educational quality becomes a function of what the university does for the student, and not what the student brings to the university--
with quality properly defined in terms of goals, missions, and objectives. The fifth characteristic is nonsectarianism, a reflection, no doubt, of Jefferson's belief that a university should not be tied to a religious system of thought. The sixth characteristic is dedication to research, advanced study, and the advancement of knowledge. While the founding of Johns Hopkins in 1876 is generally regarded as the first "true university" in the United States, the land-grant movement—as captured in its spirit and illustrated in the evolution of Virginia Tech—played a leading and major role in the establishment of research as a function of a university in every state and region of the United States. The seventh characteristic is public service to the state and nation. By the middle of the twentieth century, the three functions of instruction, research, and public service were universally accepted by all public universities and by most private universities in this country. Land-grant-related legislation was a powerful stimulus in development of the "public service" function. County fairs, state fairs, demonstrations trains, boys and girls clubs, and the like were all used to spread the word of agricultural research knowledge. Indeed, the 1914 Smith-Lever Act provided federal support for a "cooperative" extension program between land-grant institutions and the federal Department of Agriculture. The eight (and final) characteristic of the land-grant spirit is a public but
autonomous nature. By the mid-twentieth century, state universities in general had a high degree of autonomy in the conduct of their affairs, and they were in general at least once removed from the arena of partisan political strife. While this characteristic, like the other seven, gives specificity to the four-fold spirit which defines the post land-grant university today, it has increasingly been called into question with criticism of unnecessary federal and state interference, especially on matters of control by the likes of Carnegie Commission President Boyer and numerous university and college presidents. In short, however, these eight characteristics serve as the basis for the land-grant spirit on which the land-grant university evolves. The distinctive character of both rests primarily with their commitment to and support by and for society.

The first set of recommendations for the post land-grant university in the abstract and its liberal and useful balance rests with a refining of basic emphases. These are:

1. The study of agriculture and its related areas should be expanded to include more deliberately foreign nations. The issue at stake is clearly an international one—and needs to be treated as such.

2. Engineering and applied science at state universities should intensify. The rate of technological advancement and innovation seems destined to increase. Post land-grant universities should assist their states and the nation with the advancement and innovation by both responding to the technology and developing it.

3. Education for "earning a living" should
continue to receive emphasis. However, the distinction between mere vocationalism and professionalism should be maintained. Professional schools should be first-rate and of high quality in their own right. One school, however, need not be sacrificed for another. Treatment with regard to equipment, faculty, and research should be equal, especially with departments teaching the equally vital liberal arts.

4. Instruction should emphasize the integration of theory with practice. Students should be active participants with ample opportunity to experiment, write, discuss, and— in short— apply the techniques and foundations they were exposed to in lectures and textbooks. However, "hands-on" should not replace theory-based instruction anymore than the theory base should dominate the practice. Quite definitely, the integration should continue to create an instructional hybrid structure reflective of both the 1862 act and its visual manifestations.

5. Admission should continue to focus on providing opportunity and realizing potential, regardless of regional, socio-economic, political, religious, or racial background. In this respect, the post land-grant university should continue to be low cost, or, at least, accessible through scholarships and tuition loans.

6. Service to the state and its key agencies and to the state's leading organizations should be enhanced. Structures should be established to permit smoother consultation and exchange between the post land-grant university and its leading regional organizations and corporations. Too, as the universities become the driving force for improved quality of life and economic development, a closer partnership between government, business, and the post land-grant university is essential.

7. Military "affairs," as an updated version of military "tactics," should be made an integral part of the post land-grant university's domain. The military portion of the federal budget is now the largest expenditure item, after social security payments. Strategic
weaponry suggests push-button international nuclear warfare is conceivable. Arms expenditures are increasing worldwide. And, the post land-grant university's scholarly efforts about the military and its practices are extraordinarily weak. Indeed, even the land-grant act's tactics requirement is but another name for optional ROTC. While the latter is perhaps responsive to the changing larger society of which it is a part, the former needs to be strengthened. Study of the military's role in American life and a more active role in defense needs should be a logically evolved responsibility of the post land-grant university.

8. The post land-grant university in the future must pay increasing attention to the quality of life. From several perspectives—medical, social, cultural, environmental, physical, recreational—this quality is becoming more important.

9. As higher education becomes more and more a matter of lifelong learning, adult and continuing education will need greater attention. This new emphasis for the post land-grant university is important both for continued economic vitality and for personal enrichment and intellectual growth.

10. Economic development now means international trade and marketing. People live now more than before in a pluralistic, many-nationed world which is increasingly interdependent. In light of these developments, international concerns and training should increase at the post land-grant university.

Thus, the first set of recommendations refines the basic land-grant objects as conceptualized in the 1862 act and serves as a basis for the evolution of the post land-grant university in the abstract and its balance of liberal and useful elements.

The second set of recommendations treats the broader philosophical and practical aspects of both the post land-
grant university and its liberal and useful balance—but this time more from the vantage point of the latter. Philosophically, the "call" is for a "connected vision" which unites liberal and useful elements, eliminates the bifurcated view of the universe, and dismisses the false dichotomy between the arts and sciences. The "connectedness" could lie in Bronowski's "creative act."

According to Bronowski:

... there exists a single creative activity, which is displayed alike in the arts and the sciences. It is wrong to think of science as a mechanical record of facts, and it is wrong to think of the arts as remote and private fancies. What makes each human, what makes them universal, is the stamp of the creative mind.22

Indeed, the plea for integration through creativity is not new, nor is it distinct to the land-grant idea. Scientists, philosophers, and scholars have for years been attempting to reconcile at least philosophically the dualism or split view of humanity and the universe. Aristotle, Bronowski, Van Doren, Snow, Barrett, Mumford, and the representatively contemporary Conrad and Wyer sing similar songs. Philosophically, education and land-grant spirit aside, the recommendation for a connected vision in the future is there.

And, too, it is ever-present from the post land-grant university focus. Here, the leading object has always been the useful. The standard of practical education is based upon the question of what will work, and because the
practical is by definition of the curriculum set aside from issues of value, the question tends to be resolved in the most shallow and immediate fashion: What is practical is what makes money; what is most practical is what makes the most money. Practical education is an "investment," something acquired to be exchanged for something else—a "good" job, money, prestige. It is oriented entirely toward the future, toward what will work in the "changing world" in which the student is supposedly being prepared to "compete."

The standard of practicality, as used, is inherently a degenerative standard. There is nothing to correct it except suppositions about what the world will be like and what the student will therefore need to know. Because the future is by definition unknown, one person's supposition about the future tends to be as good, or as forceful, as another's. Thus, the standard of practicality tends to revise itself downward to meet, not the needs, but the desires of the student who, for instance, does not want to learn a science because he intends to pursue a career in which he does not think a knowledge of science will be necessary.

It could be said that a liberal education has the nature of a bequest, in that it looks upon the student as the potential heir of a cultural birthright, whereas a practical education has the nature of a commodity to be exchanged for position, status, wealth, etc., in the future.
A liberal education rests on the assumption that nature and human nature do not change very much or very fast and that one therefore needs to understand the past. The practical educators assume that human society itself is the only significant context; that change is therefore fundamental, constant, and necessary; that the future will be wholly unlike the past; that the past is outmoded, irrelevant, and an encumbrance upon the future—the present being only a time for dividing past from future, for getting ready.

Philosophically speaking, these definitions, based on division and opposition, are too simple. It is easy, accepting the viewpoint of either side, to find fault with the other. But the wrong is on neither side; it is in their division. Wendell Berry explains the "wrong" as follows:

[The problem is that] the practical, divorced from the discipline of value, tends to be defined by the immediate interests of the practitioner, and so becomes destructive of value, practical and otherwise. But it must not be forgotten that, divorced from the practical, the liberal disciplines lose their sense of use and influence and become attenuated and aimless. The purity of "pure" science is then ritualized as a highly competitive intellectual game without awareness of use, responsibility, or consequence, .... And the so-called humanities become a world of their own, a collection of "professional" sub-languages, complicated circuitries of abstruse interpretation, feckless exercises of sensibility. Without the balance of historic value, practical education gives us the most absurd of standards: "relevance," based upon the suppositional needs of a theoretical future. But liberal education, divorced from practicality, gives something no less absurd: the specialist professor of one or another of the liberal arts, the custodian of an inheritance he has learned much about, but nothing
from. And in the face of competition from the practical curriculum, the liberal has found it impossible to maintain its own standards and so has become practical—that is career-oriented—also.23

Philosophically, then, the most far-reaching recommendation for the future of the post land-grant university and its liberal and useful balance is that the balance should be adjusted. While the land-grant setting with its land-grant act is the ideal place for reconciliation of opposite sides, in a practical sense, such reconciliation is not that simple. There has always been a "tension" between the liberal and useful. In some senses, the tension is healthy, encouraging constant self-examination and protectiveness. In others, it is not, leading to exclusive disciplines and narrow-minded turf disputes. Thus, practically speaking, liberal and useful elements within the post land-grant university setting need to do some major adjusting.

Recommendations for the liberal arts and the professions in light of such adjustment are far-reaching, addressing both the form and function of each. First, the liberal arts must begin to look at themselves in the Greek sense of liberal, seeking to educate men of intellect and action. Such a perception should necessarily adjust course offerings within liberal arts disciplines, making clear distinctions between major versus non-major courses. More specifically, the courses should themselves seek to "grapple
with connections among multiple realities," to borrow from the Virginia Tech Faculty Report on Liberal Education and the Professions, adhering to a connected vision not necessarily tied to a departmental structure of knowledge but, at the same time, not necessarily excluding one. This recommendation might rest more with process than product. Second, the liberal arts must begin to view the useful or professional aspect as just as essential to educating the whole person as the liberal aspect. Third, the professions must reciprocate by recognizing the liberal aspect as one distinguishing mark of the university versus technical school and by viewing it as more than distribution requirement and just as essential as the useful aspect. Fourth, the professions must look for ways to incorporate liberal qualities or a liberal spirit, though not necessarily liberal content, into their own content areas. One can be liberally educated and have never graced a philosophy or medieval literature classroom. (It goes without saying that the converse is also true.) Again, the recommendation might rest more with process than product.

Thus, the second set of recommendations for the post land-grant university and its liberal and useful balance lies with a connected vision of liberal and useful components which places both in a macrocosmic perspective. Of course, at present, there remains an overemphasis on the practical, often at expense of the liberal or with only
token gesture and general education requirement lip-service
to the liberal. Even for the well meaning humanist, for
example, there is the proverbial "damned if you do and
damned if you don't" situation. William Irwin Thompson
explains the situation from the perspective of M.I.T. as
follows:

To the degree that the humanist succeeds in
technologizing the humanities (by turning them
into the social sciences), he destroys the
humanities; to the degree that he ignores the
technological world and teaches as one might at
Cardinal Newman's Oxford, he ensures the
conviction in his student's minds that the
humanities are simply irrelevant to the mastery of
our new complex society; to the degree that he
succeeds in communicating the relevance of the
traditional humanities to our society, he finds
himself welcomed by the administration as valuable
camouflage, and resented by his students, who
correctly point out that while he makes a great
noise, he is still powerless to affect the
inhumane training of the whole Institute. The
naïve humanist thinks that in teaching the
humanities to M.I.T. students he is helping a
major American institution deal with the problems
of our civilization but it does not take long for
the students to educate the teacher to see that
the Institute is, as Eldridge Cleaver would say,
not part of the solution but part of the
problem.24

At present, connected visions, liberal and useful
balances, and macrocosms are just not all that easy to come
by. Yet, one senses that though commitment or belief into
practice is not reality, there is evolving an intellectual
rationale for trying. In other words, at present, there is
at least a budding intellectual coming to terms with the
balance. Eddy, in the centennial publication on the land-
grant movement, comments:
In theory the colleges are rooted in the belief that man must make his peace with science and with the machines which science has produced rather than to take refuge from them. He must control them for the common good not oppose them in some vain notion that "culture" has no relationship to such devices. Thus, education must be based on an understanding of men of science and machines of modern industrial and agricultural society. Students should be taught what society is like, how it operates, and who operates it. The boundary line between education for a vocation and education in the humanities and social sciences is invisible. Vocational education may pursue new techniques but such pursuit must be in terms of the broader implications and social obligations.25

A few years later, on similar grounds, then West Virginia Sen. Jennings Randolph at the University of Minnesota speculated:

... We [should] teach science as a process of inquiry rather than the products of inquiry; we [should] teach art as the creation and appreciation of objects rather than their identification and labelling; and we [should] teach history as a pattern of inquiry and a process in time rather than as an aggregate of fact.26

While the present has yet to see the "should's" turn into "do's," the second set of recommendations for the post land-grant university and its liberal and useful balance suggests that they "must."

Conclusion

And, so the saga that is Virginia Polytechnic Institute and State University has been told, its implications for the post land-grant university and corresponding liberal and useful balance explained. Twentieth-century American poet, T. S. Eliot once declared:
Few things that can happen to a nation are more important than the invention of a new form of . . . verse.27

While such declaration may initially evoke laughter, subsequent analysis of its "spirit" suggests that Eliot might not have been so "off-the-wall" or too outrageously poetic. Needless to say, for purposes here, it suggests that Eliot might also have been rather perceptive.

His point, one suspects, is that creativity lies in the synthesizing of existing forms into new combinations--and, in this sense, that a nation's ideologies and very being risk alternation. One might only recall, for example, the democratic principles upon which this country is founded or the DNA molecule and its world ramifications. In each instance, the new form of "verse" is an idea embodying certain fundamentals and having the potential to affect profoundly some course of human destiny, or at least a part of it.

In this sense, the evolving land-grant spirit is itself a thought, a piece of creativity, a new form of verse, plucked from the minds of man and applied to the evolution of a nation, indeed, a kind of verse form in itself. Virginia Tech, as representative of the verse, in some one hundred years time, passed through four distinct stages of manifesting the form--always in the spirit of service and always responding to the democratic and scientific impulses and ancient tradition of humanistic studies which conceived
it. The institution evolved from an agricultural and mechanical college to a polytechnic institute to a comprehensive state university as the nation itself grew in diversity, sophistication, and technology. As Eddy remarks:

A gradual evolution marks the land-grant colleges, sometimes ahead of national change and sometimes behind, but always attempting to respond.26

And, respond they did, developing along the way two major missions to perform for their students—namely, to help them develop as persons and to help them perform a useful function in society. In broad perspective, land-grant institutions are a part of a democracy's logical development. These institutions of higher learning were the inevitable result of a free country attempting to find and then to assert itself. In the history of nations, it might well be claimed that no other country could have produced the land-grant institutions. No other country had been so free from the political and economic conditions which had bound educational institutions for centuries. Shortly after the 1862 act was implemented American fireside poet Oliver Wendell Holmes depicted the land-grant colleges' humble beginnings as follows:

And who was in the catalogue, when the college was begun?
Two nephews of the president, and the professor's son.29

Now, over a century later and over 1.4 million students and seventy-one colleges strong, these institutions still define
themselves and chart their futures as they did at the onset, by asking how they can best be of service to democracy and all its sister impulses. Often, not surprisingly, it has been the efforts of a select few—a college president or provost with a vision, or a senator with a piece of legislation—which have formulated an evolving response to the question. But, always, it has been, to borrow Nevins's quotable phrase, the "spirit... which gave life, not the mere facts."^0

And, finally, in the midst of responding, there has loomed the liberal and useful balance. At Virginia Tech, the issue has never appeared to be whether the liberal component was necessary; rather, it has been how best to incorporate it into the curriculum to ensure the education of each student for life and work. The balance, in this sense, reflects the four-stage evolution of the institution, with the final university stage seeking to mark the education of the student as "university" in form and function. One suspects that this issue of liberal and useful balance will always be just that—a constant issue. One suspects, too, that the evolving approaches to it will produce equally constant shifts in the liberal and useful tension. And, perhaps, herein lies the best kind of reconciliation between the two one could hope for—one which acknowledges both sides as important but is uneasy with an even divide right down the center between them. Quite
clearly, it is the land-grant spirit and its evolving manifestations that must adjust the balance... else, the land-grant verse form will be nevermore.
Notes to Chapter IX


2. William Lavery, interview, Blacksburg, Virginia, 8 September 1983. Unless otherwise noted, subsequent attributions to Lavery are from this interview.

3. Charles W. Steger, Jr., interview, Blacksburg, Virginia, 6 September 1983. Unless otherwise noted, subsequent attributions to Steger are taken from this interview.

4. Philip H. Hall, interview, Blacksburg, Virginia, 6 September 1983. Unless otherwise noted, subsequent attributions to Hall are taken from this interview.


6. Ibid., p. 48.

7. John M. Perry, interview, Blacksburg, Virginia, 8 September 1983. Unless otherwise noted, subsequent attributions to Perry are taken from this interview.

8. Paul E. Torgersen, interview, Blacksburg, Virginia, 7 September 1983. Unless otherwise noted, subsequent attributions to Torgersen are taken from this interview.

9. David R. Ford, interview, Blacksburg, Virginia, 9 September 1983. Unless otherwise noted, subsequent attributions to Ford are taken from this interview.

10. Henry H. Bauer, interview, Blacksburg, Virginia, 9 September 1983. Unless otherwise noted, subsequent attributions to Bauer are taken from this interview.

11. John D. Wilson, interview, Lexington, Virginia, 31 August 1983. Since February 1983, Wilson has been serving as president of Washington and Lee University in Lexington. Unless otherwise noted, subsequent attributions to Wilson are taken from this interview.


14Engineering Now, College of Engineering, Virginia Tech, No. 7, 1982-83. Xeroxed excerpt provided by Dean Torgersen during interview.


16Upon request, the Office of Institutional Research ran a special reprint of this data for me, 22 October 1982.


19Of course, the plan's vagueness necessarily became a problem for some at times in this respect, especially with regard to "classical studies." Yale, for example, had no farm for practical applications, producing only scientists with theory. While the focus was acceptable to Morrill, it was unacceptable to Connecticut farmers, and the land-grant designation was moved to what eventually became the University of Connecticut.

From the perspective of open access, early in the movement, the issue was whether to admit women or to set up "separate but equal" institutions for them. The latter option was the norm in the South, with a military emphasis in the male institutions.

An off-shoot of this issue with regard to women also surfaced with minority races. In fact, few Blacks attended at the onset. Those that did often experienced discrimination, both officially and unofficially.

Finally, officials were careful not to define "open door admission" as admitting anyone to any program. There were probationary provisions and requirements which had to be met prior to admittance. The focus here was on opportunity not guarantee.

20One need only look at the Hatch Act in 1887 and its providing federal financial support for agricultural experiment stations, usually at land-grant institutions, as proof of this role. Indeed, at the time the Hatch Act was passed, half of the land-grant institutions already had formally organized agricultural research units, and others
were substantially involved in research. As James Grey, a University of Minnesota historian, observed: "With the passage of the Hatch Act . . . in the field of agricultural education it became not only legal but obligatory to conduct research." (Grey, quoted in R. I. Thackrey, p. 26)

21Ernest L. Boyer, Founders Day Address.


APPENDIX

IMAGES OF SAGA
1872-1983
A picture, somebody said somewhere, is worth a thousand words. With time and space frozen through the camera's eye, each visual image captures instantaneously what narrative explanations and in-depth analyses attempt to describe and explore laboriously page after page, chapter after chapter. Of course, it is precisely this sense of imagery which is at the heart of the poetic word or picture.

For example, William Carlos Williams, in his famous poem of imagery, "The Red Wheelbarrow," unites the picture of a thousand words with the poetry of image, creating a meaning at once visual and poetic. He writes:

so much depends
upon
a red wheel
barrow
glazed with rain
water
beside the white
chickens.

In but sixteen words, Williams creates a painting in words. In so doing, he highlights the on-surface uneventful sensory experiences of life (a red wheelbarrow, glazed rain water, the white chickens) and all of their connotations (the farmhouse with the white picket fence, the sun peaking through the clouds), collectively seeing in them a rich vision of a world not simply what one viewer (or reader) makes of it in his own direct contact with it but also what others and their images make of it.
In like fashion, the purpose of this appendix is to paint a Williamsesque "picture" of Virginia Polytechnic Institute and State University. More specifically, with twenty-six photographic images,* its purpose is to present the red wheelbarrows and white chickens of the land-grant institution's evolution and, in so doing, capture the 111-year-old saga that has become Virginia Tech. In this form, this appendix is intended to complement the thousand-plus words of the preceding dissertation text. It is also intended to stand on its own as yet another, though perhaps less scholarly, answer to the research question posed at the onset of the study.

*Prints depicting campus scenes through 1969 are reproduced with permission from the University Archives' collection, Virginia Tech, Blacksburg, Virginia. Prints depicting scenes of the 1970's and 1980's are reproduced with permission from university catalogs and post cards.
Fig. 5. The campus in 1885 consisted of nine buildings: (1) and (2) were "college" buildings; (3) the President's House; (4), (5), and (6) professors' houses; (7) the barracks; (8) a "workshop"; and (9) the "Commencement Hall." Indeed, this campus scene reflects the founding 1872-91 attempt to imitate architectural parts of a collegial setting.
Fig. 6. With the same nine buildings pictured in Fig. 5, this 1887 campus scene best captures the initial inadvertent attempt to imitate the "old" while in search of giving form to the "new." The college's curricular, instructional, and faculty components all were classically clothed; yet, the mission was land-grant based. The barren countryside "image" depicts the budding land-grant saga.
Fig. 7. From yet another campus perspective— in 1891—the liberal and useful tension was evident. Here, it is the openness of the land and the expansiveness of the white picket fence which suggest evolutionary development of the land-grant saga.
View of the V.P.I. Campus looking west from Academic Building No. 2. House in foreground was built for Prof. V. E. Shepard's residence, later occupied by Prof. William B. Alwood, and still later used as the Administration Building. In the background may be seen the station building, greenhouse and Solitude, former home of Col. Robert T. Preston, built in 1859. Near the grove may be seen the old barns. Photo by Prof. E. A. Smyth about 1891.
Fig. 8. This 1891 photograph is representative of several archival prints capturing this year. Various photographers of the year appeared more interested in campus landscape than campus buildings. And, even with the buildings, one detects signs of a second evolutionary period of saga being ushered in: From left to right, the buildings are Horticultural Hall, Faculty Row, Old Administration Building, Lane Hall (Barracks One), Second Academic Building, First Academic Building, and Mess Hall.
Fig. 9. With the second evolutionary period, 1891-1919, came an increasing focus on useful content and methodology. Instruction sought to combine "theory with practice." These 1896 farm buildings are representative of this new-found visual manifestation of the evolving land-grant saga.
Fig. 10. The overpowering foundry smokestack in the right foreground of this 1897 campus photograph was but another sign of the land-grant saga early-on in its second period of evolution.
Fig. 11. And, too, the second period ushered in an extracurricular dimension at once technical and collegial in focus. These 1905 campus scenes illustrate the dimension. The college organized an athletic association, adopted school colors, formed a football team, formalized a motto, and established discipline clubs and a Corps of Cadets.
Fig. 12. The time had come when capturing a 1907 winter collegial scene could be the photographer's only intent.
Fig. 13. By 1914, the physical plant had also undergone metamorphosis in service to the land-grant saga. During the entire second evolutionary period, but particularly in its last five years, there were numerous building improvements and additions, including an infirmary, mess hall, chapel, auditorium, and several dormitory and academic buildings.
Fig. 14. During the third evolutionary period of saga, 1919-1953, the college achieved full-fledged recognition as a polytechnic institute first, foremost, and exclusively. This 1922 photograph captures the mandatory military aspect of the saga—billed as an "inseparable part of the tradition"—with the "rat" class numeral '26 painted on the roof of the second academic building.
Fig. 15. This 1922 campus scene also addresses the evolving land-grant saga: At the top of the hill is a barn-silo and faculty home; at the foot of the hill, the agricultural shop; in the foreground, the greenhouses behind "Aggie Hall."
Fig. 16. Throughout the third period of saga, the institution became increasingly collegial and professional. This 1930 aerial photograph highlights aspects of such professionalism: The new drill and recreation field is in the center. At the lower left is Davidson Hall (housing scientific laboratories) while at the right are the Agricultural Hall and the Extension Division Annex. To the left of the oval's center is Patton Engineering Hall, and in back of that is the new Power Plant. At the upper right of the oval is the roof of the Library.
Fig. 17. As depicted in this 1935 aerial view, the college was organized into three "schools" or instructional units—Agriculture, Engineering, and The College—collectively representative of the evolving saga of service to the state and nation. Indeed, the 1935-36 academic year had a total enrollment of 1836—the highest in its history to date.
Fig. 18. This 1936 building was originally known as the Teaching and Administration Building and was subsequently named for Julian Ashby Burruss, the college's eighth president. In addition to housing administrative offices, it also includes a 3,003-seat auditorium. Over the years, it has come to be both sign and symbol of the evolving land-grant saga with technical and professional visual manifestations in its third evolutionary period.
Fig. 19. This photograph captures a 1936 view of the campus. In the foreground are academic buildings one and two.
Fig. 20. Depicted here, in 1938, are Davidson Hall in the right foreground and Burruss Hall in the left center.
Fig. 21. In the Fall of 1943, Virginia's land-grant college offered this campus view from the air.
Fig. 22. By 1949, Virginia's land-grant college was officially Virginia Polytechnic Institute. This campus aerial at least architecturally suggests the technical "leading object."
Fig. 23. The fourth evolutionary period, 1953-1979, represented a turning point for the institution as it evolved to university status. This photograph captures one visual manifestation of the evolution: Completed in 1957, Rasche Hall was one of many residence halls (as opposed to barracks) built during this fourth period.
Fig. 24. By the end of the fourth period, both the physical plant and its accompanying institutional atmosphere adopted a university mold. Characterized as the greatest physical expansion period in the college's history, there was renovation and construction of every type of "university" building imaginable—from athletic to dormitory to academic. This 1960 photograph captures somewhat globally a part of the "university" growth.
Fig. 25. Started in 1951 and completed in 1960, the War Memorial Chapel and Court contain eight sculptured Indiana limestone pylons representing from left to right: Brotherhood, Honor, Leadership, Sacrifice, Service, Loyalty, Duty, and Ut Prosim (the university motto: "That I May Serve"). The implied symbolisms speak to a land-grant spirit with decidedly university dimensions.
Fig. 26. Symbol in itself of university growing pains, this 1964 photograph depicts Lane Stadium-in-the-making. Construction was begun in 1964 and completed by 1969.
Fig. 27. Dedicated in 1965, Lane Stadium has a permanent seating capacity of 52,500, a three-decked press box for 350, a second deck "box" for 109 sports writers and crew, and a third deck box for press services, electronic media, scouts, and coaches. The stadium was completely financed through private funds and gifts.
Fig. 28. Dedicated in 1969, Derring Hall represents the budding university's attempt to develop and organize programs in both the liberal and useful areas. For the first time in the institution's history, the liberal arts and their 1964-formed College of Arts and Sciences were given a space of their own. To this day, Derring Hall serves as symbol and home for a part of the liberal education component of the university curriculum as both a professional entity and a support core for other professional entities.
Fig. 29. This circa 1980 photograph is simply titled "Autumn on Virginia Tech Campus." It captures the overall campus atmosphere as distinctly university in character. Such character is evident in the architectural design as well as campus setting and landscaping.
Fig. 30. This 1983-84 campus map depicts Virginia's land-grant institution *in medias res*—in every sense the comprehensive American university, still distinctly in service to the state and nation.
Addresses, Reports, Minutes, and Manuscript Sources


An uncataloged collection of more than two thousand 10" X 12" X 15" boxes of correspondence, committee reports, financial records, and miscellaneous items stored chronologically for each presidential administration beginning with 1900.


Miscellaneous correspondence, originals and copies dealing with early affairs of the college.


An extensive collection of typed manuscripts relating to early history of Virginia Tech.


Committee on Reorganization. "Virginia Agricultural and Mechanical College." 13 November 1879. University
Archives, Virginia Tech, Blacksburg, Virginia.


Reports usually issued prior to each board meeting and at end of the year.


"Virginia Agricultural and Mechanical College--Its History and Organization." University Archives, Virginia Tech, Blacksburg, Virginia, 1872.


University Publications


Bulletin of the Virginia Polytechnic Institute and State University, 1908-1972.


Perry, John. "Implementing the Core Curriculum: Initial


The Techgram, 1923-1983.

From 1923 until October 1929 published promotional data about institution. From October 1930 has included news about Virginia Tech events and alumni activities.


Interviews


Perry, John M. Virginia Tech, Blacksburg, Virginia. Interview, 8 September 1983.


Student Publications


Student body yearbook. Some excellent photography of campus scenes, student life, and Corps of Cadets.


Gray Jacket, 1875-1906.

The Virginia Tech, 1903-1969.

Student newspaper. Changed to Collegiate Times in 1969.

General Works


Friedman, Edward A. "Technology and Higher Education in America for the Next Decade." Liberal Education 65 (Summer 1979): 198-205.


. The State of the Arts at State Universities and


Scully, Malcolm G. "Student Focus on Practicality Hits


Literary Works


——. "East Coker." Four Quartets, 1940.


Paradise Lost.


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ABSTRACT

Ut Prosim—the Balance of Liberal and Useful Education in the American Land-Grant University: A Case Study of Virginia Tech

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The College of William and Mary in Virginia, April 1984
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Land-grant universities provide an important structure for an accommodation of liberal and useful education. However, even within this structure, the relationship between useful and liberal is subject to changing balance. This study examines the relation by tracing the evolution of the agricultural and mechanical arts at a significant land-grant case—Virginia Polytechnic Institute and State University. From the perspectives of curriculum, instruction, and faculty, the study tests the hypothesis that Cheit's "model" for the evolution of "new profession" schools as peripheral satellites first turned full citizens second identifies Virginia Tech's evolving relationship of liberal and useful, particularly in agriculture and engineering. The data analysis is framed by Cheit's model, Snyder's "hidden curriculum," and Clark's "saga." The study's conclusion is that Cheit's model is basically accurate—with two qualifiers appended. The first qualifier links Virginia Tech's rise to professional university status to a commitment to the land-grant saga. The second qualifier acknowledges the liberal arts' own struggle for professional standing and parallels the institution's becoming a university with the development of the liberal arts as professional entities and institution-wide service/support components. Thus, Virginia Tech's liberal and useful balance becomes a tension adjusting to the land-grant saga. Based on this conclusion, projections for Virginia Tech's future are shaped by the land-grant saga, but with a qualitative, university orientation. For the post land-grant university in the abstract, recommendations for the future include a refinement of land-grant emphases with an increased focus on internationalism, a less bifurcated view of the universe, and a more integrated approach within curricula.