

The American College and Its Architecture:
An Institutional Imperative

by

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Bachelor of Arts in Architecture
Rice University
Houston, Texas
1982

Bachelor of Architecture
Rice University
Houston, Texas
1984

SUBMITTED TO THE DEPARTMENT OF
ARCHITECTURE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF
THE DEGREE
MASTER OF SCIENCE IN ARCHITECTURE STUDIES AT THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

JUNE 1988

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Submitted to the Department of Architecture on May 4, 1988
in partial fulfillment of the requirements for the Degree of
Master of Science in Architecture Studies

ABSTRACT

The architectural form of the American college campus is shaped by broader cultural and philosophical factors which themselves are based on the notion of an architectural environment able to control the intellectual growth of the individual. This thesis investigates the artistic and philosophical preconceptions of the profession of architecture during the American period of 1880 to 1920 using the college campus of Carnegie-Mellon University and the work of Henry Hornbostel as the means of investigation. The architecture of the campus reflected the values and ideals of a diverse number of parties who were all interested in improving society along a "progressive" but conservative ideology. Their tools of reform were the Fine Arts and a system of higher education. They based this education on both a utilitarian pragmatism and a hegemony of cultural ideals. As they affect the campus form I will investigate the social ideals and the means to achieve those ideals as advocated by the patron Andrew Carnegie, by his lieutenants in Pittsburgh, by the city fathers of Pittsburgh, by the architectural profession (both the practicing and educational branches), by the wider academic community, and by the architect himself.

This thesis investigates the notion of the Institutional Imperative in America at the turn of the century so to understand both the evolution of American civic architecture and the process whereby the individual architect made his formal decisions with respect to his larger philosophies and national context.

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Introduction

The desire on the part of the architect and the patron to build an institution that would serve as an example of civic propriety has guided the evolution of the architecture and campus planning of the American college. The college campus, as symbolic as any American civic edifice, demonstrates in its organization the controlled and intellectual order that could instruct the larger culture. The creators were driven in their quest to structure larger society by a personal duty, or Imperative, that was then translated into an architectural form.

I use the notion of Imperative in this thesis which comes from the American 19th century belief in a discrete code of consciously conservative ideals. The social thinkers first had to accepted the realities of an urban America and an increasingly diverse and undirected population. After a period of introspection as to what their Imperative exactly entailed and the means to achieve it, they came to see that the power of the Cultural Imperative or "the will-to-action" was based on a desire for a controllable and powerfully productive society organized along a normative and homogenous set of cultural values and ideals. Quite curiously the Imperative came to be a uniform and powerful course of action among a rather diverse number of urban reformers.

In the guise of "progressive thinking" these reformers on a broad front sought to advance to the wider urban population

the conservative and stabilizing values of the privileged and powerful class.¹ Having forsaken the embattled city and state political arenas the old landed elite, the intellectual elite², and the rising class of industrial elite sought to effect social improvement through specific urban interventions and institutions. These urban manifestations of their patrons' Cultural Imperatives naturally took the patron's normative ideals for their own as basis for a quasi-independent Institutional Imperative. My interest is in Institutional Imperative of the academic institutions for higher learning.

The collegiate institution came to have an autonomous power that informed, evolved with, and adapted to the larger society. The physical forms of the campus and its buildings were crafted to show a desired structure of reality as guided by its Imperative. The campus created the framework for the student to understand both his and the college's place within the larger society. The ideal architectural statement for the academic campus symbolically extolled the virtues and promises of the educated citizen in the face of a rapidly changing society.

The professed Imperative of the college institution, its mission or role in the larger community, would guide the architect's design of appropriate campus forms. Concurrently, the need to establish his design Imperative pushed the architect to develop and include his own

professional philosophy in the process. Design of the American civic form came to reflect this rather intellectual process of combining and modifying different professional, institutional, and personal Imperatives into a coherent architectural statement.

In this thesis I will investigate the creation of one such academic institution during this period, the Carnegie Technical Schools (now Carnegie-Mellon University) in Pittsburgh by the architect Henry Hornbostel. My interest is in the conception and genesis of the campus vision, in terms of its institutional ideals and forms, and in the evolution of the campus plan and its architecture as guided by the Institutional Imperative. In order to understand this creation and evolution of the campus, to set it within its cultural context, I will first briefly explore the broader notions of the power of the nascent American "Culture of the Fine Arts" to instruct the larger society and the subsequent evolution of the American college campus form. In this formal search I will touch on the debates within the architectural profession as to the appropriate inspiration for that campus form. I will then investigate the contexts of institutional patronage and the urban environment specific to the campus of Carnegie Technical Schools. Finally I will look at the background of the architect Henry Hornbostel as it contributed specifically to his notion of campus design.

The primary focus of this thesis in investigating the evolution of the Carnegie Technical Schools' campus is the notion of architectural form serving as a forcefully didactic lesson of the Institutional Imperative. The philanthropist and his architect as the "designers" of the American campus environment that would shape the student believed that this formal manifestation of culture had a specific message and specific audiences. I am interested in whose message of Culture this was and who the audience was intended to be in the case of Carnegie Technical Schools. Finally I would like to draw some conclusions about the design decisions made by the architect Henry Hornbostel in his architectural synthesis.

I maintain that in the evolution of the "campus" in America and its buildings the referential metaphor of "institution" has been a motivating influence in the architecture of the institution. Further, the leading academics, their architects, and their patrons have assumed not only that this architecture would be accessible and understandable to the students but that also the influence of this architecture would motivate the students in predetermined and controllable ways.

We in society want to be able to believe in ideals about the places we inhabit, but we know that such ideals are indefensible. So society strikes a bargain with the architect. We appoint him the person who makes up and manipulates the conventions of form, the rules of the good building. In return

for that privilege, we expect a scrim of such convention, specifically constructed with us in mind, seamless enough to thwart our own particular modern skepticism.³

1. This Imperative was based, however, on rather innocent and early stirrings of a cultural and natural ethnocentrism. Propagandistic nationalism and imperialism allied with corporate hegemony would drive the Civic Imperative after the First World War.

2. Note this is not the academic elite.

3. William Hubbard, Complicity and Conviction: Steps toward an Architecture of Convention, (Cambridge, Mass.: MIT Press, 1980), pp. 153-154.

Chapter 1: The Culture of Fine Arts and the Campus Form

The American era of 1890 through 1915 was one of great social, political, and economic upheaval. The growth of the new American city, fed and employed by the new American industrial corporation, strained both the moral and physical fabric of the traditional American environment. The civic leaders of the era saw that the college campus form, as it reflected their conservative intellectual Imperative, was a fundamental avenue in creating a promising new civilization and in restoring a traditional American society.

The wealth produced by the American industry generated in itself demographic and intellectual change. The new wealthy elite who came to power had notions of patronage and national culture which would define the larger American civic context. With the expansion of the expertise and resources of the American corporation came the novel approaches to city management and new sources of funding for massive projects such as college campuses.

The new elite of intellectuals and wealthy patrons looked for a way to shape American society through the manipulation of American "Culture".

By culture, most thinkers of the period meant non-utilitarian activities and goods: the arts, religion, personal refinement, formal higher education. In effect the word implied leisure: those energies which did not go into the making of a living. Imprecise and vague, the term nevertheless named definite aspirations to rise above the mundane, to enrich one's life by cultivation of nonmaterial enjoyment... The culture of the

Gilded Age... contained a particular idea of culture as a privileged domain of refinement, aesthetic sensibility, and higher learning.¹

The key word is "cultivate". These aspirations were not confined to the elite but they were propagated by the cultural establishment, in such arenas as the college and the museum, both to the middle class, as a means for social acceptance, and to the aspirant working class.

The fact that this concept of this "Culture" became such a pervasive pre-occupation of the era speaks both for the concept's usefulness by the status quo in maintaining its social and political hegemony and for the American necessity of establishing a recognized national identity. The power of this Culture was, first, its ability to effect the American civic environment, the arts, and the notions of education. "The art of the past could provide useful sources for the development of a national American art with a dual reliance on sources of 'authority' and the unique creativity and approach" of the American individual.²

Culture also was a unifying social force used to control the actions of the American individual. High Culture offered protection from "cultural proletarianization", the "cultural degradation and alienation produced by industrial life and immigration."³ The "concept of a higher culture guiding consumption and leading to a society of equals [appealed] to a bourgeois economist fearful of the degrading effects of immigrant laborers."⁴

Richard Guy Wilson enumerates three elements that transformed the American aspect of Culture in the late 19th century and formed the basis for the artistic canon of the "American Renaissance" and the educational mandate for the American college.⁵ The first was a rampant nationalism. The 1876 Centennial celebrations encouraged the young country to explore its history and to erect civic memorials to its survival. "For the United States it [the Civil War] secured admission into a pantheon of nations possessing a stock of noble themes."⁶ This intense nationalism, soon to branch out to imperialism, allowed the American intellectual to "appropriate images and symbols of past civilizations and foreign cultures and use them to create a magnificent American pageant".⁷ These pageants and civic edifices were financed by the new patrons who were empowered by the rise of American capitalism. America looked upon itself as the successor civilization of the world and as such needed a national, public image in art and architecture that displayed its virtue and enterprise.

At the same juncture of historic consciousness, as Wilson points out, the American cultural elite came to believe in both the idealism of the genteel tradition and also the cosmopolitanism of things "foreign". The source of this genteel tradition was a seemingly conflicting mix of "American nativistic, modern-oriented" notions and the "conservative and academic spirit tied to the Old World

traditions... which had the air of genteel idealism and higher service."⁸ This notion was discussed above. The latter cultural force of cosmopolitanism used the standards of the genteel tradition less for their didactic and moralizing content than for their more refined sensibilities. As Matthew Arnold intoned, "From babyhood to decrepit age [the Europeans] revel in art, and this daily contact with the beautiful quietly molds the character and creates an unerring taste, not only in the artistic, but in the properties of life."⁹ Thus it was thought possible that the nation's spiritual life could be elevated through an "ideal art".

This Art was composed of images that were almost stereotypically "beautiful, noble and universal in application". Contemporary design was to be inspired by the artistic themes and techniques of past civilizations, "literally all the history of mankind lay at the fingertips of Americans". For instance the "American Renaissance" was in name directly tied to the perceived (and often fabricated) ideals of the Italian Renaissance.¹⁰ This "seeking of all the best that had ever been thought and said in the world" was the basis for the academic ideal of the American Fine Arts.

It was the civic duty of the American artist and intellectual to learn from the past great civilizations in order to then create a uniquely new American composition. To the American intellectual this was a means to contribute to the creation of the new great society. At the same time this

notion still harbored the romantic notion of the creative individual able to shape his art and his society without particularly resorting to the anonymity of design by committee.

Thus the American artist attained the new position of the elite arbiter of Culture. The self-conceptions of the artist of the "American Renaissance" were based on the Ruskinian notion that the new artist was a seer and priest who linked man with God; Art in service of Culture became the new secular religion.¹¹ The power of the artist and architect in shaping the American environment was unquestioned.

The ultimate end of art was culture. As one pruned a garden, so through art and letters might one tend one's spirit. The essence or ideal captured by art included moral as well as physical perfection. Immersion in art's conventions and identification with its models would help one attain the grace and character vital to citizenship in a republic.¹²

The trademark of the "American Renaissance" was a collaboration of artists who worked in the wake of great wealth put into the service of society. The architect, in the increasingly common schemes for revitalizing the city and the civic institution, became the main artistic font of an improved society. Civic architecture and its attendant art forms held implicit messages of patriotism and citizenship.

Art would not only provide models and soften the rough edges; it would not merely inspire through the truth of the artist's vision; it had the power to turn men away from their appetites and to develop their spiritual nature. Idealism had clear social

implications. A more beautiful environment could mold better men... Art became an opening thrust to a spiral of growth.¹³

Architects had to charge their buildings with "human associations and it is by the power which certain architectural forms have of arousing such associations that they are endowed with warmth and life."¹⁴ The philosophers of architecture went one step farther to see that beyond inducing a moral betterment in those who use such noble edifices, these edifices would be the primary record of the American civilization and its identity.

The names of the public buildings are the century marks of the ages... wherever the footprints of the spirit of civilization have rested most firmly, some milestones of human progress have arisen... and to teach from within and without by proportion and scale, by picture and statue, the history of the people who built it; to celebrate patriotism, inculcate morals, and to stand as the visible concrete symbol of high endeavor.¹⁵

The new city civic centers, the cultural palaces, and the university campuses became the "ritualistic centers for an American civilization". The exuberant energy of the American city was directed into civic grandeur and order that would give the American individual a literal and spiritual education. "Cultural institutions would work to improve society, to engage its elite directly, and in so doing, to elevate others."¹⁶

In the history of the American institution the collegiate village and its successor the "university as a city" have depended upon an architectural and planning program to both

establish their idealized order and to espouse their cherished values in concrete form. As was the case with the rest of the society and the architectural establishment throughout the 18th and 19th century, the campus witnessed an evolution of moral Imperatives and the often attendant architectural tastes. These tastes were not simply preferences for architectural styles, rather they were symbolic images based on the dictates of an American Fine Arts sensibility. The physical fabric of the campus that resulted also reflected a self-conscious display of the Institutional Imperative espoused by both the American academic institution and its patrons.

The power of the institution has had a quintessential attractiveness to the American academic mind. American higher education employed the "collegiate ideals rooted in medieval English universities where students and teachers lived and studied together in small, tightly regulated colleges".¹⁷ This "academic village" was a Jeffersonian ideal of a closed and controllable community. The campuses were conceived as social and academic experiments that should be set off in the woods, closer to the purifying nature and away from the distractions of unbridled civilization. The location of the campus in the wilderness was also looked upon as reflecting the promise, the "manifest destiny", of the American individual to move west and bring civilization to the untamed continent. Even in the wilderness early campus

planning was based on the academic precedents of European civilization.

Despite Jefferson's professed desire to create a true university based on the European model, his concept of the 'academic village' was in many ways more suited to the traditional American college system-in its scale, rural location, small classroom assigned each professor in his pavilion and especially in the familial relationship between the professor and his students.¹⁸

Yet control was the key. Jefferson abhorred housing colleges in one large building in "which youths are pent-up and [which] are equally unfriendly to health, to study, to manners, morals and order".¹⁹ This community of scholars was sold as a democratic ideal and, as Le Corbusier judged later, the American University was a self-contained and controlled world in itself.²⁰

The necessity of implicit order was developed as a self-sustaining concept through the architectural form. The campus organizational Imperative strived for Puritanical clarity and calm repose. Each building either housed one or several academic departments. Living quarters ideally would be separated from the academic quarters, although early campuses, like Princeton, had to make-do with one hall all-encompassing hall set in the wilderness. In a simple visual image, each part of the campus was easily identifiable and understood. The isolated colonial halls sat within spacious, green commons. Architecturally these halls were provincial

American interpretations of primarily British academic halls of Georgian classicism.

The American discovery of academic Gothic in the middle of the nineteenth century as another appropriate, and competing, architectural form for higher education was predicated on several new ideals. Collegiate architects employed the rather provincial gothic forms and the enclosed quadrangles in order to make a strong association with the venerable British academic institutions of Oxford and Cambridge. American institutions sought through physical garb the connotations of age and respectability. Needless to say not all academic thinkers on this continent conceded that the introverted, enclosed system of quadrangles was appropriate for the American academic institution which was often set in the countryside.²¹

By the middle of the 19th century Gothic academic architecture, by virtue of its forms and their associational value, was also thought to imply broader connotations of the sacred tradition of knowledge. The American Literary Magazine of 1847, in describing Yale's new Gothic library (now Dwight Chapel) designed by A.J. Downing, stated that "a college must have buildings [of such grand character]... because there must be something to give the public a pledge of permanency to the institution and something that will be the center of attachment to its members."²² College architecture needed to be "venerable, substantial, laden with

associations that testify to the old and honored institution." As Harvard President A. L. Lowell lamented in 1880, "We have none, or next to none of those coigns of vantage for the tendrils of memory or affection. Not any of our older buildings is venerable, or will ever be so. Time refuses to console them. They look as if they meant business and nothing more."²³ The connotations of a campus that was inspired by and employed a derivation of European gothic forms in an institutional setting epitomized the nature of America's conservative and "tradition-hungry" schools.²⁴

Toward the latter part of the 19th century the college campus became to an even greater degree synonymous with the artistic and moral visions of the "shining city on the hill" or the "New Jerusalem". The campus was to be the place for national enlightenment and subsequently it should become the symbolic locus of ideal societal values. The wide dissemination of the writing of Ruskin in America added credence to the belief that the Gothic specifically had a powerful moral Imperative, especially applicable to collegiate architecture.

Through both its influence and its architecture, the academic institution would thus serve as an example to its immediate physical and moral surroundings and to the society as a whole. United by a quasi-religious academic creed the collegiate community of scholars would thus live together, as a family, pursuing classical curriculum while surrounded by

the appropriate architectural inducements. The campus would establish the affectionate ties of its members and mold their values. Ostensibly all of these symbolic ties and ideals were to be cemented by the nature and quality of the campus.

The architects who designed the University of Chicago employed a collegiate gothic for these express ideological purposes. It is also an institution whose genesis was based on the vision and patronage of one family, the Rockefellers, and as such is often compared with Carnegie's Technical Schools. The Board of Trustees determined that the campus was to be Gothic even before they held a limited competition and hired the architect Henry Ives Cobbs. Cultivating the appropriate campus image was as important as the selection of the faculty, and often proceeded it. The 1891 masterplan, composed of gothic quadrangles of an American gothic, displayed a desired venerability and flexibility which were deemed appropriate for the visionary role of the urban campus.

The choice of Gothic for the University over the popular classicism of the Exposition had its sources deep in the University's conception of itself. Classical buildings were financed by merchant princes [as Carnegie Technical Schools were], Gothic buildings arose through the combined efforts of humble workmen. Classicism referred to Europe's palaces, Gothic to Europe's great seats of learning. Classicism stood for the burgeoning materialism of the Renaissance, Gothic for timeless, religious values.

[The president of the university referred to the campus with an Ecclesiastical Metaphor] the University as priest, is a mediator between man and man; between man and man's own

self; between mankind and that ideal inner self of mankind which merits and receives man's adoration... the university is the keeper, for the church of democracy, of holy mysteries, of sacred and significant traditions.²⁵

This campus was also one of the first in the late 19th century whose genesis was predicated on the introduction into the United States of the German concept of the "university". The German university system, with specialized graduate study and faculty departments devoted to scholarship as well as teaching, rejected in its pure form most of the aspects of the collegiate tradition. The American notions of practicality and utility modified any outright European precedent. The spiritual union of the Imperatives of the German university and the American college produced the uniquely modern American university.

The wider European influences brought a new physical and symbolic order to the university, the university city set within the American city as a model. This played upon the already established American ideal of the college as the "domed city on a hill."²⁶ The new campuses which continued the fabric of the city became the new model for an American urban ideal. The institution was seen as an important testing ground for principles of organization that would be used in creating the necessary order in the larger society. The analogy was made that this process of planning symbolically paralleled the academic process of creating a

normative structure for society. The desire for a unified architectural character also "was in part response to the new institution's bewildering diversity, specialization of function, abstruseness of expertise, and mutual incomprehension of scholarly inquirers."²⁷

Specifically the face of the institution was changed by the introduction of master planning. The new campus plans called for a homogenous image to be superimposed over the campus architecture. This image was based on a broad, classically derived paradigm. Through the inspiration of the Beaux Arts, especially in the designs of the Chicago World's Fair, the architects established a monumental organization of disparate buildings into a coherent and unified form. The architects' utilitarian plans for the new buildings of technology and the sciences, now elements integral to the new university, had to aesthetically co-exist with the library and classroom buildings.²⁸

The coherence, clarity of meaning, and hierarchy of the academic city, in its architecture and campus planning, came to be as important as the academic propagation of ideals. "Concern for landscape and architectural harmony demonstrated the intrusion of an aesthetic mandate - the haphazard, incongruous, and ill-fitting aspects of both city and countryside mocked the wealth and pretensions of many communities and appeared to threaten their stated ideals." Further, "respect for the natural beauty and architectural

possibilities of the site was thought to be the measure of the culture of the institution... seemingly buildings displayed intellectuality 'as plainly as dress betrays the wearer' ".²⁹

The late 1890s saw the beginning of the huge university competitions and commissions which adhered to this ideological and design approach. It was accepted that the campus masterplan would be generated through the Beaux Arts canon of formalistic design based on an emphasis of circulation and vista along monumental axes. Each architect then chose a unified architectural composition and vocabulary arranged on those axes. On the numerous older campuses where remnants of an out-dated plan existed and the style of architecture was not homogenous the newly superimposed Beaux Art planning showed its flexibility in readily dealing with these inconsistencies. This was also made into an anecdotal analogy: "This reflected the premise that the ground plan [like the social plan] was supreme, and that once a good ground plan was drawn it could be executed in any style."³⁰

At the same time within the architectural profession the quest for a unified national style of design was being carried out. The architectural academics and leading practitioners had decided by the turn of the century that an architecture based on a broad classical vein would be the standard. The Ecole des Beaux Arts was the source for this modernized classical scholarship and training. However the

American Classicists opposed themselves to those who remained in the Beaux Arts neo-Grec camp. At the outset it should be obvious that neither were these two approaches diametrically opposed to one another nor were the groups necessarily hostile. It was merely an academic debate in a country whose architectural profession had the luxury to be able to worry about such fine points and had the commissions to symbolically wage the competition. Not a few architects chose to be conversant in both idioms, one of whom was Henry Hornbostel. Typical of the "eclectic" architects he was neither dogmatically single-minded about the source of forms nor averse to the use of forms predicated on new technologies and materials. Hornbostel would attach whichever style seemed appropriate to, what was essentially, a Beaux Arts planning scheme.

One stylistic camp, led by the powerful practitioner and educational patron Charles Follen McKim, was allied around the academic notions of American Classicism. This classicism "sought to enhance the functions of modern architecture by shaping them to simple forms and limpid images evocative of the classical past - prototypes were found in Colonial America, Renaissance Italy and [primarily] Roman antiquity."³¹ This camp propagated the Rome Prize and other incentives for students to study Roman antiquity. The great examples for the profession of the success of this approach was the co-operation of artists at the Chicago World's Fair

(1893) and later on huge the civic projects of the City Beautiful. Within the rigor of the accepted "style" there was enough latitude to allow diversity.

The interrelated systems of education, design, and construction encouraged both a unity of appearance and tradition, and a latitude of individual expression. Personal attitudes towards form, composition, prototype, and style differed widely and created a diversity within the sought-after unity.^{3 2}

The other powerful camp was represented by the Society of Beaux Arts Architects, founded in 1893. This group still believed in the validity of the Ecole, its educational system, and its formal canon of hierarchies of vista, function, and circulation. "The relative complexity of the formal image yielded by [Beaux Arts] compositional strategy departed even further from the simplicity of the Classicists when the rhythmically distributed columns and heavy details of the fashionable French style were applied."^{3 3}

One of the biggest defenders of the Ecole method of design in its purest form was Paul Philippe Cret.^{3 4} What is of interest in his discussion is how he defined the principles of design at the Ecole. He essentially quoted from Gaudet's book The Elements and Theory of Architecture:

1. You must be faithful to your program, be familiar with it; and also see correctly what is the character to be kept in the building.
2. The ground, location, or climate can modify absolutely the expression of the program.
3. All architectural composition must be constructable.
4. Truth is the first requirement of architecture. Every architectural untruth is inexcusable. If in some cases one of these

untruths is overlooked on account of the ingenuity and ability shown in the building, the impression given, nevertheless, is of an inferior art.

5. Effective strength is not sufficient - it must also be apparent.

6. Designs proceed by necessary sacrifices. A design must be good first of all, but it also must be beautiful. You must compose then with a view both to utility and beauty of the building. And, as an element of beauty, you will try to obtain character by variety.^{3 5}

I believe that Hornbostel operated on this level of Beaux Arts sensibility within an American notion of utility and civic Imperative.

Thus in the years at the turn of the century there were a number of precedents which an architect or the trustee for a campus might be recall. The gothic quadrangle of the University of Chicago^{3 6} belonged to the picturesque approach which emphasized the academic pursuit as a quasi-religious, segregated occupation. The rational classicism of the "American Renaissance" was epitomized by Columbia. The Chicago World's Fair, though an impermanent piece of scenery, was held up by this group of architects, as the model for permanent civic institutions; "the White City" of the Fair was translated to the "heavenly academic city." These architects used Roman imperial motives on an armature of classical order to signify the campus as the elevated source of the classical and democratic Ideals. These architects, though spiritually akin, competed with the architects who practiced the other Beaux Arts approach where designs were based on an academic neo-Grec. This canon emphasized a rigor

of plan, as the armature, and allowed a more eclectic and individualized architectural image. This was the approach of Paul Cret (University of Texas), Ernest Flagg (the U.S. Naval Academy), Cass Gilbert (University of Minnesota), and Henry Hornbostel. The early American notions of the campus in the wilderness remained, with Dartmouth as an example. Here the separate academic halls spoke for an almost agrarian simplicity of life. This value of the pastoral life was transformed by Frederick L. Olmsted into an urban notion of a park campus. Like his city parks these campuses would combine picturesque nature with picturesque, scattered, and seemingly random academic groups. Nature would be so assisted that specific campus functions would seem effortlessly accommodated in a sylvan setting.³⁷ The final, and most American by image, campus form that served as the great precedent was Jefferson's University of Virginia. Here the stately architectural order of the Lawn, with its pavilions and library, was established on the American frontier. Though he used 18th century French and antique Greek classical sources, his campus always serves as a reference for all other academic villages in the United States.

A good many of the established campus forms were predicated on and financed by the cultural phenomenon of patronage. Entire universities were donated to a specific city or the nation at large. Stanford University, the University of

California (Berkeley), the University of Chicago, Washington University in St. Louis, Carnegie Tech., and a number of the Sister colleges, were founded by the vision of a single family or individual.^{3 8} Stimulated by a number of motives, the patrons were often quite specific about the future disposition of the campus form and the quality of its architectural associations. Not a few of the patrons took an active hand in selecting the architects and in approving the designs. After all, most of these men and women had attained their power through active involvement in a practical decision-making process. They saw building a campus as just another business and manufacturing problem. Yet it was a moral obligation to be attacked with energy and performed with efficiency and practical common-sense. This was the age of great wealth when the elite saw as their duty the support of a wide variety of civic projects, the academic city not being the least.

1. Alan Trachtenberg, Incorporation of America, (New York: 1982), p. 142-143.
2. Richard Guy Wilson, in American Renaissance 1876-1917, (New York: 1979), p. 12.
3. Trachtenberg, The Incorporation of America, op. cit., p. 149.
4. Ibid., pp. 152-153.
5. Richard Guy Wilson, in American Renaissance, op. cit., pp. 28 and 29.

6. Ibid., p. 43.
7. Ibid., p. 13.
8. Ibid., p. 11.
9. Quoted in Wilson, *ibid.*, p. 29.
10. "The architectural tradition of the Renaissance was peculiarly adapted to American needs for many different reasons. In the first place the intellectual life of modern Europe and America actually began with the Italian Renaissance;... The leading figures in architecture argue that the best course which American architecture could take at the present time would be... to pick up the threads of the Renaissance architectural development at the point where they were dropped at the end of the 18th century, and so restore the architectural vessel to its true and profitable course." ["The Work of Carrere and Hastings," Arch. Record, vol. 27 (Jan. 1910), pp. 32 and 38.]
11. Helen L. Horowitz, Culture and the City: Cultural Philanthropy in Chicago from 1880s to 1917 (Lexington, Kentucky; 1976), p. 4.
12. Helen L. Horowitz, Culture and the City., op. cit., p. 4.
13. Ibid., p. 6.
14. "The Work of Carrere and Hastings," op. cit., p. 13.
15. Edwin Blashfield, Mural Painting in America, (New York: 1913), quoted in Wilson, American Renaissance, op. cit., p. 21.
16. Helen L. Horowitz, Culture and the City., op. cit., p. 21.
17. Paul V. Turner, Campus: An American Planning Tradition, (Cambridge, 1985), p. 4.
18. Ibid., p. 80. This was not withstanding the difficulty of actually teaching and living within the rather confined courses of buildings.
19. Ibid., p. 79: ff 63.
20. During the early 19th century the realities of student violence, financial stress, and student agitation for greater academic and extra-curricular freedoms dispelled the utopian notions of the campus. Rather, the disorder impressed upon the trustees of these academic villages the need for even more rigorous institutional and campus order. The college

authorities were essentially called upon to act "in loco parentis" on campuses. This era of 1800-1860 saw compulsory chapel services, strict dormitory rules, and classical modes of education which established the elitism that marked higher education in America.

A pre-eminent campus architect of the time, Alexander Jackson Davis, categorized his college designs with those of his asylums and prisons. Ibid., p. 90.

21. The United States was a country spiritually "looking outward" and growing to the west. Ibid., p. 116.

22. As quoted in Turner, p. 116: "College Edifices and Their Relationship to Education," American Literary Magazine, (November 1847), p. 271.

23. Turner, op. cit., p. 11; from William G. Brown ed. Official Guide to Harvard University, (Cambridge: 1899).

24. This is not to say that this argument could not be made for a classical campus architecture.

25. Block, The Use of Gothic: Planning and Building of the University of Chicago 1892-1932, (Chicago: 1983), p. 7.

Note how the academics have here substituted the campus and its architecture in the place of Art as the mediator between man and God.

26. This often repeated phrase comes from the Biblical conception of the "new Jerusalem," a heavenly city in the clouds. The American city was held in literature as aiming for that "city on a hill" status. The ideal university, now a microcosm of the city, became a vision of the perfectability of man through art, architecture, and moral instruction.

27. Ibid., p. xiii.

28. There was less of an desire on the universities' parts to create the residential groups as before. Not only were the students drawn from the surrounding city, but also the university institutions took less of a "parental" role.

29. Neil Harris, introduction to Block, The Use of Gothic., op. cit., p. xi.

30. Turner, Campus., op. cit., p. 196.

31. Elizabeth G. Grossman, "Paul Philippe Cret: Rationalism and Imagery in American Architecture," (PhD Diss. Brown University: 1980), p. 7.

32. Richard Guy Wilson, American Renaissance..., op. cit., p. 101.
33. Elizabeth Grossman, Paul Cret..., op. cit., p. 8.
34. Paul Cret was "imported" by Warren Laird, Dean of the school of architecture at Penn, in 1903. Laird himself was a defender of the Ecole method both as a graduate of the Ecole and as a leading figure in the circles of American architectural education. With Cret he consulted in planning campuses and he was active as a professional advisor for architectural competitions; we will see him later at the competition for Carnegie Tech. Schools.
35. Paul Cret, "The Ecole des Beaux Arts, What its Architectural Training Means," Arch. Record, Vol. 23 (May 1908), p. 371.
36. The firm of Cram, Goodhue, and Ferguson (along with Ralph Adams Cram's litany for the gothic style) was the most widely known for its American gothic work; West Point, the Graduate College at Princeton, for example. Also Cope and Stewardson's University of Pennsylvania Quadrangles, Bryn Mahr work, and Washington University in St. Louis. James Gamble Rogers (Yale), and Day and Klauder (Princeton and University of Pittsburgh) belonged to the American gothic's second phase after the mid 1910s.
37. Olmsted's work at Stanford, Wellesly, and Emory for example.
38. On the older campus the elite families gave residential complexes or the new science laboratories.

Chapter 2: Andrew Carnegie Patronage and Pittsburgh

Andrew Carnegie belonged to the industrial elite who were financially and spiritually able to foster academic and civic institutions. Carnegie had the single-minded vision and conviction, and the strength of bureaucratic control, to endow the institutions themselves with a workable ideal and organization. A self-made multi-millionaire he wrote extensively about the philanthropic necessity of the wealthy (in The Gospel of Wealth), the power of self-help, and the supremacy of the American individual. A fundamental belief in the industrial system guided his ideals. His institutions were most definitely established to facilitate the growth and consolidation of that system. He also had an allegiance to the town where he made his fortune and whose sweat and toil produced his abundance: "We are all Pittsburghers, I have made my fortune here and by the aid of very enterprising partners I find myself busily engaged in investing here. I link my fortunes with Pittsburghers - stand and fall with them."¹

Carnegie relied on his business and organizational specialists to determine the best system of education to support the current industrialization of America. He also relied on a corporate organization of lieutenants who might have had their own patronizing attitude at heart when they enacted Carnegie's wishes. However, Carnegie's notions of philanthropic patronage, distinct from mere charity, and his

founding of a large number of self-perpetuating foundations speak for a wider mission than sheer self-aggrandizement. To simply say that Carnegie fell into a patronizing disposition predicated on maintaining the capitalist status quo would be a half-truth.

Andrew Carnegie (1835-1919) managed to give away somewhere between 333 and 350 million dollars between his 33rd birthday and his death. He made his first fortune in railroads, a second fortune in oil, and his much greater fortune in steel.² Carnegie was looked upon as the model industrialist and organizer of the late 19th century. He was renowned for his largess and social thought. In 1901 after a protracted industrial battle Carnegie sold his steel corporation to the even bigger United States Steel Corporation, led by J. Gould, for 492 million dollars ("in age before income tax and inflation"). Carnegie, his partners, and his lieutenants, reaped huge rewards.

Even before he came to such an astronomical sum Carnegie had been writing about and acting upon the social responsibility of America's wealthy elite. Having arrived with his penniless family from Scotland in 1844, Carnegie's upbringing was "radical and infused with the politics of social reform [which was] entirely opposed to the accumulation of wealth."³ This obviously did not apply to the business of making money for Andrew Carnegie was quite facile at that. Yet by 33 he had begun the "business of

giving away money while he made money - the giving became an excuse for the making." His motivations were based on a mixture of religious beliefs, humanitarian concerns, and conservative ideologies.

Religious belief played a curiously quixotic role in Carnegie's philanthropy. Although John Wall, his biography, suggests that he rejected his father's Swedenborgian faith and adapted no alternative, some of his philanthropic activities imply a religious resonance... His commitment to science as the root of all fundamental understanding, his late interest in mysticism, his gifts of organs to churches (he believed that music was a better expression of religious belief than words), and his refusal to give pension plans to sectarian schools all suggest elements of Swedenborgian rebellion.⁴

The Gospel of Wealth encapsulated the personal ideals, and the means to achieve them, of the middle-aged Carnegie.⁵ In the text he calls upon the American millionaire to "sell all he [sic] had and establish an estate that would be administered for the good of his fellow citizens". Carnegie himself lived by the adage, "The man who dies rich, dies disgraced." He recommends that the wise trustee of this surplus wealth invest in seven fields of philanthropy: universities, free libraries, hospitals, parks, local halls for lectures and concerts, swimming baths, and church buildings.

The foundation of his philosophies lay on several admitted premises including the power of education and self help. Reflecting on his own humble origins, "the greatest of all advantages with which a man can begin life is that of being

poor, the industrious poor - boys reared by their hard-working parents." The young man was to be industrious, hard-working, and ever-searching for educational and business opportunities. However, he admonishes, "Don't let money be your god... surplus wealth is a great trust and should be administered for the good of the community."⁶ Carnegie would assign to the young woman the different role of assisting the "ascension" of mankind: "it is the woman more than the man who is for God and good only - it is she who raises man to God... while men are warlike creatures, savages..."⁷ Carnegie also was determined to foster education hand in hand with world peace.

In an innocent Emersonian vein Carnegie eulogizes "American individualism, independence and competence; a man's first duty is to his own competence... and then extends to his needy neighbors who are less favored than himself." Essentially he recognizes that while higher education was limited, by available resources and personal motivation to a select group, he was intent on the ideal of "creating intellectual centers accessible at all times to all classes."⁸ This ideal would shape the campus form and academic mandate of his Carnegie Technical Schools in Pittsburgh.

His notions of higher education, even with his willingness to break down class barriers, however indicate a tell-tail ethnocentrism. Though Carnegie was opposed to supporting one

religious denomination over the other he felt impelled to support institutions that would aid only the English speaking people throughout the world. His biographer Robert Lester would explain that this was the case "partly" because Carnegie felt "only the Anglo-Saxons had developed a general public library system, and also because, with his confidence in 'race imperialism', his own people seemed the most promising field for the kind of education at which he aimed."⁹ On the American continent, in the British Isles, and in their old colonies, Carnegie would aim to establish self-perpetuation institutions for a scientific, technical, and practical education.

Th larger group of civic patrons saw themselves as trying to rectify the basic social and mental deficiencies of the community through scientific means. This is in contrast to merely applying a bandage of charity to the social ills.

The first foundation philanthropists and their advisors perceived a vast transformation in the way wealth could be used to solve major social problems, a transformation produced by new scientific understanding, and the application of that understanding to virtually every field of inquiry. Medicine could provide them with their first ideal model, for it was the one that could easily become a metaphor for describing all the "ills" of the "body politic"...

The modern idea of philanthropy rests on a recognition of progress and choice; it makes the eradication of poverty possible, not through divine intervention but through human endeavor. The transformation calls for an educational system and an educatable public, together with a body of knowledge available to

all. It requires attitudes towards class transcendence and transformation that are faithful to the Judeo-Christian tradition...¹⁰

To put it almost too simply, they were looking to shape a stable, modern American consciousness by eliminating the unpredictable volatility of the uneducated masses.¹¹

Obviously this patronizing and elite concept and course of action were based on the noblesse oblige notions of the day. However the goals of the philanthropists are much more complex and unsettling than any of the goals about which the early critics of the "robber barons" wrote.¹²

That none of these philanthropists ever questioned his values, motives, or methods is not at all surprising given the force of character of the elite and the tenor of the moralizing of the times. The business methods did not allow for governmental checks and balances, as "success" in America unquestionably beget success when left unhindered. These men saw the value of working in arenas that avoided politics and group electorates; they saw the value of a collective effort free from outside interference.

Such independence, however, did not mean that political or business leaders were excluded from making decisions about the philanthropic process. On the contrary, their involvement was essential, not so much as political leaders or as businessmen, but as statesmen recruited from both sectors, chosen by self-selecting boards of trustees for their statesmanship and the experience their respective professions had given them. Again, moral judgement was the essential criterion...¹³

This philanthropy, operating on a higher plane free from political and profit-oriented baseness, looked upon the support of intellectual rigor as the most potent means to support its "agenda".

Carnegie's directives to the trustees of the Carnegie Technical Schools in Pittsburgh reveal his notions about the way in which the technical institution was the central element in the ascension of the American culture. There was no question that his patronizing educational Imperatives were directly tied to industry. The basic Imperative of the technical school was the need to continue to produce capable and skilled workers for the factory system. He also wanted any civic institution to instill civilizing notions in the industrial workers so that they would become active members of the larger (and predictable) society. "Yet, Carnegie's interest was perhaps less industrial than autobiographical, reflecting the limitations of his own career and the desire to aid future young technological entrepreneurs in their own search for success."¹⁴ Carnegie felt, and wrote, that he was paying off a debt to the society that allowed him his success. It was a form of an inward oriented American manifest destiny.

Carnegie's notion of self-help belies a much more complex orientation toward the American University. Carnegie thought to finance technical and scientific education, disciplines thought to be quantitatively based. Thus the nebulous ideals

and values of a liberal arts education could be dispensed with. Competence, productivity, and societal conformity, not rationalism or critical innovation, were the attainable and desired products of his education systems. He wanted a controllable and predictable, almost industrial, process.

Like John D. Rockefeller and his heirs, for example, Carnegie was directed by this personal sense of the social Imperative to establish a mechanism to fulfill those Imperatives. The mean to achieve these ends was the charitable foundation. This management structure was modeled after the very corporate structure that had brought success to the businessmen in the late 19th century. Carnegie had operated with a hierarchy of lieutenants in his mills, and he saw no reason to stop the practice. Initially his close circle of lieutenants and advisors would make the detailed decisions while Carnegie oversaw the "big picture". Later the full decision making process involved a corporate dimension. Carnegie had implicit faith in the precision, acumen, and honesty of his close advisors and his "men in the field". It is important to note that this circle at the turn of the century was yet to include the incursion of outside experts.

The second importance of the foundation was that it created the legal entity of the perpetual trust that would outlive the patron. "My chief happiness... lies in the thought that, even after I pass away, the wealth that came to me to

administer as a sacred trust for the good of my fellow men is to continue to benefit humanity for generations untold."¹⁵ This entails a certain belief in the validity of such philanthropy and the patron's social Imperative in the future. Within the foundations was also an implicit faith on the part of the patron, "that the trust would be managed by trustees who would observe the spirit of the donor's philanthropic intent." Using modern business techniques the donor could establish a foundation that would be flexible enough to accommodate any unexpected future scenarios. The general purpose foundation, devoted quite simply to the welfare of mankind, seemed a wholly appropriate way to formulate their wishes.¹⁶

It seems that these business magnates recognized the value of education in shaping a controllable culture. They saw the need to support (and thus control) such academic agencies through the corporate foundation. Robert Arnove argues that these supportive foundations have from their inception "played the role of unofficial planning agencies for both the national American society and an increasingly interconnected world-system with the United States at its center."¹⁷

Carnegie, as did his counterparts, saw the value of cultivating managers and trustees who would not only share his authority but who would also be integral to the continuing health of the business and philanthropic enterprises. Typically, Carnegie's "search was not for

educated men, in the classical sense of the term, but for new managerial specialists who could be relied on to continue [his] endeavors."¹⁸ At the same time, however, these trusted subordinates had to have similar attitudes and values as the foundation. This situation was simply a "carry-over" from the earlier days of Carnegie's organization of trusted lieutenants.

The coupling of ideals was a little more complex when it came to selecting directors of educational institutions. "Carnegie's technologists, like the presidents of his institutes, reflected a calculated judgement of the skills of managerial experts among men trained in the specialties they sought to advance." Arthur Hamerschlag, the director of Carnegie Technical Schools in Pittsburgh, exemplifies this reality. He was a self-taught engineer who directed technical schools in New York City before he was called upon to come to Pittsburgh at the age of 31.

This rise of the corporate foundation, which occurred at the same time as the beginnings of the Carnegie Technical Schools, did not cause Carnegie to change his own style of operation. He distanced himself from his managerial underlings and retired to Scotland to take a more "active control" of his interests in philanthropy. From relatively modest home offices, surrounded by even fewer advisors ("business associates") than before the turn of the century, Carnegie would write or cable often cryptic messages to his

subordinates. The close advisors by his side and in the field were personal friends with whom Carnegie would casually communicate about almost any matter. They were his personal envoys and agents. William Frew, a lawyer and businessman in Pittsburgh, was Carnegie's most trusted advisor in the city. As such he was made the President of the Board of the Carnegie Institute. In this way Carnegie maintained a sense of personal control of the upper-most hierarchy of the management.

This style of "management from a distance" is precisely how he saw to the philanthropic creation of both his public library system and the Carnegie Technical Schools. Carnegie believed in the power of the book. Here were the ideal civic institutions where a motivated citizenry could educate, and thus improve, themselves; "so little given to produce so great and beneficial a result." He thus gave the funds for the construction of some 2500 libraries, totaling \$56 million, between 1881 and 1907. The last library was completed in 1915. By 1900 he was "giving" two or three away a day.

Three points are essential about this library campaign. The libraries were only erected in English speaking countries, following Carnegie's conviction that all British and Americans had "an unsatisfied yearning for literature"¹⁹. Carnegie avoided having his name associated with the libraries, especially having his name "carved over the door".

Instead each was to be named "Free Public Library".²⁰ Finally, Carnegie looked at the gift of a library building as a bribe to each community to erect a library system. Carnegie only acted on the specific requests of communities that were able and willing to provide a site, stock the shelves with books, and pledge an annual amount for the maintenance of the system. The more specific the request the quicker the action. His lieutenants, taking care of the details,²¹ required full statements as to the population and income of the community before they would even bring up the request to Carnegie. There were no personal interviews. Carnegie only gave what he pledged, \$2 per head of the population. If the community overspent the stipulated sum he paid for it and later charged them.

The local library boards were to select the architects for the buildings and approve of their designs. The Carnegie libraries had no central planning agency. Two ways of getting on Andrew Carnegie's black list were to overspend and assume he would pick up the difference, and to use the appropriation for an overly ornate building and provide inadequate facilities for book handling.²² Yet the New York City Branches were to be some of the most elaborate.

To prevent abuses of this kind Mr. Bertram [his personal secretary] insisted on inspecting and approving plans... a pamphlet was prepared and sent to the applicants containing suggestions, which increased in value with successive additions. There were no requirements that a particular sketch be adopted, and local architects were given free

scope; no money could be obtained, however, unless the scheme met the approval of the Carnegie office which maintained that, while a pleasing exterior was not undesirable, first emphasis should be laid on a structure as a convenient working library.²³

This approach was basically the same with the Carnegie Technical Schools, although Carnegie himself did show most definite and specific tastes in architecture.

His first libraries in the United States were in the mill suburbs of Pittsburgh, the cities of Allegheny (1890) and Braddock (1889). These were "paternalistic ventures directly benefitting his workman". Called "workman's club houses" each was essentially a community center with library, auditorium, gym, and social hall.²⁴ This practice of joining a library with an auditorium continued in the subsequent Carnegie Libraries in Pittsburgh and elsewhere in the country. The first libraries are imposing Richardsonian edifices of dark stone.

Carnegie also funded the Carnegie Institute in Oakland, offering one million dollars in 1890 for the construction of a library, art gallery, museum, and concert hall.²⁵ This civic institution on the grand scale made the suburb of Oakland the cultural counterpart to the business district of the city at the Point.²⁶

The full list of Carnegie's philanthropy actually takes several volumes and to merely quote the huge amounts of money expended says relatively little beyond the relative importance of each project.²⁷ He contributed to the

technical education of Scotland through schools and libraries. He created the Carnegie Hero Fund to reward citizens who had risked (and lost) their lives saving another person. He established both the Carnegie Endowment for the Advancement of Teaching and the Carnegie Corporation of New York for Education to advance the causes of professional education methods and the teaching of science. He had established a number of teacher's pension fund. He supported over 500 colleges and universities directly, with Carnegie Technical Schools receiving four million dollars by 1911. Three buildings to peace and the Carnegie Endowment for International Peace supported his fervent desire for world-wide harmony.²⁸ He funded the Carnegie Concert Hall in New York, the Carnegie Institute and Library, and its branch system, in Pittsburgh, as well as the wider network of public, free libraries around the English speaking world.

His philanthropy, even after his death, followed his established social Imperative. The Imperative was taken by his trustees and executors as gospel. Carnegie's philosophies of Institution created these "facilities for self-help" and in turn generated the very Imperative of each institution.

Carnegie's Pittsburgh has always been an urban center dedicated to industry and commerce. It was a blue-collar city whose working populace was, for the most part, imported from Europe to work the mills. Ethnic heritages did not

disappear for they often were the only means by which the worker and his family might survive the industrial chaos that surrounded them. Ethnic diversity took hold and created a patch-work of cultural values and lifestyles.²⁹ As a result too, ethnic identity produced strong affiliations and geographical neighborhoods. Pittsburgh is still a city composed of cultural enclaves each often with their own notions of community and political affiliation. The cultural group, the social and working affiliation, and the church formed the nucleus of a rather dreary existence.

The capabilities and power of the city's industrial base produced a number of technical innovators, corporate entrepreneurs, and wealthy industrial families. It was accepted that the capitalist system would allow the industrious American individual unlimited possibilities. The work ethic and invention were the unabashed credo. The bosses worked as long and hard as their men, though the former always had more to show for it. Success was measured by tonnage of output and capital accumulated. The "captains of industry" could have been coined in Pittsburgh; not only had many of these men come up from the working ranks but they also knew had to take personal charge and run the business.³⁰ The industrialists worked in the mills or in the towns by their mills to be in constant, active command. Yet they depended a good deal on their lieutenants as these activities by necessity were to pioneer the corporate chain of command.

Between 1890 and 1910 Pittsburgh had given birth to its first corporations, born from the huge profits of the steel, oil, and transportation industries. The corporate conglomerate existed for economies of scale and control. The legal entity existed to fend off competition. Thus the city became the location of company and then corporate headquarters. The white-collar office worker made his appearance, as did the business expert, the technical specialist, and the scientific advisor.

Pittsburgh saw the creation of the attendant headquarter's buildings, transportation networks, social clubs, civic institutions, and estates of the wealthy. The general prosperity also supported the cultural institution of patronage and charity.

Even after the bosses became industrial giants, they lived in the city or maintained a residence there (while they lived in New York). These industrial giants at first needed to assimilate into the existing elite and then maintain their status in that exclusive elite. The industrialists commissioned architects to build their estates, artists to paint their family portraits, and collectors to scour Europe and bring back "Art and Culture". The "captain of industry" in Pittsburgh, as in any booming city across the country, attempted to overcome their provinciality by wearing the garb of respectability and civility.

It was this pursuit of "class status" and acceptability that brought about a peculiar transformation. Rather than simply gaining the finery of success for themselves and leaving it at that, most of these industrial bosses saw to the improvement of the city. Based upon a number of no-doubt patronizing motives, as mentioned above, the industrial bosses acted to improve the city at a time where the notions of "City Beautiful" were proposed by architectural and social planning specialists.

The early city improvements, in Pittsburgh and elsewhere, came about through the mutual support of the corporations, the major industrial figures themselves, and the urban reformers. The business leaders preferred to keep their actions apolitical. Instead the corporation gave its business know-how and resources to specific urban improvement projects. The industrial giants by their involvement added legitimacy and the air of success. The practical business sense of the corporate manager was now directed to the problems of the city.

Steep hills, green valleys, and rivers mark the geography of the place. Even far suburbs on hills can see the skyline of downtown in the distance. "Downtown" is located on the famous triangle between the Allegheny and Monongahela Rivers. It was here that the first settlements and forts were established in the wilderness, astride the trade routes west and north. The city expanded over the years primarily to the

south and east to encompass the suburbs to which the industrial bosses and their well-to-do managers had moved. On the other hand the nearby towns that had grown up around the mills, along the rivers, also had been annexed by the larger city of Pittsburgh by 1900.

The man-made geography at the turn of the century clustered along the river and crossed the river. Mills of various manufacturing processes separating the land from the water formed the nucleus to worker settlements. The rail and the river served as lines of communication and transportation. Thus the valleys became production and transportation jungles, with the management classes and the rich climbing up the hills and away from the rivers.

It was these suburbs to the east and south that actually got the first attention of the urban designers. The elimination of the social and environmental evils of the mill towns and even cleaning up the industrial and commercial squalor of "downtown" took a great deal more effort and time. What Pittsburgh got at the turn of the century was a string of parks made from land donated from the estates of the industrialists. These were designed after Olmsted's methods in order to surround pastoral suburbs.

Our interest specifically lies in the creation of the civic and educational center of Oakland several miles east of downtown. Between the years of 1890 and 1890 a number of men and a woman created this suburb-turned cultural city. Each

had different motives but each was willing to support the rather vision which would encompass a rather vast array of civic institutions adjacent to the burgeoning residential areas.

These crowded 700 acres... represent an attempt at the turn of the century to create a second Pittsburgh at a moment when the old Pittsburgh had so decayed that it required a shimmering alter ego some distance away. Only this can explain why Oakland was not throttled at its birth...the golden years of Oakland lasted only two decades, from 1890 to 1910, but these were crucial decades for American cities... For Pittsburgh these were also the years of judgement, if not years of atonement, as both the muckraker Lincoln Steffens and the publication of the Pittsburgh Survey targeted Pittsburgh as the most corrupt and socially repressive city in the United States. The creation of Oakland, one of the best pieces of cosmetic urbanism in the country, was a direct response by the civic leaders of Pittsburgh to the attacks.³¹

The rational organization, the pastoral and well-manicured parks, the planned axes and vistas, the architectural and academic harmony, of Oakland were images of the promised "City on the Hill". This particular vision of order came from the tenets of the City Beautiful movement and the Beaux Arts architects. In this regard Pittsburgh was not far behind such civic projects which were planned for the east coast. The primary organization that all cities would emulate was the Civic Art Commission in New York City. This group was composed of civic leaders, business men, politicians, and architectural (landscape and structural) and urban design experts. Learning from corporate America each

specialist in his place contributed to the greater whole. The architects and planners came to exert the most influence. Thus their field of specialty, the built environment, became the preferred mode of civic reform. Architecture and landscape design were the tools for the City Beautiful.

The pastoral quality of Oakland came from 400 acres of park land given to the city by Mary Schenley in 1889. This particular park was shaped by Edward M. Bigelow who was also instrumental in creating the series of parks across the city. This landscape architect was not only among the social elite in the Pittsburgh but he was also trained in the Olmsted school of progressive social reformers.

Like the landscape architects in other cities, Bigelow shared the assumption that the environment sufficiently affected human psychology and behavior. He did not trust the masses of the working class, and felt that parks were needed to counteract and restrain the disorder engendered within these individuals by ugly and chaotic cities... Bigelow and other advocates of the city parks were interested in promoting middle class-restraint. Hopefully, parks would induce a behavioral pattern for the lower class acceptable to middle class values and interests... they were untroubled by the class bias inherent in the concept. The early park leaders felt no doubt or shame about elite stewardship and proudly accepted the responsibility.³²

The chain of parks was filled with fields for pastoral pleasure, scenic vistas, and scattered monuments to civic figures, war dead, and historic events. All park elements were to be calming and educational.

The crowning gesture of Schenley Park came when Carnegie's partner Henry Phipps created a huge glazed conservatory complex in 1893, which was modeled after the Chicago Fair's Horticultural Hall. "In plan it is the most intricate Beaux Arts building in the city, with a succession of major and minor axes and cross-axes in a manner of a mid-century French insane asylum."³³ Not only would this glass complex be another attraction for the city dweller on a Sunday outing, but the implicit organization of botany and its supportive architecture was a lesson into civic order and hierarchy. "Each thing unto its own place."

The architectural tenor of the Oakland center was established the next year when "Carnegie weaned away twenty acres of Schenley Park for the construction of a huge library, museum and music hall,"³⁴ the Carnegie Institute. "Carnegie's patronage of Oakland was the sign to other industrial leaders to endow the area with buildings of such magnificence that it might create a new Pittsburgh free from the stigma [and corruption] of the old."³⁵ The Carnegie Institute complex also formed another precedent with its architecture. Essentially Carnegie gave notice that the classical style from the east coast, which was to become the style of the "American Renaissance", was the appropriate style for the public monuments of Pittsburgh's civic institutions. Richardson's brief reign in Pittsburgh was over.³⁶ The Oakland competition designs of Henry

Hornbostel's Carnegie Technical Schools, the Western University of Pittsburgh, and the Soldiers and Sailors' Memorial follow the more Beaux Arts tact.³⁷ The other civic edifices were designed in a mix of eclectic or more severe classical idioms by firms primarily trained in the atelier of the east coast or Paris.

The architectural character of Oakland was also determined by the developer Franklin F. Nicola. While he made and lost his fortune in speculative apartments and hotels (for example the Schenley Hotel and the Schenley Apartments), he was fundamental in suggesting and championing the civic development of the area. He was a partner in building the baseball stadium (Forbes Field) across the street from his hotel. He commissioned Hornbostel on a number of occasion and staged at least one competition that Hornbostel won. In 1905, having bought the northern section of Oakland from Mary Schenley, his Schenley Land Company was responsible for the overall face of Oakland by "planning the model city with a separate character to each of its four quarters".³⁸ One quarter was for residences, called Schenley Farms. Another was for monuments, including Hornbostel's Soldiers and Sailors' Monument. The third quarter was for private clubs built on a civic scale. The final quarter was the hillside "educational Acropolis" that became the University of Pittsburgh (at the outset the Western University of

Pennsylvania). To this civic center would be later added the Gothic Cathedral of Learning and a huge medical complex.

Carnegie Technical Schools was looked upon as the eastern outpost of Oakland civic center as the institution grew from 1905 through the 1920s. The campus was sited essentially out in the direction of the city's suburban growth, closer to those suburbs of the industrial bosses. Carnegie Tech. mediated between the city and its wealthy suburbs - it would offer to the populace of the city restraining morals and educational values more acceptable to the tastes of the elite. It was symbolic, too, that the city seemed to be growing physically back toward the east. The campus of modern technology, in its academics, its faculty, and its architecture, was a bridge back to the civilized east coast.

The campus would assumed the pastoral quality of its neighbor Schenley Park. The campus looked across one of Pittsburgh's ubiquitous hollows, in the floor of which ran the city's lifeline of railroad tracks, to the center of the Oakland civic precinct. It was taken for granted that the campus would reflect the City Beautiful notions generated by the Chicago Fair. Was this a dichotomy, looking east for inspiration and cultural rectitude while looking west for the physical form and image of campus?

The Chicago World's Fair was, of course, primarily the product of the east coast academic and architectural establishment. Pittsburgh, like Chicago, would take a

national architectural style and a national cultural Imperative and fit it to its local needs and conditions. It seems fitting, too, that rather than being fabricated from a doctrinaire architectural and planning approach Carnegie Technical Schools would naturally be designed by an eclectic and acceptably innovative architectural hand of Henry Hornbostel.

1. Frank Toker, Pittsburgh: An Urban Portrait, (Pittsburgh: 1986), p. 96 and James Van Trump, An American Palace of Culture: The Carnegie Institute and the Carnegie Library of Pittsburgh, (Pittsburgh: 1970). This was from a speech at the opening of the Carnegie Institute (museum, library and music hall) in 1890. His "investments" were both industrial and philanthropic.

2. Toker, op. cit., p. 94.

3. Simon Goodenough, The Greatest and Good Fortune: Andrew Carnegie's Gifts for Today, (Edinburgh: 1985), p. 4.

4. Barry Karl and Stanley Katz, "Foundations and Ruling Class Elites," in Daedalus: Journal Of The American Academy of Arts and Sciences, vol. 116 (Winter 1987), p. 17.

5. Andrew Carnegie, The Gospel of Wealth and other essays, (New York City: 1900; and Cambridge: 1962).

6. Address to Men, Founder's Day 1910. [Carnegie-Mellon University Archives]. It seems that the only time that Carnegie ever saw his campus, in six visits, was primarily during Founder's Day in April (1907, 1910, 1911, twice in 1914, and 1916(?): as noted in Dean Arthur W. Tarbell, Andrew Carnegie and the Founding of Carnegie Institute of Technology, (Pittsburgh: 1937).

7. From an address to the "Girls of the Women's School on Founder's Day, 1910" [Carnegie-Mellon University Archives]. Throughout his life, Andrew Carnegie's inseparable advisor was his mother.

8. Robert Lester, Forty Years of Carnegie Giving (New York City: 1941), vol. 2, p. 199. The argument has been made that even this "accessibility" implies a screening of certain elements of society.

9. Ibid.

10. Barry Karl and Stanley Katz, Daedalus, op. cit., pp.5 and 6.

11. Barry Karl and Stanley Katz go to some length in their article to discern the motivations of patronage and ruling class elites in their much wider philanthropic causes. My interest will be to use their argument about academic institutions and the creation of the "foundation" to support them.

12. The critics argued "that the donors acted in a politically self-interested manner, assuaging their guilt and seeking to improve their public image without giving up control of their wealth. Tax avoidance, 'tainted money', and redistribution of money to elite institutions - these were the usual critical charges, couched in characteristic Progressive rhetoric." Barry Karl and Stanley Katz, Daedalus, op. cit., p. 1.

13. Ibid., p. 35.

14. Ibid., p. 29.

15. Simon Goodenough, The Greatest and Good Fortune:, op. cit., p. 43.

"...the relationship between humanitarian commitments formulated in terms of the donor's attitude toward religion, and their perception of the enormity of their wealth, extending well beyond the normal methods of distribution from generation to generation, led them to seek alternative ways to guarantee the continuity of their lifelong commitment to philanthropic activity. The fact that such alternatives might limit the resources available to their own progeny was... in Carnegie's case, an article of faith. He did not believe in passing so large a fortune to his family; he was prepared to limit their resources, and to do so comparatively severely." [Barry Karl and Stanley Katz, Daedalus, op. cit., p. 8.]

16. Ibid., p. 7.

17. From Arnove's Philanthropy and Cultural Imperialism: The Foundations at Home and Abroad, (1980), quoted in Barry Karl and Stanley Katz, Daedalus, op. cit., p. 2.

Antonio Gramsci would stress "the role of the intellectual in the development of culture and the political

role of culture" within a notion of the Marxist base and superstructure.

18. Ibid. The men in power were "always generous with those whose services they needed".

19. Robert Lester, Forty Years..., op. cit., vol. 2, p. 205.

20. Only a third of the libraries were christened with his name.

21. "In administering his library benefactions as all others, Carnegie adapted the system found so effective in the making of steel. Matters of general policy he formalized himself, but details were left to his lieutenants... This kind of minutiae had never interested him in business, nor did it in the distribution of his wealth." Robert Lester, Forty Years..., op. cit., vol. 2, p. 204.

22. Ibid., vol 2, p. 205.

23. Ibid.

24. James Van Trump, An American Palace of Culture: The Carnegie Institute..., op. cit., p. 2.

25. Carnegie first offered \$250,000 in 1881 but the city did not respond. The 1891 competition for the two phased construction of the huge complex was the largest ever held up to 1891. 97 firms competed and the Boston and Pittsburgh firm of Longfellow, Alden and Harlow won. Frank Alden (1859-1908) had been H.H. Richardson's supervising architect for the Allegheny County Courthouse. Mr. Van Trump does a marvelous job explaining the evolution of this institutional building in An American Palace of Culture: The Carnegie Institute and the Carnegie Library of Pittsburgh.

26. While other libraries were established across the country on a local basis, the City of New York in 1901 was offered 5.2 million dollars for the construction of 42 (eventually 61) branch libraries. "Long before Carrere and Hastings' majestic central library was completed, it was clear that continued growth of the city would soon put large segments of the population beyond the reach of the main repository." [Leland Roth, McKim, Mead & White Architects, (New York City: 1983), p. 292.] One of Carnegie's lieutenants would write "sixty five libraries at one stroke probably breaks the record, but this is the day of big operations and New York is soon to be the biggest of the cities." [Koch, op. cit., p. 10.]

Each library was to cost Carnegie \$80,000 while the city would donate the land and the books.

27. The two exhaustive works are Simon Goodenough, The Greatest and Good Fortune: Andrew Carnegie's Gifts for Today, (Edinburgh: 1985) and the older Robert Lester, Forty Years of Carnegie Giving (New York City: Scribner's Sons, 1941).

28. Two of the buildings are the Pan American Union Building in Washington D.C., by Paul Cret, and the International Court of Justice at The Hague. Both buildings were awarded to architects by competition. The latter competition is illustrated in the marvelous volume International Competition for the Carnegie Foundation: The Palace of Peace at the Hague, (London: 1907). The entrants include Berlage, Otto Wagner, Eliel Saarinen, Eduard Cuyppers, Warren & Wetmore, and Henry Van Buren Magonigle. The illustrations are renderings that demonstrate the full range of possibilities for civic building in Europe.

29. More than one social reformer wanted to homogenize this diverse "immigrant stew".

30. The bosses tended to have grown up in the city while much of their labor had been imported.

31. Frank Toker, Pittsburgh: An Urban Portrait, op. cit., p. 80.

32. M. Maxwell, "Pittsburgh's Frick Park," in Western Pennsylvania Historical Magazine, vol 68 (July 1985), p. 246.

33. Toker, op. cit., pp. 81 and 103-104. Berry Bergdoll stated that all the American campuses of the gallery and pavilion tradition (as in the University of Virginia) came from this French tradition.

34. Ibid., p. 81.

35. Ibid.

36. The first block of the museum and concert hall that was built was an eclectic combination of an Italianate library ("from the Florentine palazzo"), an uneven Romantic/Victorian semi-circular hall, and a pair of towers that were "versions of San Marco's campanile. The 1904-7 additions were "more Ecole based." The 1891 commission set up Longfellow, Alden and Harlow as the pre-eminent Pittsburgh firm for twenty years - the local equivalent of McKim, Mead, and White. [James Van Trump, An American Palace of Culture: The Carnegie Institute and the Carnegie Library of Pittsburgh, op. cit.]

37. See below for the evolution of all Hornbostel's work in Oakland.

38. Toker, op. cit., p. 81. For Nicola's biography see footnote 41 in the Survey of the Works of Henry Hornbostel chapter 7, below.

Chapter 3: Henry Hornbostel and His Notions of Campus

Mr. Hornbostel sees, as perhaps no other man in this country does, the comparative values of the elements which make up a competitive program. He knows how to emphasize those [elements] of importance until they fairly shriek of their presence... speed is his dominant characteristic, coupled with vast physical energy and a mind of equal dexterity.. he has a most restless, active, enterprising mind and an imagination of surprising fertility.¹

The editors of Brickbuilder in described Henry Hornbostel's talents accentuated a number of professional traits that had established him to some high professional esteem. As a product of the Ecole des Beaux Arts he had been trained to accomplish quick design problems in the typical compositional manner. His talent for the quick perspective and his ability to show in those perspectives the major requirements of a design program enabled him to win a great number of architectural competitions throughout his career. It also gave him a wide reputation as a renderer and somewhat of a visionary. Hornbostel's work embodied the dichotomy of architectural design, drawing as a product in itself, and the creation of an architecture appropriate for the needs of the larger society.

Hornbostel practiced while the American architectural identity was developing. The schizophrenic desires of economic utility co-existed with civic grandeur. The American ethic of business-minded practicality guided architectural education, design practice, and architectural

criticism of the period. Meanwhile the society espoused the scientific method and the means of engineering to solve its problems. The debate raged as to the "correct" balance of the influence of fine art and engineering. Hornbostel's work, especially those projects thought to be most eclectic, continually addressed this dichotomy.

Henry F. Hornbostel was born in Brooklyn in August 1867,² raised by his father, a German immigrant stock-broker, and his mother, a native New Yorker, in New York. This was the American city where, at least on the surface, the most inventive architecture within the accepted European mode was practiced. He attended a series of private schools where he became known for his theatrics, fashionable dress and athletic prowess.³ He was marked early by a desire to stand out, to be known as "a character".

He apparently had decided upon entering Columbia in 1887 that architecture was to be his field of study. Before his graduation he had already become involved in summer work at the offices of Lemos and Cordes and also Wood and Palmer, all in New York City. The latter would be the firm, located at 63 William Street, which he would join upon his return from the Ecole des Beaux Arts. This office would serve as his vehicle to re-enter the New York society upon which he depended for his commissions.⁴

Hornbostel attended the Columbia School of Mines' architectural program which was formed by William Ware and

administered by Alfred D.F. Hamlin. The curriculum of Columbia was loosely related to the Ecole method of teaching. Ware was, however, determined to instill a practical bent and a much wider appreciation of the liberal arts in the undergraduates. Similar to the curriculum of the Ecole design was taught through a series of esquisse, a series of progressively more complex problems. Ware determine during his tenure that the competitive nature of the Ecole education should be reduced. Rather Ware wanted to encourage individuality and flexibility. The general curriculum, typical of the education of the period, tried to balance practical office and engineering questions with the dictates of creative design. Hamlin was left to balance the ramifications of historical precedence and the ways to teach that discipline with drawing and creative design.⁵

Hornbostel came to develop both a drawing style and pragmatic design approach that would mark him for success. According to Francis Swales' biography in the February 1926 issue of Pencil Points Hornbostel was "at the head of the class at Columbia in 1891" when he graduated with a bachelor of philosophy. The drawings that remain of his undergraduate work show both the development of the educational process of young architects during that period as well as Hornbostel's own sure hand. In Ware's freehand drawing class of 1891 Hornbostel used the medium which was to become his trademark, pencil on paper, to produce a fully plastic and

developed classical head study. The other projects which remain to us come from the third year. For the "historical design class" he constructed a column design based on early gothic motives. Again using pencil on paper, the drawing shows a development of a linear technique of texture and shadow. The rendering has an awareness of historical precedent with a good bit of the inventiveness which was encouraged by Ware. One design exam problem of 1891 was "A Monumental Belvedere", rendered with pencil and colored wash on paper (figure 1). The composition is shown by a drawing with a tower facade and a juxtaposed plan. The figures are somewhat forced on the presentation page. The simple symmetric plan has a main hall approached on three sides by grand stairs with porches. The rusticated plasticity of the porches' Palladian arch and trebeated side openings are fixed to a wall of planar simplicity. The ornateness of the central porch is carried to the second level in a miniature baroque church attic complete with miniature volutes and a circular wreath-cum-window. On the second level is a pergola with a marble balustrade and a suggestion of Corinthian columns. Behind the hall is a campanile which is flanked by small "piazza." The tower's elevation has a more Tuscan austerity with an open, octagonal belvedere which uses a Palladian arch motif. The tower has a tile roof. The arrangement of the forms seems a bit immature and the handling of the medium is less accomplished. Nonetheless it

is clear that the instruction at Columbia instilled in Hornbostel an Americanized concept of the Beaux Arts design method. He was armed with accepted forms and the means to depict those forms.

In 1893 Hornbostel went off to the Ecole in Paris. He was to stay for four years at the atelier Ginain until he won the Prix d'Emulation in 1897. Hornbostel no doubt chose this atelier for the reputation of its patron, Paul-Rene-Leon Ginain (1825 or 1828 - 1898). It seems too that this noted atelier had a fair number of Americans.

The period in Paris was instrumental, as all educational situations are, upon the tenor of Hornbostel's design method and architectural tastes. In Paris he would develop his sense of building materials, building technologies, and drawing techniques. This was a period where he was recognized as a talented American of some distinction. In Ginain's studio he was soon to become known as l'homme perspectif for his brilliant drawing skills.⁶ This talent gave Hornbostel the unusual opportunity to work outside the atelier Ginain, during his tenure in Paris, with the firm of Claude Girault and Blavette on their plans for the pavilions of the 1900 Paris World Exposition. This opportunity allowed Hornbostel to participate in French office practice. Hornbostel's experience with American and French offices would allow him to pick and choose the best tenets of each. Also he participated in the creation and implementation of a

new form of civic design that mediated between the engineered notions of the French expositions and the Beaux Arts canons of composition.

The atelier of Ginain was attractive to the young Hornbostel because its patron had a leading role in French architectural education and he was the Architect for the City of Paris. "Important public commissions, almost without number, were entrusted to him and he was a noted teacher of the Ecole."⁷ Ginain had been a pupil of Huyot and Lebas,⁸ and had enter the Ecole in 1842 just at the beginning of the period when the "rationalist notions" of Viollet Le-Duc questioned the canon of the Ecole.⁹ Nevertheless Ginain chose to "pursue the academic path through life" and to concentrate on the "old fashioned classicism of Lebas."¹⁰ He became most admired for his neo-Grec style, then favored in Paris, which he applied to a number of civic buildings. He also was elected member of the Institute in 1881 and he took the chair of Lefuel. He was recognized for his independent atelier.¹¹

As Architect for the City of Paris Ginain had designed a number of civic buildings for new institutions.¹² The two for which he was most well known, and both seem to have had influence on Hornbostel's later work, were the Ecole de Medicine of 1878-1900 and the Musee Galliera of 1878-1894. Both projects would have been in the office of Ginain while Hornbostel was there. The former project is a symmetric,

classical block with a long street facade. The composition's source, typical of the French academic approach, is that of the Italian Renaissance palazzo with base, piano nobile (holding the great rooms), and attic not unlike the model of Labrousse's Bibliotheque Ste-Genevieve of 1842-50 and McKim's later Boston Public Library of 1887. The facade is articulated by a trebeated bay system. Over a rusticated base zone, with evenly spaced openings and a central entrance porch with caryatids, a colossal two story Ionic order contains a smaller Corinthian order. This zone is framed by end pavilions embossed with ceremonial swags and inscriptions. The building is capped by a heavy entablature and cornice whose motifs are reduced and geometric. The details seem almost machined abstractions of classical embellishments. Both the relative weight given to each of the elements, the feeling of plasticity and multiple planes, and the handling of materials will be seen in later Hornbostel work.

The Musee Galliera shows an even more eclectic approach (figure 2a and b). "It is one of the few examples of the late Beaux Arts style to be fully realized."¹³ Substantially completed by 1890, it had been originally designed to house the private collection of the duchess de Galliera that would be donated to the city. However while the duchess later decided against donating her collection to the city she did give the building to the city. The museum has been devoted

to temporary exhibits since that time. Ginain had to establish the civic presence of a building which would house a new type of urban institution; it was a museum built by and filled with the collection of a private patron donated to the city.

What is particularly interesting in the Musee Galliera with respect to Hornbostel's later work is the similar handling of the exterior walls, the use of materials, the massing of details and silhouette, and the eclectic use of historical precedent (figure 3b). Hornbostel followed in his patron's footsteps.

In elevation, the open and closed surfaces of the exterior walls are modulated to turn the building in upon itself on its street facade, and to allow its principle axes to flow into the garden.

A contemporary review described the Musee as gallo-grec, and indeed the forms and the decoration of the building are rich in reference to Hellenic Greek and French Renaissance models, as well as reminiscences of sixteenth-century Italy... Ginain was adept not only at blending recognizable stylistic motifs in his architecture, but also at creating surfaces that are symphonic arrangements of moldings and their shadows against smooth stone... Ginain's contemporaries felt that... he proved himself a master of detailing of stone, and perhaps for this they overlooked the clumsy handling of scale and intersection [of axes].¹⁴

His experience at Ginain's atelier thus strengthened the Beaux Arts compositional sense that Hornbostel had gained at Columbia. He was schooled in a neo-Grec style which was

tempered by a sense of the current technology and a feeling for materials.

In fact his French education went beyond the atelier. "The desire to obtain an intimate knowledge of materials led him to take up odd jobs in Paris with sculptors, painters and other artist-workmen, among them Paul Bartlett and Carnas."¹⁵

In Hornbostel's numerous competitions at the Ecole, in which he apparently did quite well, he had honed his ability to quickly develop a parti and bring its salient strengths to a pictorial intensity. He had also pretty much chosen the pencil, as opposed to watercolor and/or ink, as his medium. Several drawings of the period remain. One is of an esquisse problem, a 12 or 24 hour problem, to design a composition of a fireplace. Hornbostel submitted his ubiquitous perspective as well as plan and elevation. This pencil with ink and wash presentation won him a second mention.¹⁶ Hornbostel's sketch of the facade of the Palais des Etudes, dated 1894, is a pencil rendering (figure 3). Hornbostel used the linear stroke of the pencil to suggest shadow, line, and texture. It appears to be a rapid sketch for a much larger exercise. The view is depicted in sharp perspective. The rapid and much more confident strokes suggest in an impressionistic mode the details of the arch and the receding details of the elevation. The view framed by the arch is quite dynamic and is suffuse with light. An economy of detail and pencil stroke still are able to suggest the full plasticity and

material quality of the scene. The third drawing (figure 4) is his premier esquisse presentation of a "Collumbarium of the Family of Edward D. Boit for the Saint Germain Cemetery".¹⁷ The scheme is shown in a watercolor and pencil perspective and a separate elevation. It is a rather ornate walled cemetery plot. His use of the two-point perspective as part of the presentation probably made this entry unique. On the drawings, almost swallowed up by the hazy wash of background trees, he has delineated the dimensions and listed the materials of the project as if the project were an actual proposal. The elevation, although an apparent variant of design from the perspective, has the same ethereal air of a watercolor rendering.

A Fourth drawing is reproduced in the Swales' Pencil Point issue which illustrates another esquisse problem, a grand court on a body of water (figure 5).¹⁸ This particular drawing is interesting for its composition as well as for its design. Hornbostel would use a similar juxtaposition of classical colonnade surmounting terraces and stairs which lead up from a water landing in his Columbia stadium proposal ten year later in 1907. On the drawing Hornbostel highlights the perspective from the water with pencil and wash, while the almost-sketchy ("in process") plan, section, and elevation are rendered below in ink as if they were part of the water plane.

Hornbostel's intellectual experience in Paris of course was bound to extend beyond the architect's atelier. He saw that the progressive thinking of the period was torn between the technological orientation of the Paris exhibitions and the work of Labrouste and Viollet Le-Duc, and the classical eclecticism evinced by Ginain and other established practitioners. Not only was he witness to the new technologies and concepts of civic planning but he also saw first hand the new building technologies and the new demands for civic edifices. Projects for railroad stations, museums, university buildings, and port facilities were both in evidence in the architects' offices in Paris and in evidence in Ecole competition problems. Hornbostel would take the grand interior spaces, the structural rationale, and the use of modern building technology shown in Labrouste's work and in Laloux's Gare de Tours (1895-98) and Gare du Quai d'Orsay (1895-1900) and re-apply the notions to his own buildings.

His work with Girault on the Petit Palais (design 1895, construction 1897-1900) for the Paris Exposition of 1900 would give Hornbostel working experience in assembling technologically new buildings for new civic institutions within the Beaux Arts tradition. "As a French answer to the Chicago Exposition of 1893, these buildings display far greater originality and strength of design, and a sense of urban ensemble. They lie at the end of the classical Beaux Arts tradition, but they still convey its capacity to create

powerful images." ¹⁹ The form of the Petit Palais was a source for Hornbostel of a number of stylistic motifs for his later work. Beyond the Beaux Arts compositional strategies, his late work would employ the unengaged colonnade in front of arcaded window wall, the colossal order on top of a heavily rusticated base, and the eclectic, modulated corner conditions.²⁰

An insight into Hornbostel's method of design, as any writings attributed to him directly on this subject are few, comes from John Harbeson's The Study of Architectural Design. In the 1920s Harbeson advocates an imaginative approach to a Beaux Arts design.

It is considered desirable, because the "products of past experience" should be combined in modified, new or ideal forms, that there be an effort made in school programs, to add some new requirement so that the problem cannot be just a copy of what has gone before... Henry Hornbostel - whose opinion in such matters may be taken without the proverbial grain of salt because he has been so eminently successful in architectural competitions - once said,... that in any problem there are certain features that recall previous examples that have been solved; sift these out until there is left, finally, the conditions of the program that are new with this problem, that have not been done before; and put all your thought, and your effort, in the solution of these parts.²¹

This advice does seemed to have guided Hornbostel in his competition entries; "he was able to distill the essence of

the composition of building programs, as well as render them in bold, forceful style."^{2 2}

As I have stressed Hornbostel was intent in his work to wed contemporary building technologies and materials with a Beaux Arts sensibility of design. In some cases this approach was demanded by new forms of civic institutions. Hornbostel's architectural inventiveness within the era's diversity of approach as well as his professionalism and dedication to teaching his approach were well noted in the periodicals of the age.

His particular aesthetics, derided by some as being eclectic and not part of the increasingly prevalent Academic Classicism, are evident in examples of his renowned pencil perspectives. He believed in a knowledge of historical precedence balanced with a practical knowledge of materials, technology, and presentation. His American practicality had never left him in Paris. He also seemed to have disdain for the completely non-practical and elitist notions of the Ecole. Hornbostel did see how it suppressed individuality and inventiveness.^{2 3}

In the years of his career up to the mid 1920s his brand of design was informed but not drastically changed by the modernist tendencies around him. His projects range in scale from the town and country house, to the civic institution and the college campus. His most inventive architecture occurred in his public projects, the edifices to house new urban

functions within an evolving city, the academic commissions, and the public memorials.

His designs bear his own unmistakable approach. His tenuous connections with a number of different firms throughout his career also speak for an individualized process. One reason for his desire to remain unfettered by the restraints of "design by committee" was that Hornbostel was a product of, and cultivated, the American notion of the creative individual.²⁴ "He was a large man who wore a beard when no one else did, and who never faltered in his faith of his own pre-eminence. He used to march in front of the Carnegie Tech. student parades. He had a memorable personality, a gift for self-promotion, and a talent for enraging his fellow architects."²⁵

Appreciative of his intellectual rigor the County of Allegheny would have Hornbostel write the section concerning the county's architecture in its Sesquicentennial Catalogue of 1938.²⁶ In the article Hornbostel states the leitmotif of his philosophy, "the materials of architecture largely dictate the styles of any given era". In a rather even-handed analysis of the socio-economic forces which generated the architecture of the county he also has the patronizing sensibility of the Arts and Crafts's view of the craftsman.

Buildings in tasteful style disappeared in Allegheny County - as it did elsewhere - a few years before the beginning of the Civil War. There are many causes. Among them was the introduction of machinery in

the production of building materials which robbed the craftsman of his incentive to work with his hands. There was great emphasis on making money and making it quickly. Pride in fine work died out.

Hornbostel illustrated his article with his own buildings along side the work of such masters as H.H. Richardson! In describing his Carnegie Tech. buildings he states "[they] represent an ensemble of industrial architecture with a French aspect... seen from the air they represent a comprehensive and pleasing whole."

Henry Hornbostel from the beginning of his practice in America was concerned not only with an acceptable national architectural aesthetic but also with the engineering consciousness predicated by the American ideal of utility and function. His use of the modern materials of terra-cotta, steel, and the Guastavino tile vaulting system signaled his progressive, and cost conscious, adaptation of the older Beaux Arts classicism. Apparently any worry about the "dishonesty" of cladding engineered structures with architectural garb, for the sake of civic beautification and ornament, did not bother him. In fact Hornbostel became known in New York City for a series of quite notable structures in which engineering was successful synchronized with architecture.

Hornbostel was to integrate engineering utility and aesthetics with a sense of architectural beauty in the bridge designs of the Queensboro Bridge (1909) and the Hell Gate

Bridge (1907-14). Hornbostel saw that the bridges were not simply examples of the architect's beautifying an engineering structure. Rather these were opportunities where "the architect and engineer followed the common principles of construction - utility, economy and beauty".²⁷ Gustav Lindenthal, the City Engineer, and Henry Hornbostel's realized Queensboro Bridge was hailed by Montgomery Schuyler, who in general disliked the design approach of the Municipal Arts Commission. Referring to the Queensboro bridge designs, "they are a marvelous exception to the mutual attitude of distrust and contempt with which the man of exclusive artistic training and the man of exclusively scientific training confront each other...here is a reconciliation of the claims of the science and art of bridge building." Schuyler applauded Lindenthal's choice of Hornbostel, "an architect unusually capable of taking the engineering point of view and then he [Lindenthal] associated him with the design from the inception."²⁸

As with all his bridge designs Hornbostel presented the final schemes to the Commission in a series of grand perspectives of the entire bridge and in a series of detail studies of the stone anchorages, including portal and finial details. The Queensboro Bridge's innovative cross section, designed to add an extra deck for the streetcar track, was depicted in Hornbostel's elaborate perspective.

"Hornbostel's hand could be seen in every detail of the

design, including the exquisitely worked out patterns of the rivets on the steel work."²⁹ Hornbostel's Modern French approach was evident in the steel and stone details on the approaches and anchorages of the bridge;

The entrance to this avenue of steel was announced by two colossal bronze lanterns and two delightful cast-iron and terra-cotta kiosks leading to an underground terminal for the streetcars that crossed the bridge. Twin turrets marked the termination of the anchorage... The turrets, with their segmental arches and low domes, were elegant essays in the Modern French manner. The steel superstructure of the bridge began with a low arch across the roadway mounted with bronze commemorative plaques, and had four towers crowned by spiky finials which Hornbostel had deemed 'gaily capped'...

The treatment of the approach supports on the Queens side was elegant in a manner that simultaneously conjured up images of the Gothic, the work of Gustav Eiffel and the Art Nouveau. On the Manhattan side the steel was camouflaged in a granite and terra-cotta veneer with Guastavino arches carrying the roadway over an arcuated hypostyle hall of impressive proportions and no particular purpose.³⁰

Hornbostel's renderings for the Hell Gate Bridge (figure 6), the largest steel-arch bridge in the world in its time, show the muscular power of the bridge. This is Hornbostel's original design for the flanking abutment and towers that would have visually and physically received the structural forces of the elegant series of steel curved arches. In his perspective Hornbostel employs a terra-cotta decoration and stone and brick details of massive proportions to play off the massive silhouette of the steel arch. The stone bands

seem to reflect and anchor the steel structure while maintaining the semblance to Beaux Arts sensibilities. However the "effusive Modern French treatment" of the towers and buttresses was rejected by the Arts Commission in 1907 because it was "not strictly utilitarian." Hornbostel's final design, realized seven years later and while he was working on the Carnegie Institute of Technology's campus, is a much more austere and severe counterpoint to Lindenthal's engineered structure.^{3 1}

Hornbostel's later work would continue this notion of modern and traditional counterpoints. Similar to Otto Wagner in Vienna, Hornbostel had designed elements within an urban transportation infrastructure mixing artistic and engineering sensibilities. He gained a reputation as a designer for his modern sensibilities of materials and technology. The work on the Carnegie Tech. campus was part of this testament.

Nowhere, however, has iron work been treated on such a grand scale, and with anything like the success obtained by Henry Hornbostel on the Queensboro and Williamsburgh [sic] bridges. The lamps on the Williamsburgh Bridge are marvelous, and the treatment of the partial and the finials on the towers of the Queensboro Bridge is masterly. Henry Hornbostel's mind is at once daring and inventive and he never hesitates about executing work because it has no precedent. He leads the way where others follow...

New materials possess a certain fascination for Mr. Hornbostel beyond which they have for the imaginative mind of the average architect, and in the use of Guastavino tile among the new materials he has led the way.^{3 2}

This sense of materials, developed from his experiences in Paris, would also target Hornbostel as an eclectic. He continually experimented with the balance between the overtly architectural and the overtly engineered, whether it be in the form of his domes, in the novel materials used for traditional forms, or in the creation of new institutional and campus forms and planning schemes.

Upon his return from the Ecole in 1897 the first major civic competition he entered under his name was for New York Public Library. This was Hornbostel's first attempt at assimilating his diverse architectural notions into a design for a civic institution. He entered associated with the new firm of Wood, Palmer and Hornbostel.³³ The style and the presentation technique of their neo-Grec design was ebullient in comparison to the chaste (and Academic Classical) entries of the others.

True to the tenets of the Ecole des Beaux Arts the design and drawings for the library emphasized circulation through and up into the building. The building section was cut through the grand foyer with its grand staircase, showing a third-floor reading room which was located above the stacks and below a huge domed skylight. Symmetry, emphasis on the center, and monumentality of composition were used to organize the plan. The architects organized the modern functions of the children's room and periodicals room which

flanked the entrance, the exhibitions hall, the stacks, and the book shipping lobbies on the first floor.³⁴

The principle building elevation shows a composition of an unengaged colonnade, like the Petit Palais on which Hornbostel had worked in Paris, framing a central pavilion which had three exedra shell entrances. The colonnade was flanked by end pavilions of ornate and sculptured massing. The facade is divided into the base zone, the zone of the main floors with the colossal trebeated order framing a smaller arcuated order, and a very heavy attic zone. This attic had an entablature, cornice, and balustrade ensemble that hid, among other things, the skylights of the secondary reading and work rooms. The central pavilion's tripartite composition is carried up through the attic zone where the appropriate inscription of names of scholars makes this central element a kind of memorial to scholarship and a shibboleth of education. A skylight dome tops the central pavilion.

In 1907 the firm of Palmer and Hornbostel was engaged in a number of civic projects secured through a number of competitions. Hornbostel's appetite for competitions was matched by his appetite for the almost baroque detailing and massing of the neo-Grec. These commissions established the firm, or at least Hornbostel, as one of the American inheritors of this monumental French tradition. One such project in New York City, whether it was a solicited design

or competition is not clear, was for the Columbia Stadium, Naval Reserve, Public Recreation Pier and Water Gate to be located over the Hudson between 112th and 120th street. A triumphal arch and loggia linked the complex to the shore and served as a monumental armature and backdrop for two stadia and public plaza. The juxtaposition of a classical arcade and water is reminiscent to Hornbostel's earlier Ecole esquisse problem (figure 5). The civic function of such stadia is enhanced by its use as a public amenity and naval docking port. Typical of Hornbostel's engineering bent "Palmer and Hornbostel's Modern French facades reduced classical vocabulary to a simplified system of panelling which suggests that they intended to explore the use of poured concrete as an inexpensive way of constructing such a vast project."^{3 5}

The temple for the Rodef Shalom Congregation and the Soldier and Sailor's Memorial were two Pittsburgh 1907 projects built close to his, then extant, work on the Carnegie Tech campus. The synagogue and memorial preceded a number of such civic commissions in Pittsburgh. Each of these projects is notable for its progressive public image, its use of modern building technologies and its distilled French neo-Grec style.^{3 6} All of these edifices also had a certain drama in their forms, in their polychromatic material, and in their response to the site.

Rodef Shalom was brought into the office through a limited competition where Palmer and Hornbostel's scheme won because the "building was fitting in expression for a synagogue, the house of worship... with a modern aspect, in some style other than Moorish or Roman."³⁷ Franklin Toker best describes the resulting edifice.

What Hornbostel sought was a house of worship that would relate in some way to everyone who used or merely glanced at it. It would not be alien to the other public monuments of Oakland, but akin to them in scale and richness. It would not deny the heavy industry of Pittsburgh that was the source of its wealth, but would identify with it in its common yellow brick from Kittanning. Unlike most premodern synagogues, there is nothing fake-Moorish here, although the dazzling colors on the terra-cotta bands hint strongly at orientalism that passersby know instinctively that this is not a church.³⁸

The design of this synagogue shows how Hornbostel symbolically dealt with a relatively new public institution. The forms with their European and Byzantine references³⁹, the restrained references to Hebrew symbols (the minora as part of the terra-cotta and stained glass composition of the arched window and triple doorway, and the architectonic totems that straddle the door and sit in the side garden all create a public dialogue of public institutions.

The imposing form, which sits right on a major street, has three building masses combined. The square dome with green glazed terra-cotta is topped by an ornate skylight weighing 22 tons. The domed block is backed by a cubical block to

hold the sanctuary. The entrance block sits on the street. The polychromatic effects of the exterior terra-cotta were widely praised. "The introduction of color effects on the exterior of buildings is not, in this country, getting the attention it is in Europe. It is therefore worthy of special mention when the application of color is so artistically accomplished as to present an attractive and harmonious effect... this is one of the most successful attempts in this direction that has been accomplished in this country."⁴⁰ This would put to rest the criticism of Hornbostel's monochromatic excesses. The use of terra-cotta, and buff yellow Kittanning brick characterizes his works of this period in Pittsburgh.

The interior is an amazing space suffused with light and glowing from the warm colors of terra-cotta. This ethereal effect belies the structural dexterity which Hornbostel here also employs. The construction drawings which were published in Architecture show a complex steel truss system to support the soaring dome and skylight. The truss was never needed. Rather Mr. Guastavino suggested a pair of concentric masonry domes using a system of timber arches with tie-rods and pendentive construction. The inner bearing shell acts as a ceiling and was plastered and the outer shell carries the lantern and is the roof membrane. "Guastavino's combination of art and engineering", as Hornbostel called it, was so advanced that Hornbostel had to do a rough axonometric

drawing to get it approved by the local building authorities and to convey its essence to the readers of Architecture.⁴¹ Also, the architect complemented the lightness of the dome by reducing the width of the exterior walls of the central cube. This sense of surface planes rather than mass was emphasized through the technology of steel reinforcement and a brick and terra-cotta veneer.

Hornbostel's monumental interior compositions also have a uniformity of his stark neo-Grec style modified by his engineering aesthetic. By virtue of his repeated use of Guastavino tile systems Hornbostel over his career favored the large domed public spaces that he had first seen in his student days in Paris, in the railroad stations of Laloux for instance.⁴²

It seems as if Hornbostel was willing to appropriate, with quite eclectic references, symbolic and historic architectural images of nationalism. He would use this distilled reference in order to reinvest a civic meaning in a new kind of building type, the exhibition hall. Hornbostel also gives his attention here to a relatively new type of design problem, the memorial as a functional building. Hornbostel combined the functions and engineering requirements of large meeting halls with the historical monumental edifice. Palmer and Hornbostel's Soldiers and Sailors' Memorial of Pittsburgh (1907-11) uses the Mausoleum at Halicarnassus as a model. The edifice is a functioning

auditorium and headquarters for benevolent groups. Fitting the American notion that utility should be a goal in all architecture, American Architect wrote:

As many times editorially expressed in these columns, the most fitting memorial was one that combined a utilitarian purpose. The building as approved by the Elks, exactly carries that ideal, and when, as in the present instance, designed with architectural skill, becomes a logical and much respected expression of the gratitude and sympathy of a group of men who realize their responsibilities.⁴³

Hornbostel took such notions as "logic" and utility very much to heart. The Memorial in Pittsburgh is for the Civil War dead of Allegheny County. Here a muscular Beaux Arts classicism is enhanced by discrete engineering innovations and bold uses of terra-cotta.⁴⁴ Hornbostel himself called it "a Greek composition done in the Roman style."⁴⁵ The major element is a colonnaded box which rises from an almost fortified base and is capped by a heavy attic. The columns are, as usual, unengaged and are flanked by massive corner piers. The piers have pilasters which are of massive size to hold up the heavy entablature and balustraded attic. Above the attic is a green hipped roofed pavilion which contains the ballroom or "banquet hall". Crowning the composition is a concrete pyramid with a ventilating duct hidden with elaborate terra-cotta located in the apex ("so that on cold days the building comes alive as it puffs hot air through the roof"⁴⁶). On the elevation bold shadows are created by the

heavy stone work of the terrifically plastic aediculae, base and cornice lines, and entrance ensemble. The stonework is relieved by Hornbostel's use of over-scaled and very detailed terra-cotta work. The roof line is quite fussy with its use.

The colonnaded box contains the huge auditorium whose deep bridge-trussed-ceiling, hidden behind the heavy attic, carries the banquet floor. The interior is festooned with overly plastic classical details and bright colors. The vertical circulation is much less worked out than usual for a Beaux Arts composition. The engineering gymnastics and the stacking of the program make for a difficult "celebration" of vertical movement. In plan this a donut scheme with the major public room in the center. The exhibition rooms, the meeting rooms, the support rooms and the circulation occur on the outer ring.

Another memorial designed as an auditorium was projected for Oakland, California, in the mid-1910s. The first auditorium scheme of 1913 was part of a civic complex (figures 7). Its monumental facade faced the public plaza framed by a projected museum and library. The facade was essentially a rusticated wall with seven blind exedra niches similar to those Hornbostel had just used on the front entrance elevation of the School of Fine Arts at Carnegie Tech. (1911-12, see below and figure 50). In each exedra were a coffered shell vault and statuary niches. Within the confines of each exedra was a fountain that seems to evoke

sarcophagi. The water from the fountains ran down to a long series of connected reflecting pools. To a greater extent than the facade of the Fine Arts Building, this wall was made plastic and active.

Hornbostel later designed a number of memorials whose sculptural monumentality spoke of a continued belief in the power of classical models to instill appropriate civic messages. Often his design talent was augmented by his collaboration with sculptors. Briefly, these designs of the 1920s and 1930s followed the prevalent style of the national monuments of John Russell Pope and the federal architecture of Washington D.C. For the most part his exuberance of detail was replaced by simple but vast forms. Working at this stage with Eric Fisher Wood, Hornbostel won the competition for the Warren Harding Memorial (Marion, Ohio, 1925) by using a temple with a circular open colonnade of monumental proportions. Here a severe, colossal Doric order in a single ring of columns surrounds an enclosed and smaller order. This in turn forms a "C" which encloses a tree and a cenotaph. The W.H. Seward Memorial of Seward Alaska (1929) is a huge semicircular shell in whose base is formed an amphitheater. Hornbostel's dramatic perspective shows the ribbed and towering concrete form (almost in a form similar to the early Beaux Arts esquisse of figure 6) set starkly against the mountains.

Collegiate Buildings

Thus Hornbostel naturally came to see that a muscular French classicism was an appropriate source for the architecture of the civic institution, the engineered structure, and the memorial edifice. He believed that an enlightened French classicism was also appropriate to satisfy the Institutional Imperative of the college campus. Designing his campuses on a grand Beaux Arts scale Hornbostel seemed to favor those commissions where he started from scratch in the wilderness. Of the four major campuses Hornbostel would design, three were competition entries. Later he would extend the lessons from campus planning into the planning of at least one city, that of Johnstown, Pennsylvania.

While he was producing designs with Palmer and Wood in the 1890s Hornbostel continued with his freelance and rendering jobs. In 1899 the association of Hornbostel with Howells and Stokes⁴⁷ entered the Phoebe Hearst International Competition for the University of California in Berkeley.

The patroness, dictating the terms of this competition, stated that it should be international competition and that the designs should think on the grand terms of a complete composition. "I have only one wish in this matter - that the plans adopted should be worthy of the great University whose material home they are to provide for, that they should harmonize with, and even enhance, the beauty of the site

where upon this home is to be built, and that they should redound [sic] to the glory of the state whose culture and civilization are to be nursed and developed at its University."⁴⁸ This, then, was the Institutional Imperative that the architects had to support in their designs. It would be a "City of Learning of a complete and harmonious design - all left to the unfettered discretion of the designer". Mrs. Hearst insured that the creation of the campus would be a flight of visionary design rather than a struggle with funding; "In the great works of antiquity the designer came first and it was the business of the financier to find the money and carry out his plans." This competition was an architect's dream in the size of the commission and in financial scope of the campus.

The competition program, released in December of 1897, called for a two stage masterplan competition. The first stage was to be judged in Antwerp and the second in San Francisco. The program was prepared according to the guidelines of the AIA and printed in English, French, German, and Italian (as were all the official releases). The program listed the departments of the University that the designs had to accommodate (15 departments including a museum, a military establishment, and a gymnasium) and gave explicit details of the site. None of the existing buildings were to be particularly respected.

One programatic requirement was spelled out that would shape the campus form directly, a similar requirement to one we will see later at Carnegie Technical Schools. "All buildings are to be connected as to insure easy communication, both open and covered, between the groups of buildings, and, to contribute to the stately aspect of the whole."⁴⁹ This dictated an approach that Olmsted (with Shepley, Rutan & Coolidge) had employed at Stanford over ten years before and that Jefferson had used in the most American of campuses, the University of Virginia. As Berry Bergdoll has pointed out, such American campuses which pre-occupied with the arcaded system and buildings placed as pavilions on that arcade are modelled after late 18th century Paris hospital plans (which Jefferson would have seen while ambassador in Paris).

There were eleven semi-finalists and four honorable mentions selected by five jurors and the "architectural advisors" of Mssr. Gaudet of Paris, John Carrere of New York, and Albert Pissis of San Francisco. By December 1899 the best designs had been selected and the trustees were at work with the winner, E. Benard.⁵⁰ In the final publication of all the entrants' schemes the jurors would establish a criteria for judgement that would form the basis for subsequent competition judgments, including that of the Carnegie Technical Schools.

1. That the buildings should generally represent a university rather than a mere architectural composition.
2. That there should be a convenient grouping of the educational sections without undue crowding or the prevention of possible future expansion.
3. The purpose of the several departments should be clearly defined in the design.
4. The architectural forms should be adapted to the configuration of the grounds and the preservation of natural beauties.

Of Benard's winning scheme the jurors praised the grouping and the variety of treatment of the individual buildings, the excellent scale and proportion of the composition, and the presentation's rendering. In his plans Benard shows a series of academic squares connected by a long, straight axis up the hillside (figure 8). The buildings are large neo-classical blocks, not particularly connected by galleries, sitting on their own city-block-like plots. The living groups are not particularly separated. Rather Benard established the high status within the campus hierarchy of the gymnasium and stadium complex in its placement at the head of the grand square which is itself perpendicular to the grand axis. The administration building is neither given a commanding location in the campus plan nor is it identifiable as a unique type. Apparent in the aerial perspective (figure 9) the composition employs individualized French pavilions often capped with domes, strategically located campanile, and the axes and outdoor quadrangles defined by rows of trees.

The perspective also makes quite clear the presence of a acropolis-type complex cut into the crown of the hill. This complex employs a series of terraces, in the Beaux Arts tradition, to climb the verticality of the slope. The pinnacle of the campus has its buildings set not on the grid and axes of the lower campus but in a picturesque, almost random grouping. The upper campus is not identified is not connected with a specific academic function. Rather it has the imagistic function one of emphasizing the campus' aspiration to be the new ideal of the "city on the hill" or "the learning acropolis". In this vein Benard has also labeled his plans "Roma".⁵¹

Benard's handling of specific buildings and his amazingly grand perspectives are instructive as to a European notion of campus planning. For example, the plan of the gymnasium, which forms part of the stadium complex, is extremely baroque in its poched plasticity. A series of grand colonnades, the corners of which are marked by campanile, surround the athletic field. The central axis of the gymnasium composition is marked by a huge rotunda and a sequence of other volumes of Roman precedent and proportion. The ornateness of the spaces, seen in the heroic perspectives, and the energetic masses and forms that are piled up are directly inspired by the French Beaux Arts. The perspectives of the rotunda and the stadium (figure 10) show grand spaces filled with people and ornament.

Howells, Stokes and Hornbostel's second place scheme places a much greater emphasis on axes and building ranges. The jury commented that while the "whole design was very artistic, reasonable in scale, and suitable for the University," they felt the dormitory designs were monotonous and the University buildings rather crowded together.⁵² An unidentified periodical of the time noted that "the keynote of all the American schemes was the dormitories" and that they all treated the athletic field as an amphitheater.⁵³ The article specifically targets the second place American design of Howells, Stokes and Hornbostel. "In the second prize plans the dorms... were placed at equal distance on either side of the central avenue, interspersed with charming gardens, but giving a touch of monotony to the scheme." Further, "no provision was made for the extension of the educational buildings, which was regarded as a mistake architecturally." Hornbostel would remember this criticism in his later Carnegie Technical Schools scheme when he faced on a smaller scale a sloping site and the desire for ranged buildings. Instead of the dorms he would position the academic buildings in the galleried ranges. He designed them so that they could expand out from the gallery spine.

Howells, Stokes and Hornbostel's masterplan is cruciform. Its lower ranges are made up these dorm groups and at the plan's head are the administration group and library (figure 12). The masterplan is not quite symmetrical. Howells,

Stokes and Hornbostel seem to be more respondent to the vagaries of the topography than Benard asymmetrical scheme. The stadium and auditorium are accommodated in the topography on either arm of the cross in less commanding positions. The required aerial perspectives (figure 13) show the relatively small scale of each pavilion and the dominance of the axes. One gets the sense of small building on a hillside rather than a series of grand quadrangles superimposed on the topography. On either side of the central axis are the arcaded gallery connectors. The axes are defined by terraces and buildings, not by rows of trees, and thus the axes would have been much more open to the sky.

The dominance of the administration/library group is obvious in the group's domed articulation, its placement on the symbolic summit of the campus, and its separation from the arcaded circulation spines. This hierarchy of administration and scholastic buildings, emphasized in a number of perspectives in Hornbostel's hand, contrasts with Benard's notions. Hornbostel's approach represents the prevalent American concept where the joint library and administrative group is located at the head of the ensemble.

This group of Americans unlike most of their counterparts chose not to emphasize, much less directly connect, the complex of buildings located on the summit above to the rest of the campus. This nebulous grouping exists simply because

the prospect afforded from the height and the symbolic value of an acropolis was probably too good to pass up.⁵⁴

In Hornbostel's pencil perspectives we see the same sort of French inspired forms and their details as we will see in similar perspectives for all but one of his subsequent university designs. One aerial perspective (figure 13) in its vantage point, its line quality, and its handling of building mass, is strikingly similar to the competition perspective for the Carnegie Technical Schools (figure 28). The architecture of the buildings, while grand and ceremonial, is less plastic. The dormitories are simple, T-shaped, gabled halls on the arcade spine. For the academic buildings Hornbostel's team has built up, or seemingly tacked on, blocky forms to create classical piles. Hornbostel's rendering style almost supports this additive method of architectural creation.

The finesse of Benard is not guiding this design. It is interesting to speculate that the young Hornbostel seems to have been, among his equally young associates in this competition scheme, the design leader. Hornbostel's perspective of the Library Court is strangely vacant and unpeopled (figure 14). The use of the rusticated base and the ever-present double pilaster on a series of rather busy elevations is his trademark. The necessary accoutrement of a civic space, such as the grand stair, the statue of the founder, the reclining lions, and the obelisk, are present in

almost gratuitous form. The silhouette of these academic buildings is equally active with classical forms in the French neo-Grec idiom.

Ten years later the firm of Palmer, Hornbostel and Jones would enter the design competition for the Western University of Pennsylvania in Pittsburgh. The new campus for the Western University was conceived as an academic acropolis to be located in Oakland.⁵⁵ This suburb was to evolve along the lines of "the City Beautiful" into Pittsburgh's cultural and educational center. The program in 1908 called for over sixty buildings on a very steep and rather small site in Oakland. The resulting schemes of the competition were dense and monumental, all playing on the ideal of "the acropolis".⁵⁶

Palmer, Hornbostel and Jones' scheme placed the bulk of the buildings on the crest of the hillside. The scheme is less organized by any major axis of circulation than by a city-block notion (figure 15). The block plan uses massive buildings with numerous wings and small interstitial courtyards in a manner similar as those of the later designs for the Federal buildings in Washington D.C. On the Oakland plateau there are two squares of some size that flank what appears to be the administration and library complex. The upper district of the composition is composed of local centers of symmetry and hierarchy and competing minor axes separating building groups. The outdoor spaces and the

sequence of vistas have Roman precedent.⁵⁷ The upper academic acropolis has some similarity to the planning notions used in the design of the Central Court for the 1893 Columbian Exposition in Chicago.

The most striking part of the plan was the way in which Hornbostel had the leading buildings cascade down the slope. In both his site section and site elevation (figures 16) severely neo-classical and long buildings are used to create an ascending terrace effect. The effect is quite different from his usual neo-Grec exuberance in campus architecture. There is an implied axis down the hill, on line with the upper grand squares, which supposedly was to be occupied by giant escalators.⁵⁸ However Hornbostel has the primary path of ascension curving back and forth across the hillside across the central axis and between the buildings. This creates the unusual situation where neoclassical buildings are not viewed frontally but in a series of moving and off-axis perspectives. In fact, near the crest of the hill the buildings become completely molded by the site and curve with the road and topography.

With such diversity and fragmentary spaces this campus would have seemed less a unified campus than an academic microcosm of the American city. There would have not been the over-arching physical and spiritual organization of "an Acropolis" to which such an academic institution aspired. The necessary campus unity and a sense of academic

didacticism might have been attained through the styling and restrained exuberance of the individual buildings, as demonstrated by the few that were built. An early perspective of the Medical Library (figure 17) of 1910 shows Hornbostel's signature tripartite building elevation with rusticated base, piano nobile marked by colossal pilasters, and heavy attic with elaborate frieze. This particular grouping corresponding to the curve of the site has a separate, monumental library block. It is a Roman temple on a heavy base. The cross section of this ensemble shows that the buildings' interiors, as well as their exterior form, are designed to match the slope of the site.

His sense of material, his novel use of the new technology, and his play of those textures and colors is developed on the University of Pittsburgh buildings. Another elevation (figure 18) shows an ornate gabled facade where the neo-Grec has been informed by an almost machined austerity of detail and crispness which are akin to his earlier approaches on the New York Bridges and the Carnegie Technical Schools. Classically derived garlands, pilasters, entrance aediculae, and temple pediments are combined with a refined and redefined use of industrial materials. Hornbostel makes the details of the pediments seem like large rivets and machined grooves. He overlays terra-cotta on yellow, industrial brick (called Kittanning brick) and uses rough hewn stone as decorative panels. His grill work has a machined quality

rather than a hand-crafted softness. The cornice eaves and details are machined metal of contrasting colors and textures (figure 19). Characteristically the pediment and attic zone are used for sculptural motifs signifying the purpose of the building and its place within an academic culture (figure 20).⁵⁹

Henry Hornbostel designed the Emory University campus initially when he was part of the firm of Palmer, Hornbostel and Jones in 1915. Whether or not there was a competition is of some question in my mind. While he continued the campus design alone into the 1920s the design appears all along to be his own. Although his aerial perspective shows a complete ensemble (figure 21) the campus never attained this form.

The buildings which were completed by Hornbostel show a mastery of siting, material, and appropriate historical precedent.⁶⁰ His drawings of the site show what was a simple and laudable response to a complicated site and context.

Hornbostel's plan placed a series of formalized, balanced groupings of buildings on the irregular contour of the site. As he had done in his plan for the Carnegie Technical Schools, he had located the central sequence of academic structures along the crest of the hill, oriented toward the city. Though arranged formally, the architectural groupings were placed so as to respect the natural topography, accepting its irregularities, and the system of roads through the campus accordingly combined patterns both geometric and meandering. In its sympathetic response to the site, the plan fit well with the informal curving patterns of the design of Frederick Law Olmstead [sic] and his firm

for Druid Hills Park, the Atlanta suburb of which the campus is part and which the central buildings directly face in the original plan....

Two shallow ravines transversing the site provide natural divisions between the major functional parts of the plan, separating the central academic group from the group of small buildings on the right, the "domestic service group", and from the dormitory quadrangle and the hemicycle of fraternity houses to the left.^{6 1}

The campus library which would have formed the focus for the academic group follows the example of Hornbostel's previous campus parti which themselves took their precedent from Jefferson's UVA. Hornbostel gave the library this dominance by locating it at the center of the campus on the axis and by designing it to culminate the scattered composition. Rather than using a dome, he caps the library block with an octagonal pyramid. Hornbostel has reinterpreted McKim's Low Library, if not the density and block arrangement of the whole Columbia campus.^{6 2} The "dome of heaven" is now replaced by a more funerary image of a pyramid cap. Hornbostel arranged the peripheral buildings through their height, massing, and decoration so to build up to and frame the library climax. On this campus the grand entry along the central axis passes through or around this library.

The architect in designing the individual buildings employs more of a southern Italian Renaissance sensibility than he had before. "Hornbostel's choice of the Italian Renaissance as a generic style for Emory was prompted at least in part by

his reaction to the natural landscape of the Atlanta region, which he felt had characteristics similar to northern Italy: 'rolling hills, pines and even marble as a native stone.'"⁶³ In his low classroom pavilions Hornbostel emphasizes the plane of the wall through its materials and fenestration. The low-pitched red-tile roof and the terra-cotta decorative emphasis on the openings speaks of Spanish colonial architecture. Hornbostel was not shy in using "specifically southern decorative motifs" such as the cotton flower, leaf, and boll to establish the cultural setting of the buildings.

The materials of the buildings are unique in their colors, their manufacture, and their application. Hornbostel's creativity was applauded in an article of the period, "the simple, exquisitely colored buildings along the borders of the forest clearing, are as iridescent opals deep in a green jewel casket."⁶⁴ Hornbostel had sought the rough edged discards, slabs of varying size and thickness with one smooth edge, which had been shorn off the standard block of the normally expensive, local Georgian marble. On the campus site the slabs were cut into rectangles of varying size. They were then polished and hung on the building without regard to size and color like so many different sized scraps of a tapestry. "The colors embrace almost every shade of grey, pink or brown in one piece." The marble was used for what it was; slabs were attached inside and out to the concrete structure in a such a way as to show that they were

vener. To emphasize this quality no mortar was used to join the marble slabs and the facade openings are holes cut in the skin. There are no lintels or surrounds. Following classical precedent, however, different buildings have different corner conditions, either irregular slab quoins or darker red corner pilasters. The cornices, under the red tile roofs, are simple and effective in their broad projections supported on steel brackets. The soffit panels are also variegated marble. Apparently the play of light, shade and the color of the marbles is stunning. Finally, the marble slabs were also used as the form-work for the pour of reinforced concrete.

The academic function of each building is abstractly codified by limited terra-cotta motifs. Beyond the marble veneer, the other building veneer of terra-cotta is made to act as stone by being used to highlight the openings and carry the only symbolic ornament of the building, the cotton boll. Each building uses a differently designed industrial metal sash window with unique muntin divisions within the windows. The window treatments are part of the means to differentiate the academic functions contained within the marble pavilions.

The interiors of the buildings are simply detailed and functionally flexible and practical. Hornbostel uses the virtuosity of industrial stairs or the grace of more sinuously curved stairways to enliven the entrance foyers.

His designs for the great rooms, the Law School Library for example (figure 22), contrast the texture, the color, the plasticity, and the historic reference of the ceiling and of one wall with the austerity of the veneer of the remaining marble walls. Mass is played off the planarity and the "punched opening" sense of the fenestration.⁶⁵ This dichotomy comes from a French 18th century rationalist approach.

One large planning scheme in the period before the 1920s was Hornbostel's proposal for the Masterplan of Johnstown, Pennsylvania.⁶⁶ The premises, of course, came from an updated and commercially practical City Beautiful concept. Public institutions were to be geographically linked. Public transportation was to be improved. In a very comprehensive document proposing ideals of traffic planning, zoning, housing ordinances, civic institutions, parks, and playgrounds, Hornbostel's description of "the civic center" is most pertinent.

The Civic Center in the average American City may be defined as the monumental housing of the political, administrative, and ethical activities of the community. The word 'monumental' in this use is most apropos and happy. In the Latin the original terms [sic] means 'to warn.' A group of buildings, then, which 'warns' one accomplishes these things in an instant view: It 'warns' or notifies you that these are public buildings, devoted to the work of the people. In a more subtle sense such a group conveys to the human mind this impression: 'Here are a group of handsome edifices, erected for public business, which also typify the

finer sense of living and the taste of this people, this community... A monument, of course, in the derived acceptance of the word, is a showing, and this shade of meaning also indicates the psychological advertising value to a community of a Civic Center, ornate, dignified and impressive, as showing the soul and essence of the communal life so circumscribed.

Every time a citizen visits a Civic Center representing such concentrated beauty he receives a pleasing impression; his political ideas may even be stimulated... the communal life.⁶⁷

Henry Hornbostel, after twenty years practicing in the United States, here establishes his belief in the power of architecture to inform society and the individual man.

Hornbostel whole-heartedly supports and works within the belief of the era that carefully conceived environments guided by the Fine Arts could improve the values and morals of society. Hornbostel, directed by the moralistic and utilitarian Imperatives approached the design of the Carnegie Technical Schools, as he would do for all of his campuses, assured that his architecture would effect as positive a lesson on the students as any academic training would.

1. "Prof. Henry Hornbostel, A Personal Sketch," Brickbuilder, Vol. 24 (1915), p. 26.

2. This was a most auspicious year for the birth of the architects who would shape the notions of art and architecture in the following generations. This generation of architects were inventors within existing canon. The "modernist" architects known for their outright innovations, or vast creative leaps, would in fact belong to the next

generation. To some extent they were the impatient disciples of Hornbostel's generation. Born in 1867, Tony Garnier, Hector Guimard, Frank Lloyd Wright, Josef Olbrich. In 1868, Mackintosh, Behrens, and the artist Matisse. Born in 1869, Edwin Lutyens, and Bertram Goodhue, and in 1870, Adolph Loos, Irving Gill, and Henry Green (of the Green brothers). The "modern artists and architects" were born in the 1880s: Mies, Le Corbusier, J.J. Oud, Gropius, Picasso and Braque.

It was to be Hornbostel's fate, like that of Otto Wagner, to be a transitional figure between periods of architecture and educate the critical new generation. Like Wagner, Hornbostel was an accepted academic architect who tried to create in his civic commissions a bridge between the fine art canon of the Ecole des Beaux Arts and the technology of the new age.

3. In 1892 he was the champion "one-miler " in the United States. Frank Harper Pittsburgh To-Day (New York City: 1931), p. 146.

4. As listed in Wodehouse's American Architects from the Civil War to the First World War: A Guide and Informational Source, a number of architects in the 1890s had their address at 63 William Street. George E. Wood (listed as a draftsman) and architect George Carnegie Palmer (1862-1934) appear to be two of four or five architects of this loose atelier. A Brickbuilder (Vol. 24, 1915, p. 25) article says that Hornbostel returned from Europe to work for a Mr. Raymond, the firm Raymond and Hornbostel enduring until Mr. Raymond's death. Wodehouse shows that between 1897 and 1899 Mr. Raymond worked at 63 William Street, and that he died in 1901. This mysterious gentleman apparently brought Hornbostel into the William Street fold. The same article says, aside from his association with Howells and Stokes in the New York Public Library Competition "in 1899", he also formed a partnership with Wood, Palmer and Jones while at this address.

This sharing of offices helps explain why during the years of 1897 through 1920 Hornbostel was both affiliated with a number of different architects and also a sole consultant in other work or rendering jobs. Palmer and Hornbostel or Palmer, Hornbostel and Wood (or any variation on that), or Palmer, Hornbostel and Jones (a mysterious character, Sullivan Jones, who first pops up in 1908 and again in 1914-15) was in reality a loose association rather than a fixed office. Hornbostel seems to have been the principle designer in any of the work produced under the Palmer et al aegis. Relatively little is known about either Wood or Palmer. The former was listed as a draftsman for another architect, William Pringle, also at 63 William Street. On the other hand, Palmer was born into the affluent circles of the city and completed a number of houses for his

relatives. He probably enabled the firm to enter competitions for rather elite club houses.

5. Hamlin in practice ran the design curriculum of the school between 1882 and 1894. He became the temporary dean of the school after 1900.

6. "Like others in this country he had been attracted to the idea [of perspective sketches] of Otto Reith which appeared in the architectural journals during the early 1890s." Francis Swales, "Master Draftsman," Pencil Points, Vol. 7 (Feb, 1926), p. 73; and Steven Bedford "Biography" in Adolph Placzek ed., Encyclopedia of Architecture, (New York City: 1982), Vol. 11, pp. 420.

7. "Paul Rene Ginain Obit.," American Architect and Building News, Vol. 60 (2 April 1898), pp. 2 and 46.

8. Hippolyte Lebas (1780-1867) was the nephew and student of A.L.T. Vaudoyer, whose atelier was open from 1789 until 1832. In the years following 1819 he shared the atelier with Lebas. Another student of A.L.T. Vaudoyer was Henri Labrouste. Vaudoyer shared with Boulee the belief "that architecture has a model for imitation in nature. Arthur Drexler, ed., The Architecture of the Ecole des Beaux Arts, (New York City: 1977), ff. 129.

During Ginain's tenure at Lebas' atelier, which had started in 1832 and would continue until 1864, it was one of the three largest with seventeen students.

9. By 1852 Ginain, on his fifth attempt, won the Grand Prix de Rome. This followed a second prize in 1844 and four times winning the logiste. Along with Ginain there were to be 15 Grand Prix winners in this atelier, including Charles Garnier who would essentially later steal Ginain's commission for the Paris Opera House.

Apparently Ginain won the first prize in the competition with Garnier placing second. Political intrigue intervened and Garnier was given the award. I have not found Ginain's entry to this competition.

10. Drexler, op. cit., p. 96. In his obituary in The American Architect and Building News he was noted to be a "modest and conscientious artist representative of the Classic and academic school."

11. A brief recapitulation of the academic system of architecture in Paris, as it would instruct the system at least on the east coast of the United States: The Ecole was primarily an institution that arranged design competitions and organized lectures on architectural subjects. The ateliers were separate entities, either teaching studios or

working offices, run by patrons who gave the elementary design criticism. In the atelier there was a rather rigid hierarchy of students, the younger students helping the older students in their competitions and in the process learning the fundamentals of drawing, presentation, and design. There was a great loyalty to the atelier and patron as they were the true source of design education. As the character of the atelier depended very much on the patron each atelier produced its own design approach and architectural style within the broader Beaux Arts canon.

12. Notre Dame des Champs, on the Boulevard Montparnesse (1867-76), the Clinique d'Accouchement (1877-80), the Ecole de Medicine, on the Boulevard St. Germaine (1878-1900), the Ecole Pratique de Medicine (the 1880s), and the Musee Galliera (1978-94). ["Paul Rene Ginain Obit.," AABN, op. cit., p. 46.]

13. Drexler, op. cit., p. 448. Ginain designed a hierarchical composition of closed galleries, open colonnades, and garden parterres. The major axis extended from the entrance exedra court through the building and is paralleled by two other axis of the side pavilions.

14. Drexler, op. cit., p. 449.

15. Swales, op. cit., p. 73.

16. Avery Archives, drawer DR-91. Dated 3 March 1896, atelier Ginain.

17. The date of this is in question. Avery Library in its archival catalogue has no date (neither does the drawing). The Emory show's catalogue says it is circa 1898, while Hornbostel was noted by Swales to have won a prix d'emulation at the Ecole in 1897, just before he returned to the United States.

18. Francis Swales, "Master Draftsman," Pencil Points, op. cit., p. 74. There is no date on this drawing.

19. Girault not only designed the Petit Palais but he also coordinated the architects for the Grand Palais. Of the Petit Palais, "Contemporary critics hailed the taste in decoration and the brilliance of the plan as proof of France's continued artistic hegemony, and indeed the building is a notable, though not great, descendent of the school of Garnier..." Drexler, The Architecture of the Ecole des Beaux Arts, op. cit., p. 457.

20. The Petit Palais used end pavilions with aediculae entablatures on one face and rounded entablatures on the other to balance long facades and visually rectify obtuse

corner conditions.

21. John Harbeson, The Study of Architectural Design, (New York City: 1927), p. 229.

22. Steven Bedford, The Making of An Architect..., op. cit., p. 420.

23. Luis Harper, "Ex-Aide Describes Colorful Career of Hornbostel," Pittsburgh Sun Telegraph, (16 Aug. 1954), p. 1.

24. Henry F. Hornbostel (1867-1961) cultivated his personal eccentricities and talents. He was an athlete, a gardener, a drama critic, and an avid democrat. He was a member of the National Sculpture Society, the Architecture League of New York and the Architecture Club of Pittsburgh, the Society of Beaux Arts Architects (and its president for two years), the Columbia University Club, the Pittsburgh University Club (he was the building's architect), the exclusive Duquesne Club of Pittsburgh (he had truly been accepted by the powers that be in the city at this point), and (by 1934) a fellow of the AIA. In 1910 he received an honorary Master of Arts degree from Columbia University. Later in life (after the period of this study's interest) he became the supervising architect of the Pennsylvania State Planning Commission, the Director of the Allegheny County Parks (1935-39), a member of the Pittsburgh Arts Commission, and the one time director of the Allegheny County Fair (for the sesquicentennial in 1936). He married Martha Armatage of New York in 1899 and had two sons from that marriage, Lloyd and Caleb. He was married again in 1932 to Maybelle Weston. (Frank Harper Pittsburgh To-Day, op. cit., pp. 146-7; and J. Van Trump, "Henry Hornbostel (1867-1961): a Retrospect and Tribute," Charrette, Vol. 43 (Feb. 1962), pp. 16-17).

25. Ketcham, "Some Interesting Pittsburghers 1911-14," Western Pennsylvania Magazine of History, Vol. 65 (1982), p. 103. In the 1915 CIT Alumnus there is a photograph captioned "Patron Saint Hornbostel, King Reveler of the Bacchanalian." Hornbostel, with his unmistakable French goatee, marches in a parade wearing an ornate Roman toga and the helmet of the legion.

26. Henry Hornbostel, "Architecture," in Allegheny County: A Sesquicentennial Review, ed. G. Kelly (1938), pp. 245-264.

27. Hornbostel, "New East River Bridges," Architecture, Vol. 8 (15 August 1903), p. 103.

28. M. Schuyler, "Bridges and the Art Commission," Arch. Record, Vol. 22 (Dec. 1907), pp. 469 and 474.

29. Robert A.M. Stern et al, New York 1900, (New York City: 1983), p. 54.

30. Ibid. The "hypostyle hall" has since been appropriated by the city for maintenance sheds. Hornbostel would write of the approaches, "The approach in Queens is a very simple and good-looking steel viaduct, and the Manhattan approach, entirely different, is both amusing and useful. The latter approach is really a steel structure, veneered with granite and terra-cotta, very much like our office buildings, and is an attempt at making an otherwise complex and hideous steel structure attractive." Henry Hornbostel, "Queensboro Bridge," Architecture, Vol. 19 (April 15, 1909), p. 50.

31. Stern, 1900, op. cit., p. 55; and Schuyler, "Bridges and the Art Commission," American Architect and Building News, vol. 92 (17 August 1907), p. 50. This railroad bridge connects to a series of viaducts across Queens that lead to the Long Island and Pennsylvania Systems. The employment of reinforced concrete construction by Hornbostel, Lindenthal, and Arnold Brunner (who did the viaduct still extant over Queens Boulevard) was noted for its advanced method (see Hornbostel, "Queensboro Bridge," op. cit., pp. 49-53).

32. "Architectural Criticism, The Use of Iron," Architecture, Vol. 18 (1907), p. 57.

33. The preliminary competition was announced in the July 31, 1897 issue of Architecture and Building and the final entries of the competition, with a deadline of November 1, were announced on the 14th of August. In April of the next year Architect and Building published several of the final competition schemes including Wood, Palmer and Hornbostel's scheme.

34. This was the central library which sent books out to the Carnegie-financed branch libraries.

35. Stern, 1900, op. cit., p. 414. "The abstraction of traditional forms also lent the scheme a monumental scale commensurate with the view of the Palisades."

36. The Congregation B'nai Israel, designed with Alexander Sharove in 1923, is a small but powerful rotunda. "A great drum of dark random ashlar, austere and massive as if in response to the steep hillside close behind it..." Frank Toker, Pittsburgh: An Urban Portrait, op. cit., p. 260.

37. Henry Hornbostel's own description of his work in "Rodef Shalom," Architecture, Vol. 19 (15 Jan. 1909), pp. 2-3. The firm had competed against Albert Kahn.

38. Frank Toker, op. cit., p. 114.
39. Hornbostel would later say that it was "a modern interpretation of Byzantine and Arabian architecture." Henry Hornbostel, "Architecture," op. cit., p. 252.
40. "Rodef Shalom Synagogue, Pgh," American Architect and Building News, Vol. 93 (Mar. 1908), p. 97. "It is hoped that this successful solution of so difficult a problem will induce architects to enliven their facades of buildings by the introduction of color."
41. Hornbostel, "Rodef Shalom," op. cit., p. 2.
42. A note about Guastavino tile, which Hornbostel and other architects of the time used extensively. "The vault is very thin, consisting of little more than a surface, and derives its rigidity not from massiveness or thickness but rather from its particular geometric form, viz its curvature...adhesion [of the thick-set mortar] rather than gravity-produced friction is the stabilizing device." [pp. 176-7] The Guastavinos, father and son, were patented producers of the system (which the father had brought from Spain in the 1880s) which was very strong and fireproof ("being composed of terra-cotta and hydraulic cement"). This made it perfect for civic and industrial requirements. The technology comes more recently from Catalan vaulting, although the process is thought to be much older. [George Collins, "The Transfer of Thin Masonry Vaulting from Spain to America," JSAH vol. 27 (1968), pp. 176-198.]
43. "Competition for the Elks National Memorial Headquarters, Chicago," American Architect, Vol. 122 (Aug. 1922), p. 145.
44. The program of the 1908 competition was prepared and managed by the professional consulting architect Warren P. Laird. He had run the Carnegie Technical Schools competition five years before and had been the judge of its submissions.
45. Henry Hornbostel, "Architecture," op. cit., p. 254.
46. Toker, op. cit., 121.
47. John Mead Howells and I.N. Phelps Stokes. Both were members of the New York elite. Stokes (1867-1944) was not only the same age as Hornbostel but he attended Columbia's architecture program, after graduation from Harvard, and the Ecole (1896-7) at the same time as Hornbostel. Howells and Stokes were known for their church, college, and house designs. Woodbridge Hall at Yale, the Music School at Harvard, and St. Paul's Chapel at Columbia are among their

institutional work.

48. The International Competition for the Phoebe Hearst Architectural Plan, (San Francisco: 1900), p. 6.

49. Ibid., p. 14.

50. The semi-finalist were: Barbaud et Bauhain (Paris); E. Benard (Paris); F. Bluntsabli (Zurich); D. Despradelle and Stephen Codman (Boston); Robert Dick (Vienna); J.H. Freedlander (New York City); G. Herand and W.C. Eichmuller (Paris); Howard and Cauldwell (New York City); Howells, Stokes and Hornbostel (using a 46 Ceder Street address in New York City); Lord, Hewlett and Hull (New York City); and Whitney Warren (New York City). Ernest Flagg was one of the honorable mentions.

The winners were, in order: Benard; Howells, Stokes and Hornbostel; Despradelle and Codman; Howard and Cauldwell; and Lord, Hewlett and Hull.

51. To maintain the required anonymity Benard chose this "symbol" as a means for the judges to identify his design after the selection of a winner.

52. The International Competition for the Phoebe Hearst Architectural Plan, op. cit., p. 32.

53. H.S. Allen, "The Hearst Architectural Competition," no date. [Harvard Loeb Library Vertical File F103557]. This magazine might be an early Architectural Record, as Allen wrote other articles for it at this time.

54. I have been describing in both cases the second and final competition entry. All entrants submitted a first scheme and consequently all had the opportunity to see what their competitors were doing. Howells, Stokes and Hornbostel's earlier design had a much stronger emphasis on axes and larger block buildings, almost like Benard's pavilions (figure 11). Their first scheme also puts more emphasis on the hilltop and had a larger administration/library complex at the head of the lower campus. Interestingly this earlier plan shows an independent pavilion, possibly a library modeled after McKim's Low Library at Columbia with a square plan and a central domed area, centered in the upper terrace. Hornbostel's first scheme for the Carnegie Technical Schools had a similar independent block, also possibly a library, located on the central axis however at the lower end of the campus.

The other schemes do not appear to have taken the edict about covered circulation as seriously, or at least made that functional requirement as much a major theme. One or two of the other schemes also exhibit masterplans with a much

greater sense of the baroque fluidity. The fixation of the schemes with grand independent forms is quite amazing.

55. Four years previously in the same city the firm had won the commission to do the campus for the Carnegie Technical Schools.

56. The competitors were: Palmer, Hornbostel and Jones (New York City); Jansen and Abbott (Pittsburgh, architects of other civic and institutional buildings in the area); Allison and Allison (Philadelphia); Lord and Hewlett (New York City); Bellows, and Ripley & Russell.

Had Hornbostel's terrifically ambitious winning scheme ever been built this campus would be overwhelming in scale. The trustees of the new university, in soliciting huge masterplans, did not have the financial resources that the University of California had had. Four years later one of the trustees, using the analogy of establishing "an Acropolis of Athens" as an educational ideal in Pittsburgh, appealed to Andrew Carnegie to endow the school with 5 million dollars so to induce the people of the city to match his donation. This sum was five times what Carnegie had spent to establish Carnegie Technical Schools. Carnegie wrote back that "a modest university is all that we can aspire to and I understand this is being steadily obtained." [Letter from Mr. Church to Andrew Carnegie, January 16, 1912, and Andrew Carnegie's response (no date) [Carnegie-Mellon University Archives].

Mr. Church would later become the president of the Board of Trustees of Carnegie Tech. where he would also pursue a large building program.

In his response Carnegie saw no use for the University of Pittsburgh to compete with Princeton, Harvard "or Hamilton". He had maintained this conservative approach during the founding and early growth of Carnegie Technical Schools years before.

57. Toker, op. cit., p. 93. This scholar interprets the outdoor plaza on the summit as "a full-scale reproduction of the Forum of Trajan."

58. Ibid. The giant escalator as "people mover" was another product of the Chicago Fair.

59. Only three or four (the authorship of Allen Hall is a bit contentious) buildings on the campus were finally designed by Hornbostel between 1908 and 1912. Ultimately the acropolis was abandoned for the equally daring and ambitious Cathedral of Learning by Day and Klauder (1926-1937).

60. The buildings completed are the Theology and Law Buildings, the paired Physiology and Anatomy department buildings, two dormitories (off the main quadrangle), and three arched concrete bridges.
61. Clark Polig ed., Henry Hornbostel/Michael Graves: An Exhibit of Architectural Drawings, Photographs and Models, (Atlanta, Georgia: 1985), p. 5.
62. Ibid., p. 7.
63. Ibid.
64. Arthur North, "Emory University," and editorial in American Architect, Vol. 118 (6 Oct. 1920), p. 429.
65. Hornbostel liked to have gothic, in this case Tudor Gothic, interiors encased by classical Renaissance exteriors. His domestic works show this especially.
66. Henry Hornbostel, Comprehensive Plan of Johnstown: A City Practicable, Plans for the Enhancement of Its Natural Beauties and Desirability as a Manufacturing Center, (Johnstown, Pa.: 1917), in the Loeb library collection. Hornbostel worked with a George Wild and a Victor Rigamont. Note the emphasis on "practicability" in the title and the end goal, "increasing its attractiveness as a manufacturing center."
67. Ibid., p. 111.

Chapter 4:
The Early Evolution of the Carnegie Technical Schools

The guiding social Imperatives as well as the single-mindedness of vision with which Carnegie Technical Schools was shaped are characteristic as much of this era in America's history as they are of its patron Andrew Carnegie. From the technical schools' earliest inception Carnegie would establish the working ideal, often through his lieutenants as was his method, that would shape the character, organization, scope, and architectural character of the place. This was a patriarchal patronage that viewed the curriculum and architectural environment as essential elements in imparting the necessary civilizing aspects to the students and the larger community.

In November 1900 Andrew Carnegie sent a letter to Pittsburgh Mayor William Diehl offering to finance a technical school for the city of Pittsburgh if the city would provide the land.¹ His letter to the mayor is quite revealing. It was circulated to the distrustful public of the time as showing the magnanimity of his ideals.

I learned with great interest that the Central Board of Education had asked the City of Pittsburgh for \$100,000 to begin a Technical School, no doubt to obtain from the bright youth of High School the essential advantages which technical education in our day afford. For many years I have nursed the pleasing thought... [of] a Technical School formed upon the best models, for I know of no institution which Pittsburgh, as an industrial center, now so much needs... I believe that a first class Technical

School, probably as large as Worcester, would develop latent talents around us to such an extent as to surprise the most sanguine. If the city of Pittsburgh will furnish a site, which will be of ample size for future expansion, I shall be delighted to provide the money for such a school, taking care to provide room for additions to the buildings to meet the certain growth of Pittsburgh. I will endow it with \$1 million, 5% gold bonds, yielding a revenue of \$50,000 a year... It is really astonishing how many of the world's foremost men have begun as manual laborers... I know of no better foundation from which to ascend than manual labor in youth. I shall put the Board of Trustees of Carnegie Institute to manage it, as to questions of fees (or free of charge) status [that is] to be investigated by that Board [which] will choose what models [to follow].²

In this case Carnegie typically elects to use his lieutenants, the local Board of Directors of the Carnegie library and museum complex, which he had founded down the road from the schools, to make the detailed considerations.

However Carnegie would exhibit during the growth of these schools a surprisingly constant and detailed interest in their creation and formal arrangement. From the beginning Carnegie not only stipulated the need for inherent flexibility in the curriculum and in the campus organization but he also provided models from which the architects and academics should draw lessons and inspiration. In this first letter he used as suitable models the Technical Institutes of Boston and Worcester, Drexel Institute in Philadelphia, Pratt Institute in Brooklyn, the Armour Institute in Chicago, and

the Halifax and Keithley Institutes in Great Britain.

The bureaucracy swung into action with the subsequent appointment of William Nimick Frew Esq., Carnegie's local legal advisor, as the head of the Carnegie Technical Schools' Board on the 15th December.³ The City of Pittsburgh accepted the offer by the 28th of January, 1901.⁴ The Committee for the Plan and Scope of the Educational Organization, composed of five members of the local business and scientific community, was organized by December 1900. These men, whose names appear all over the city, were the founding fathers of the city and its institutions. The notion of interlocking corporate directories seems to have been applied to the various Boards of Trustees of civic institutions. The group in turn selected its first advisory committee composed of national educational experts, some of whom came from the institutions which Carnegie had recommended as models. This, too, followed accepted practice in a time where the "paid expert" or the professional consultant was considered essential.⁵

With what apparently seemed a carte blanche for "big thinking" the first advisory committee quickly published a report that did not prove acceptable. This was "largely for the reason that they overshot the mark, looked too far in the future... their envisionment, sound enough in its conception, called for technical instruction at such an advanced pitch as to be beyond what was then regarded as the immediate

educational requirement of the Pittsburgh district."⁶ Carnegie and his lieutenants did not want an etherial scientific education but a practical one geared to the young worker desirous of improving his lot in life. Also the institution had to be within fiscal reality even with Carnegie's call for future flexibility and his deep pockets. It appears, too, that this advisory group also proposed a campus whose size would "have necessitated a grand area of at least 60 acres and the expenditure of many millions of dollars."

What this initial episode did was to establish in the minds of the Board members just how far Carnegie's vision could be made to stretch. Their era of academic aggrandizement and expansion was witnessing all too many huge plans with no expense spared, based on the all-encompassing notions of the City Beautiful movement. Their patron, however, seemed less bent on personal aggrandizement than practical utility and relatively immediate realization. Thus the campus form and the curriculum in their scale needed to be suitably contained.

The second advisory group, formed in 1902, was again composed of men from those institutions which Carnegie had praised. They were Arthur L. Williston, Director of Sciences and Technology at the Pratt Institute, Clifford B. Connelley, superintendent of the Allegheny (Pa.) Manual Training Schools, and Arthur Hamerschlag, superintendent of the

St. George's Trade School in New York City. This group was key to the future of the institution not only because their recommendations about the scope of the schools was taken as the standard but also because from their group Carnegie would select the first director and president of the school. Arthur Hamerschlag would in time become as much an influence on the curriculum and physical nature of the school as any man.⁷

Even while the Committee of Plan and Scope and its Advisory Committee were working out the details and size of the institution, the selection of a site and its preparation commenced. A letter as early as 1900 mentions a site in Oakland. However the date which is most agreed upon for the selection of the site is the 13th of February 1903. The City of Pittsburgh had bought a 32 acre site, at \$11,000 an acre, from the transportation and political boss Christopher Magee and had offered it for the purpose of the campus.

The site sloped steeply down to Junction Hollow, a chasm of sorts, and toward a distant (and later obstructed) view of the downtown city. Grading of the ubiquitous hilly topography would start in February or March 1904, several months before the architectural competition.⁸ Thus the architects had to work with some preconceived notions and siting situation decided upon by the Trustees.

The size of the program which the Committee of Plan and Scope proposed necessitated the complete use of the 32 acre site; the future schemes would fill the site, almost hugging

the periphery. In fact as early as January 1903, before the site was officially approved, in a letter Carnegie pushed for the city to "buy as much land as possible so that expansion would not be hampered." Ultimately he left this decision up to the city and his lieutenants.⁹

The advisory committee for the Committee on Plan and Scope basically proposed a plan for a broad "secondary technical" education which was to be beyond the scope of technical high schools but not to be as comprehensive as an undergraduate education of a four year college.¹⁰ There was to be day and night classes. The Institute goals were: 1. To impart skill and intelligence to young men, to increase their earning capacity, to lift their standards of labor from the unskilled to the skilled and to raise them socially; 2. To have courses that will give those of greater intelligence and natural ability a more thorough course fitting them, after a proper experience, to direct the skilled labor, and to fill that great class of middle positions below the Engineer and General Manager, but above the skilled mechanic; 3. To provide courses to give young men and women who have sure taste and ability for art, a training in the application of art industry, enabling them to turn such talents to the best advantage; and 4. To provide courses that seek to give to the constantly increasing number of women who must earn their living by their own labor the same opportunity that is given men to increase their skill, their technical knowledge, and

their judgement and intelligence, and thus uplift their work to a higher standard, increase their opportunities for employment, and broaden their field of usefulness.¹¹ The ideals belong of course to Andrew Carnegie, as does the rather patronizing tone of maximum usefulness to society and industry.

The experts advocated a technical education based on German models. The programs were to train technically minded workers, not engineers and business leaders, "but Designers, Inspectors, Foremen and Superintendents trained to give immediate service, to find ready employment." All of the founding committees agreed that this "specialization of education, based on deep knowledge and scientific reasoning, was the quickest path to success." This education would replace the now-outdated apprentice and journeyman system. The curriculum was also a means to pacify and make productive a potentially restive and intelligent group of working class.

The experts called for a direct translation of each goal, category by category, into four schools within the Institute, a school of Science and Technology (for men), a school for Mechanics and Artisans (for men), a school for Fine and Applied Arts (for men and women), and a Women's Industrial School.¹² What would affect the architectural conception was that each school was to be a distinct entity and yet be supportive of the whole. The schools would offer "to the community and to the country a modern, well-balanced, salient

factor in their social and industrial development." The curriculum and the campus form needed to appear modern and community oriented. The campus was neither to be an enclosed and exclusive monastic quadrangle nor was it to be set at disjuncture with the rest of the city. It was to be in academic and physical form an example to the city.

The advisory committee also established "certain tentative arrangements of buildings". This was primarily a designation of required building areas calculated by the amount of floor space each kind of student would need. "The probably enrollment in the Carnegie Technical Schools should receive careful thought before the appointment of the architect who is to plan the buildings, so that suitable provision can be made for special equipment..."

From the beginning these professionals saw the need for an architect to plan the campus. They put a premium on his ability not only to accommodate the modern needs of such a technical school but also to design an inherently flexible and expandable campus. "The buildings should be designed so that their interior arrangements will be specifically adapted to the shop or department uses to which they are put." They essentially called for a series of industrial sheds.

The advisory committee also noted the uncertainty concerning the control of site and its selection and how that might affect the design of the buildings. "There is still the question of the site... that only when the site has been

definitely placed in the control of the trustees can the real work of planning and designing the buildings be fairly taken in hand."¹³

It is in the letters to and from Andrew Carnegie of the period that we see the evolution of an architectural pre-conception. Carnegie appears to have taken a close interest in the details of the campus. In a letter of January 1903, a month before the final committee report was unveiled, William McConway sent to Carnegie "a diagrammatic arrangement of the buildings that accompanied the report of the Advisory Committee transmitted to you July 16th last." McConway states that the diagram was "not representative of any final disposition but to illustrate in a uniform scale the space that would be occupied by buildings suitable for 4000 day and night students."¹⁴ The buildings were to be one or two stories in height, of "modest beginnings with the expansion possibilities while maintaining a harmonious group when completed." Further it was agreed by the advisory committee, and the Committee for Plan and Scope, that "the schools should be placed as that they should be 'in evidence' as a public institution, i.e., that they should be a perpetual reminder to the passer-by of the opportunities that are at hand for his children, or his friends' children, as for himself." The architecture of the campus should thus be in a form that has, beyond a moralizing tone, outright advertising possibilities. It is almost as if the businessmen are

advocating something on the order of the skyscraper on the skyline to advertise a corporation's presence.

If the architect is successful they should, and would, be enduring examples of a group of public buildings, illustrating dignity and simplicity, with their influence on public taste, solidity and economy, as an industrial lesson; and light and air as a modern sanitary example; that in short, the buildings should, themselves, be perpetual example, to the pupils, housed within, of what constitutes correct taste and honest work, with all that that lesson would imply in an industrial community.¹⁵

Carnegie responds from New York three days later by approving the magnificent plans and the wise scope of their vision. He pointed to the successful scope of both Cooper-Union and the school of the Mechanics and Tradesmen's Society (New York). He had contributed to both schools for their subsequent expansions. Carnegie finishes by advising that greater thought was needed as to the size of the anticipated student body at night, "for every one scholar by day there are four or five by night."

In a series of letters written a year later, during June of 1904, Carnegie was asked for his thoughts about the architectural program which he just been sent (see below for that program). The competition for the campus design was currently being held and the final selection of the architect was some months away. Carnegie's attention to both the details and the grand scope is here obvious. In an almost fatherly way he dispenses advice to his lieutenants who have

finally realized that their plans are too extensive to be accomplished at once. His theme of flexibility and utility in the face of the uncertain future is omni-present. He does not presume to be able to judge, much less direct, the future growth.

No school can be a 'creation' but an 'Evolution.' No plan should be adapted to fetter our successors. The real wants of Pittsburgh cannot be imaged. These have to be proved. I should proceed thus:

Select the one or two obviously needed branches. Build a long brick building, with light partitions, easily moved, so to give the needed floor space to different classes. Equip it with the necessary machinery. Take a few scholars, a very few, and begin. After this branch is working successfully, I should select another branch and repeat the operation...

All of this requires years, but by starting at a small scale with the best applicants and setting a high standard and with steady labor, the School would be firmly planted...

When it has thus proved a success and it is seen that the field is not filled by the Million spent on the School, then the donor's promise comes into play, which is to meet the proved wants of Pittsburgh in this direction.¹⁶

Carnegie advocated the same approach that had led to his success. His clarity in understanding architectural implications might come from a number of sources, including his constructing of steel mills.

It is interesting that he states that the long buildings, like mills, should be of brick. This might be for either fire protection or more likely Carnegie feels that the use of

brick might symbolize a permanent institutional building (the mills were made primarily out of sheet metal, concrete and wood). Hornbostel would use brick in all of his campus buildings. Carnegie goes further to link the architecture with the fiscal restraints and its symbolic, utilitarian function.

I am heartily in accord with the committee in that the buildings, to be consistent with their purpose, should have an architectural treatment of great simplicity [my emphasis]. Their purpose is to teach the most economic modes of production, and any money lavished upon the workshops, or in their operation, is an obvious lesson to the students in the wrong direction. Every dollar should count and not show - the best Buildings, Machinery, Tools and Instructors, etc., are chosen because of economy...

The immediate business is to provide a working Technical School for not more than a Million Dollars...

In the Programme for the Competition it is said that I have promised to erect and equip these buildings. This seems liable to misconstruction. I have given One Million Dollars... "These buildings", if held to embrace those specified for [in the program], I take it would cost many times that. I ardently hope that some day the proved wants of such a school will largely exceed the Million, but first comes the Million experiment and future sums depend upon the future...

Carnegie would again and again have to write to restrain his lieutenants to "make every dollar count". "I please myself with imagining the Technical School of Pittsburgh calling upon me from time to time for more and more money, basing the calls upon the fruit it is producing."¹⁷ He again picks up on architectural theme and the need for restraints.

"The buildings of the Mechanics and Tradesmen's School are handsome, simple, nothing inartistic, suitable for the purposes intended, plain, dignified..." Carnegie uses past successes as examples, in this case the buildings at his school in Dumfermline.

These men built the Technical School that I gave Dumfermline, and manage it with great success.

An extension of their school is now in order. The building stands along side of the High School and shames it, in the opinion of everybody, by its elegant simplicity. It is, however, of stone which is the building material used throughout Scotland, and if the building committee [in Pittsburgh] favors stone, I have no objection although I am partial to the brick used in the Homestead and Duquesne Libraries [the first Carnegie libraries, near Pittsburgh in his mill towns]. I prefer it greatly to the stone used in the Braddock library, but it is a matter, I suppose, of taste. Vitrified brick has the advantage of being easily kept clean and bright, a consideration not to be lost sight of in smokey Pittsburgh.

By the time Carnegie would write McConway in 1914, nonetheless, he had spent \$24 million "but I begin to see this great sum wil [sic] yield satisfactory dividends, thanks to your invaluable service and that of others".¹⁸

1. Of course this was the same arrangement that he would offer with his library bequests.

2. Plan and Scope of the Proposed Carnegie School of Technology at Pittsburgh (Pittsburgh: March 1903), and "Carnegie's Letter of Intent," 15 November 1900 [CMU

University Archives and archives of the Western Pennsylvania Historical Society]. There is some discrepancy between the two, the latter document might have been embellished for public release. Please note too that Carnegie's cryptic writing style makes some quotations quite jumbled.

3. The individual who coined the first name of the institute, the Carnegie Technical Schools, is unknown. In 1912 the name was changed to Carnegie Institute of Technology.

4. Dean Arthur W. Tarbell, Andrew Carnegie and the Founding of Carnegie Institute of Technology, (Pittsburgh: 1937). The dates of action in the first five years, and the actors involved, are presented by various sources with some confusing inaccuracies. Tarbell himself, between his two books, offers two dates for the acceptance of the site by Carnegie.

5. The Committee of Scope consisted in 1901 of William McConway (Chairman of the Trustees' Committee on the Institute of Technology 1902-1919, and thus the man with whom Carnegie would most communicate), Dr. John Brashear (local son of wealth and world renowned astronomer), Mayor William Diehl, W.A. McKee (descendent of the area's early founders), and Charles Schwab. The latter had been a successful manager of Carnegie's steel operations, "having worked up from the bottom", and recently made a partner. This is a somewhat interesting attainment as he was always considered the "perennial outsider" because of his Jewish working class background. He and Hornbostel seemed to have a good deal in common and Schwab's patronage may have gotten Hornbostel several commissions.

The Committee had changed a bit by 1903: McConway and Brashear remained, with the additions of W.L. Scaife, W.H. Stevenson, and Charles Crawford.

The "experts" were Professor R.H. Thurston (dean of engineering at Cornell), Dean Victor Alderson (of the Armour Institute in Chicago), Professor T. Grey (of Rose Polytechnic in Terra Haute, Indiana), and Dean J.B. Johnson (of the engineering department of the University of Wisconsin). [Tarbell's The Story of Carnegie Tech., and Preliminary Report..., op. cit.]

6. Ibid., p. 24. This is the only source that mentions this first advisory group. I did not find a reference in any university or local archive.

7. Arthur Hamerschlag was born either in 1867, the same date as Hornbostel, or 1872 in New York City [the first date is from The Thistle, Vol. 1 (1906), the Carnegie Tech. Schools yearbook, the latter from Tarbell's The Story of

Carnegie... op. cit]. He attended public schools, in contrast to Hornbostel, the Hebrew Technical Institute and extension course at Columbia University. His background was one of relatively extensive self-education. He had a meager formal and technical college training, "yet he had a keen mind, an extra-ordinary grasp of essentials... [and] a forceful personality prevailed." [Ibid., p. 27.]

He definitely fit the Carnegie ideal. By 1892 he was teaching mechanical drawing in those trade schools supported by city church diocese and the patronage of the elite. By 1902 he had become a well-respected industrial educator in New York City. Hamerschlag was known for his experience in mechanical and electrical engineering and his expertise with trade schools. He acted as the consulting engineer for the New York Trade School and was for twelve years the superintendent of the St. George's Evening Trade School. He was highly recommended to Andrew Carnegie for the position as academic head of Carnegie Schools by the president of Cooper-Union (for which Carnegie was a trustee).

The search for a "director" had begun early in 1903 while the second advisory committee with Hamerschlag was still at work. By the 9th of November he had been unanimously selected at 31 years of age to be the first director. He was made "president" in 1918.

8. Extensive grading ("ironing out the ubiquitous hills of Pittsburgh") was required - in excess of one million cubic feet of dirt was removed between 1904 and 1916. The existing gully (called "the Cut") to the north of the site was originally to be filled in with industrial slag. The plan was abandoned because of its expense. Hence the buildings on the north edge of campus were built with rather extensive exposed steel foundation structures. These underpinnings have been covered as "the Cut" has been slowly filled over the years. "The Cut" also necessitated Hornbostel's proposed bridge (in figure 32) to connect the old campus to the new expansions to the north, towards Forbes Avenue. This is land acquired between 1914 and 1917. Between 1903 and 1935 eighteen parcels of land were added to the original site. Tarbell the Story of Carnegie Tech., op. cit., p. 50.

The individual who was responsible for supervision of the grading and the redesign of the site is unknown. With all the engineers involved in the studies for the academic organization of the school there was probably enough expertise within the organization to take care of it.

9. Letter from A. Carnegie, 19 January, 1903 to William McConway. [CMU University Archives]

10. The final report was presented on the 16th of February, 1903, three days after the site had been approved.

This date is confirmed by Tarbell and Plan and Scope of

the Proposed Carnegie School of Technology at Pittsburgh (1903). The latter mentions that there was a preliminary academic report of July 1902 which first established the goals of the institution, and the subsequent report was concerned with the means to achieve the goals.

11. I found this particular set of goals only in a typed draft along with Carnegie's original letter of intent, located at the Western Pennsylvania Historical Society.

Within the published Plan and Scope it is stated a bit differently: "Carnegie Technical Schools are to offer instruction in all educational branches in which art, science and skill can be imparted to the individual for his own betterment as well as the benefit of those related industries which are essential to the prosperity of the community. These courses should not encroach upon the field or purpose of your Universities, nor should they include the elementary or general education which is within the province of your private schools... it is to provide aid to those not already provided for."

12. The mandate of the different schools are of some interest here. The School for Mechanics and Artisans would be directed to the building trades and the manufacturing trades. The School of Fine Arts "should cultivate an appreciation of the Arts in the community and train those who will lift the standard of Art in this country to a higher plane." This of course followed the conviction that art could accomplish such a cultural catharsis and that the trained individual was integral to such success. The school should also "foster Art as applied to industry"

13. Such a situation of continuing uncertainties about the site and the need to proceed with the design of the buildings is similar to the situation at the Chicago Fair of 1893. While the trustees there argued about the actual location and size of the site, the architects were called upon to establish building sizes (made even more difficult because the exhibition committees had yet to decide on the amount of space they needed!) and to develop buildings that could be expanded or reduced depending on the final needs. A classical architecture that employed a system of bays allowed such expansiveness.

14. Letter from Wm. McConway to Andrew Carnegie, 16 January, 1903. I have not found this tentative plan.

15. Ibid. McConway emphasizes that these views have the full endorsement of all Board Members including the advisory committee, "all men of capacity to the full to advise upon this subject, each of them having success behind them to which they can point as evidence that they know their

business." Note the power of the proven expert and the "proof of success".

16. Carnegie to McConway, 20 June 1904 [CMU University Archives].

The latter part of the quotation is typical of Carnegie's obtuse writing style where he refers to himself in the third person on one line and "I" on another.

17. Letter of Carnegie to McConway, 29 June 1904. In this letter he also presses his officers to consider increasing the enrollment of the night students. "These young people work through the day and educate and improve themselves at night."

18. A. Carnegie to Wm. McConway, 2 November 1914. The letters which remain in the holdings of the CMU University Archives show that during the period of the architectural competition, the summer of 1904, the greatest number of rather contentious letters were sent back and forth.

Chapter 5: The Architectural Competition

The preparation of the architectural competition was undertaken by Professor Warren P. Laird, of the University of Pennsylvania, throughout the spring of 1904. Ultimately the competition would attract 69 firms and run through the summer. The deadline was set on the 3rd of September 1904 with the results known by the 25th of October.¹

The Building Committee seems to have been made up primarily of Hamerschlag, McConway and select members of the Carnegie Institute Trustees. The list varies. What is even more uncertain is where the idea came from to chose an architect by competition. As the final competition would state the Trustees of Carnegie Technical Schools were looking for an architect with which to work, not simply a design for the campus.

Warren Laird was head of Penn's Beaux Arts inspired School of Architecture and was one more of the key actors in the creation of the campus plan and the architecture of Carnegie Tech. Laird is best known for his educational leadership and his wide-ranging consultation on architectural competitions. He does not seem to have built much on his own. However he was empowered by this Building Committee, and a number of others throughout his career, not only to organize a competition along the lines approved of by the AIA² but he was also retained for the "judgement of the designs and the selection of the architect."³ Thus his taste in

architectural style and composition seems to have been the deciding factor in the anonymous competition.⁴

The competition program evolved throughout the spring of 1904 as Carnegie's lieutenants debated what the scope of the campus should be. The list of the architects to be invited was in constant flux and it kept growing. Throughout the evolution the program seems to have been guided by Laird along the lines proscribed by the AIA (see above). Initially program of the "open competition", which was in reality an invited competition with the possibility for an open second round, called for preliminary sketches for a campus. The competition program solicited comprehensive planning schemes. Five finalists would be selected, by Laird I suppose, and presented to the Building Committee. They would pick the final "sketch", with the other four receiving \$500. This early program draft states that if none of the five were acceptable to the Committee, these five architects would then have the privilege to compete with five other architects (selected by the Committee) "in a final paid competition for the detailed working drawings for which the architect will be compensated."

This first draft of the program, establishing subsequent standard procedures, enumerated the "five terms" of professional competitions. Ultimately the program would include at least ten points.⁵ One interesting facet of the first draft is the provision for submissions of local

architects. "Two awards [of the five finalists] are reserved and will be paid for the best two plans submitted by the architects of Allegheny County, Pennsylvania; this is done in recognition of the local interest in the undertaking and to stimulate among the local architects the desire to enter the competition."⁶ This community-minded gesture, like the curriculum and the form of the campus itself, was conceived as the symbolic and practical contribution of the school to the community.

The first dated program in a finalized state was of April 15, 1904, and was the one probably released to the public and also sent to Andrew Carnegie.⁷ This program, in its redundancy, length, and detail, is emblematic of the cross-purposes and nebulous conceptions of an architectural reality that the Building Committee had in mind. Paradoxically the program would be hailed by architectural periodicals as progressive and unusual. It is "admirable in its provisions for the selection of an architect, not a design... and in its mix of invited competitors with the open invitation to competent firms at large."⁸

The first part of the released document discusses the scope and the needs of each of the four schools and the administration group. These would form the initial core of the larger ensemble which the architects would also design within a sketchy block plan format. The program calls for an initial enrollment of 4000, both day and night students.⁹

Each group's functional and social requirements are thoroughly detailed "in order that the competing architects may express in their designs the purpose for which these buildings are erected, and design them with such respect to their utility and adaptability as may insure efficiency in operation and construction." For example, the Administrative group would house the executive department and "make provisions for the social development of the students and provide an auditorium". I read this as call for a student center of sorts. Meanwhile the Technical School for Women "will be strictly practical in nature." The School for Applied Science shall be "modeled after modern, efficient industrial and commercial shops." Each building, it seems, should be separate and yet connected, of a different character and yet unified to each other in some way.

Ubiquitous of all programs general size requirements, in square foot per student per department, and adjacency requirements are stated as immutable law. "It is desirable that these rooms, or areas, be grouped as per instructions, in either a single building, single floor, or separate group of buildings, all of which will have a central passage..." The program would give Hornbostel the chance to resurrect his arcaded pavilion schemes of the University of California. The importance of the hallways is further stipulated in a manner which Bosworth at MIT would later see fit to use: "It is also sufficient that the hallways and passages have

sufficient width and area to accommodate a large number of students... and to permit of the handling of heavy materials economically and efficiently [a ten foot minimum width was later stipulated]."

In a separate section the program restates the competition statement (listed above) and adds to it. The first building to be built will be the administration group. The other required buildings to be designed will be the buildings for the school of Applied Sciences, the school of Apprentices and Journeymen, the Women's Technical School, the school of Applied Design (Fine Arts), and the service facilities. The names of the schools imply their separateness and their functional uniqueness.

In this section of the program there are some pointed words towards the appropriate architectural form and arrangement of spaces. The program stipulates with an engineer's accuracy the lighting and air flow requirements. "Rooms designated as 'shops' must be lighted from both sides... and have the capability of future growth of 50%." For Hornbostel this would also justify his selection of separate pavilions attached to a circulation spine. It is interesting to see that the other competitors, at least the ones whose drawings survive (see below), do not take this provision as seriously. The buildings are to be three floors above the basement. "Because of the large number of students that will be entering and registering at once, generous space at the main

entrances are required with a direct exit to the school corridor which will constitute the main artery of the group...[and another reference to the halls] they must allow the passage of teams in the hauling of heavy material to and from the shops." Following Carnegie's thinking the Building Committee stated "to be consistent with their purpose, [the buildings] should have an architectural treatment of great simplicity." The program lists a number of technical schools and industrial shops as examples of the desired architectural treatment.¹⁰ Again, the efficiency and practicality of business and engineering is dominant in the Building Committee's program.

The third section of the program states in very specific detail the required drawings. A Beaux Arts presentation technique was the only acceptable one.¹¹ This, of course, was the method in which both Laird and Hornbostel had been schooled. The competition required a block plan and a "bird's eye perspective", from a fixed point above the site, at 1/64th scale. The architects also needed to submit one detailed design for one of the program groups as well as 1/16th scale drawings of portions of the School for Applied Sciences. The latter apparently was the first group that the Building Committee, again following Carnegie's advice, had decided to build. The competitors could include a typewritten statement describing features not clearly indicated on the drawings.

The final part to this section states that the drawings were to have "no cipher or nom de plum" to identify the project. Also stipulated is that no competitor should "reveal the identity of his design to, or seek to influence either directly or indirectly in his favor, any member of the Committee."¹² Of course this provision was to counter any claims of bias, favoritism or corruption in an era where such practices were common.

The program thus states that the competition is most definitely looking for an architect, not just a scheme. Yet the architect was viewed as another too in the creation of an institution and was accorded the respect and responsibilities as such. This is not to say that in the course of construction that the engineers at the school, primarily Hamerschlag, would not try to tell Hornbostel how to do his business.

The final section of the competition program, entitled "Judgement and Award", states definitively the role of the Warren Laird as advisor and the autonomous nature of the submissions. The deadline for submission are the 3rd of September, 1904 with the selection of the winner by the 15th of October.¹³ Laird would examine the designs and eliminate those that did not meet competition standards. He would then "examine the remaining designs, and select the one, which in his opinion, gives promise of the best results... recommending it to the Committee." Laird would also rate the

other designs in order of their merit, like the competitions at the Ecole des Beaux Arts. Only then would Laird open up the envelopes and reveal the identity of the designers.

The invited five architects, Carrere and Hastings, Cass Gilbert, George Post, Howells and Stokes, and Frank Miles Day & Brother, were chosen no doubt for their past campus work and because of their stature within the architectural community. Though these five were the announced firms it appears that this list was far from being unanimously selected and supported. The Building Committee and Warren Laird, and any one else who had a suggestion, did not refrain from suggesting and writing the biggest and most prestigious firms. Nor did the committee ignore young but attractive small firms with some "track record". All of the lists in the Carnegie-Mellon University Archives bear neither date nor marks indicating sequence. A preliminary wish list included 156 firms from Allegheny County alone (125 from Pittsburgh). The final list, after numerous revisions, dated the 16th of August 1904 shows 66 firms having accepted (and seven yet to accept) the grand invitation.¹⁴

Palmer and Hornbostel appear on the lists relatively frequently leading me to think that they acted quickly, and were accepted early, to get on the competition lists. The first letter in the Carnegie-Mellon Archives from their office asking for information, dated April 27, 1904, was written by the mysterious partner Sullivan Jones. Two days

later the firm officially requested to enter the competition. To qualify for the competition the firm of Palmer, Hornbostel, and Jones sent in the particulars of the 37 year old Henry Hornbostel on a standardized form. What he lists as his credentials is interesting as is the fact that Hornbostel appears to be the designer for the firm if not its most active and notable member. He lists a few of his projects with an industrial or engineered bent, such as a number of office and factory buildings for the Steinway Piano Concern, an iron works, the New York Bridges and "the design for the New York City Municipal Office building-about to be erected in 45 stories" [this was the George Post project]. Appealing to the engineers of the Carnegie Technical Schools he stated "The study and experience required to erect a profitable office building, I have obtained through factory works which requires [sic] even more care and economy of construction..." Hornbostel gave his educational particulars and his teaching situations. He also includes the note that he "took four courses at the New York Trade School for Two semesters." He thus established his link to technical training, his link to a school which Carnegie hailed as being a model in both academic and architectural matters, and his link to a school with which the new director of the Carnegie Technical Schools had also been involved.

Following a period of judgement, Warren Laird announced the winners to the public on October 28, 1904. Palmer and

Hornbostel (the "Jones" kept getting lost in the announcements) placed first. George Post placed second. Wood, Donn and Deming (in association with Pell and Corbett) placed third, Cram, Goodhue and Ferguson placed fourth. T.E. Billquist, from Pittsburgh, received an honorable mention following the original stipulation of the competition about local architects.¹⁵ Each of these architects, and the invited architects, were paid the \$1000 fee. At the announcement of the award, Palmer and Hornbostel were notified that the directors of the new institute were ready to get to work. The first meeting would be Saturday, October 29, 1904.

1. The Competition Notes [CMU Archives]. Meanwhile The Thistle, vol. 1 (1906) gives completely different dates, the deadline 12 July and the date of announcement September 10. The Thistle says 69 firms entered while Tarbell lists 44 firms in the competition. I count at least 69 in the rather confused accumulation of undated lists at the University Archives.

2. See Appendix 2, The American Architectural Competition for a discussion of this evolution.

3. Tarbell, The Story of Carnegie Tech., op. cit., 30.

4. Warren Powers Laird (1861-1948) attended the Ecole a few years before his contemporary Hornbostel. He had previously attended Cornell. He was selected directly from the Ecole in 1891, at the age of 29, to "organize and build" the University of Pennsylvania's School of Architecture. He felt "Architecture was the Fine Art... the Mother of the Arts integrating utility, stability, and beauty." Laird acquired his national reputation as a professional consultant and advisor to many state, municipal, and private institutional bodies in the United States and Canada. He was made a Fellow

of the AIA in 1915 for his "service to the profession in raising the ethical standards of architectural competitions". Somewhere along the line Laird would practice in Minneapolis, New York, and Boston. [Obituary, AIA Journal, vol. 10 (Dec. 1948), pp. 249-250]

As dean of the school of architecture Laird was responsible for importing Paul Cret from Paris in 1903. Laird worked with Cret on a number of planning consultations including the University of Wisconsin (1906) and the University of Cincinnati (1908).

5. By the beginning of the summer of 1904 the final points of the terms of the competition were: 1. five architects were to be selected and invited to submit plans, being paid \$1000 each [note, this is initially]; 2. other architects, when approved by the Committee, shall be permitted to enter the competition - such approval [when] ..evidence of their ability to design and execute large work has been submitted; 3. from the two groups five awards are offered at \$1000 each in order of merit; 4. the Allegheny architects provision; 5. the above awards are fees to the architect towards the design.

The later additions: 6. Professor Warren Laird is announced as official advisor in the preparation of the program and to assist the committee in making the awards; 7. the date for the plans to be announced [by the summer this changed to "four months allowed for the preparation of drawings]; 8. in number and kind, the drawings are to be as few and simple as possible; 9. the conduct of the competition, and the engagement of the appointed architect, are to be in accordance with recognized professional practice; 10. the architects invited by the committee in accordance with the first clause and who have accepted the invitation are Carrere and Hastings [New York], Frank Miles Day & Brother [Philadelphia], Cass Gilbert [New York], Howells and Stokes [New York], and George Post [New York].

It is probable that Palmer and Hornbostel heard first of the competition (even before it was announced in the trade periodicals) from Hornbostel's working connections with Howells and Stokes or George Post.

6. Unfortunately, none of the drafts have any dates attached to them nor do they state who the author of each section might be. The typewritten drafts are copiously annotated and corrected. [CMU University Archives].

7. In a letter from A. Hamerschlag to Andrew Carnegie, May 18, 1904. "I am sending you the program which was adopted May 11; please note and comment on these points: you will be the final approval of the actual construction and the amount spent (with the assurance that each building subsequently constructed will contribute to a harmonious educational and

architectural scheme, and properly utilize the site); the architects are required to provide in their designs for growth and changes as recommended by you; the expenditure of \$10,000 for the competition will get part of the final design"; finally a list of the architect which had by that time accepted the invitation (beyond the first five).

A final, typed, draft of the letter would include one different note: "It has been thought advisable to have the competitors work upon their detailed schemes so that when these buildings are eventually erected, it will produce in effect an architecture consistent with the prominent location adjacent to Schenley Park."

8. "The Program for the Competition for the Carnegie Technical Schools of Pittsburg, Pa.," AABN, Vol. 84 (4 June 1904), p. 77.

9. The majority of students in each school were to be night students. It seems that Carnegie's plea for the predominance of night classes had been heeded.

10. There are the Pratt Institute, Worcester Polytech., the New York Trade School [McGill University was crossed out in this draft]. The industrial shops are the Mesta Machine shops, the Westinghouse East Pittsburgh plant, and the Brooklyn Navy Yard.

11. "In rendering, the block plan is to be shown in two flat, ungraded tints only, the darker indicating the building... [written in pencil] which are to be shown in outline, without indicating internal treatment; the perspective is to be drawn in black ink without brushwork, shadows or any rendering save only its principle outlines and opening." [in pencil in the margin the opposite effect was called for: "the perspective must be rendered in respect to character of live [sic], and indicating shadows, detail and texture similar to the manner of the photo-lithic illustration"]. It seems the latter method of perspective was the one finally accepted, although one of Hornbostel's winning perspective is typical of his pencil renderings without much shadow.

12. In one draft this whole part is crossed out. However the next section of the program calls for anonymous entries.

13. In fact the date of notification to Palmer and Hornbostel was October 26th [Cable from McConway to Palmer and Hornbostel].

14. The August 16, 1904 list includes: Boring and Tilton (NYC); Cram Goodhue and Ferguson (Boston); Ernest Flagg (NYC); Hunt and Hunt (NYC); Hale and Morse (NYC); Lord and

Hewlett (NYC); Palmer and Hornbostel (NYC); Trowbridge and Livingston (NYC); S.S. Beman (Chicago); Copeland and Dole (NYC); Cope and Stewardson (Philadelphia); H. Van Burn Magonigle (NYC); Wood, Donn and Deming associated with Pell and Corbett (NYC); Carrere and Hastings (NYC); George Post (NYC); Howells and Stokes (NYC); Cass Gilbert (NYC); Frank Miles Day & Brother (Philadelphia); Warren and Wetmore (NYC); Guy Lowell would chose not to enter.

An apparently earlier list of invited architects shows Carrere and Hastings; Cass Gilbert; McKim, Mead and White; Peabody and Stearns; and George Post.

Each of these list in the CMU Archives appear also to have been use as tally sheets for votes on the suitability of each firm. Most lists have penciled checks, cross-offs, number (vote?) tallies, and comments.

Some of the lists separate the copious roll into the three catagories of suitability of the firms. Finally the lists separate out the firms from Allegheny County.

15. The order of the "also rans" in fact is not consistent among a number of undated documents. One document places T.E. Billquist at second, Cram et al at third, Newman and Harris at fourth (they were fifth in the October 28 release), and Wood, Donn and Deming et all at fifth.

Chapter 6: The Competition Drawings

An examination of some of the competition entries is quite informative about the different architectural approaches to the problem. The drawing style and architectural style as well as the organization of the campus and the general conception of building form speak about the architects' interpretations of the specific Institutional Imperative of the Carnegie Schools. Certainly the lieutenants of Carnegie, in accepting the final proposals, chose what they believed were appropriate organizations and forms for the architectural ensemble. Warren Laird brought to the selection process a decidedly Beaux Arts planning and academic approach. Finally the kind of designs presented by each architect reflected a personal philosophy of Institution, its role, its form, and his belief in architecture's didactic capability.

I have found only five of the competing schemes. Most of these illustrations are in periodicals of the era.¹ The total number much less the variety of competition submissions must have overwhelmed the judges. One can imagine that such a single, huge competition could have encapsulated the full range of responses to the American academic institution. The three historical planning references which the surviving competition plans recall are McKim's Columbia campus, the Chicago World's Fair Grand Court (and all the lessons of the City Beautiful), and the quintessential notions of

Jefferson's University of Virginia. No references seem to remain of the actual process of judging or the feelings of the Trustees about the schemes. Beyond the ranking of the schemes I find no written inference that might show how the Committee developed a mutually acceptable notion of the architectural form that would have supported the Institutional Imperative.

The block plan and aerial perspective of Carrere and Hastings' scheme, which did not place, show simple shed-like buildings arranged in ranges around courts (figures 23). Their design is most definitely a Beaux Arts scheme modified by American requirements. They have emphasized the axis, symmetry, and processional and visual hierarchy. The entrance to the campus as prescribed in the program is on the south edge, along Schenley Park, halfway up the long slope of the prepared site. The campus has four parts, each a distinct entity with somewhat different architectural styles and planning configurations. This differentiation comes from the program's directive that each school was to have distinctive yet functional handling. The three story industrial sheds, with basement, for the School for Apprentices and Journeymen are located at the lowest position of the hill. The roofs are flat with skylight monitors. The architecture is a severe commercial stone style, like Boston's Granite Commercial Style. This group of buildings

form a symmetrical series of wings with central courts balanced about the central axis of the campus.

This axis, like the main axes of all the remaining competition entries, ran up the hill to some final architectural form. The lower end of the axis for all the schemes are without exception terminated by the hollow with railroad tracks. Some schemes chose to accentuate the vista toward Oakland and "downtown", the arrangement of lower campus, or the slope of the site. Carrere and Hastings by their location of the School for Apprentices and Journeymen² visually block the axis and as a result ignore that tail-end of campus.

Rather this firm chose to accentuate the uphill termination. An imposing administrative building commands the ceremonial forecourt where the lesser axis of the campus entrance crosses the main east-west axis. This minor axis creates the dog leg for the central axis to continue to the north and then east as the site demanded. The administration group, composed of offices, a student center, and a large semi-circular auditorium, has some affinity to Jefferson's library at the head of the Lawn at UVA. In the perspective this building is shown with a severe colonnade set in front of a pediment facade of some thinness. Behind the facade is hidden the half-dome of the auditorium. Thus Carrere and Hastings believed that such a technical institution did not need a symbolic dome. Like Jefferson's library this edifice

sits at the head of a court and looks back down the length of the campus. Unlike the UVA model this central building is not isolated but rather is framed by gabled wings that had pavilions to turn the corners. Of course this building was not the campus library but its administrative head; the campus was more like an efficient organization of shops and corporate headquarters than a place for higher liberal arts learning. Library space was neither designed nor specifically mentioned on the drawings. The architects inferred this emphasis of the administrative center over the library from the program.

The central pedestrian quadrangle is flanked by the groupings of the Technical School for Women and the School for Applied Design (or Fine and Applied Arts). The two complexes of buildings, with hipped roofs, are gathered around central internal courtyards. The main bulk of the blocks visually belong to those rectangular pavilions which are located perpendicularly to the slope and are interconnected by galleries. These galleries would negotiate the change of levels dictated by the site's topography and contain and direct the central vista.

At the upper head of both complexes are more formal pavilions which house large (lecture?) rooms. These pavilions are more finely articulated in the French rational style. They form the western boundary of the upper entry plaza with the administration building to the east. The

pavilions refer to a theme of local pavilion symmetries and form the visual boundaries of the sequence of monumental public spaces.

The north axis accommodates both the buildings for the School for Science and Technology and the buildings to support any future growth.³ These diverse buildings are the most notable in their employment of an organizing central circulation corridor. It appears as if the central spine was not a gallery but a hallway of the same massiveness as the industrial-looking buildings. Within this flat-roofed complex the architects simply allocated space for academic functions. The shed type was able to accommodate a variety of needs without being particularly shaped by them.

One notable compositional decision by Carrere and Hastings was the grouping of the buildings in the center of the site along distinct axes. The site is filled up but not to its edges as the other schemes do. The ability for the buildings to expand is hampered by the choice of these courtyard blocks and tight pavilion configuration located in the middle of the site. The shops on the lower end of the campus are allowed a bit more flexibility.

Finally, the institutional desire for functional utility, architectural simplicity, and practical planning and organization appears to be directly manifest in Carrere and Hastings' scheme. The campus has the austerity of an industrial park. It is interesting too that the

architectural style and campus form is based on a premise of an urban image and compactness, although the city did not encroach on the campus. In fact, the site was bordered by estates on one side and Schenley Park on the other. The few pastoral touches are schematically depicted by cubic rows of trees enfallade. It is as if Carrere and Hastings took the notion of the campus as the "city of the future", an example of city-form shown to the existing city, too much to heart.

The scheme by Howells and Stokes, old associates of Hornbostel, takes McKim's Columbia as its example (figure 24). This scheme did not place either. Unlike Carrere and Hastings, these architects sought to reduce the scale of the buildings and the campus. They use a series of quadrangles and more pervasive local symmetries rather than one or two major axes. Like Columbia University's campus this campus is arranged in city block-like fashion with donut shaped buildings surrounding enclosed courts. The slope is accommodated by level changes in the streets between the blocks while each block sits on a podium. Howells and Stokes use, on the whole, hipped roof pavilions of a more ornate character. The perspective shows that the buildings have end pavilions that anchor the long facades and have emphasized doorways. The large windows are framed by plasticized piers.

An administrative building sits astride the axis of entry which enters the largest quadrangle. This edifice is like a gate to the campus. At the far end of the quadrangle sits a

domed library that is an offspring physically and spiritually of McKim's Low Library. However here, like Carrere and Hastings' scheme, the library does not exist as separate entity but it is tied to the arcaded circulation system. Neither does the library really occupy the commanding position of the campus. It is one block of many.

The central axis up the hill is nonetheless emphasized by the circulation element of the arcade that passes through a green avenue. The arcade goes through a number of transitions and transformations depending on local demands. On the lower campus the arcade is a single story which crosses access streets, forms the edges of the quadrangles, or bisects open green courts. On the upper campus the arcade, of more monumental scale, is used to tie together smaller and more disparate buildings which would most likely accommodate future growth. On the north and south edges of the upper campus the arcade joins with a series of retaining walls that deal with the terrain difficulties, which Carrere and Hastings had ignored.

This scheme has a more intriguing mix on the campus of the arcadian ideal and the ideal of urban practicality and efficiency. Howells and Stokes place the campus in a larger forested setting. The forest creeps onto the campus in the green courtyards. The urban aesthetic is demonstrated in the city-block arrangement. The industrial aesthetic is evident in the simple shops of the lower campus, the massive

retaining walls, and the symbolic placement of a pair of smoke stacks at the bottom of the campus (they actually spring from the floor of the hollow). This conceit of the smoke stack used as symbol of the industrial, lower campus to contrast with the arcaded quadrangles ("academia") of the upper campus is also used in the schemes of both Post and Hornbostel. The campus as it exists today owes a great deal to this symbolism. The paired smoke stacks seem to imply a balance, or symmetry, about the campus' central axis on which only one building effectively sits. While the voided green avenue and arcade run down the center only the power house on the lower end of the campus sits on dead center. It is as if the spiritual center of the campus, now located on the lower end of the campus closer to the commercial city of Pittsburgh and the cultural city of Oakland (uphill faced toward the suburbs), is embodied in the place of energy generation.

It is of passing interest too to see the firm of Howells and Stokes designing a campus plan without the assistance of Hornbostel. When we compare this present scheme with their associated work in the University of California competition we can see how prevalent the hand of Hornbostel was. The architectural forms here, and the rendering itself, do not have the same commanding presence. The composition subsumes the individual building in the Carnegie School entry, while Hornbostel at California would put a greater visible emphasis on the buildings inspired by French Rationalism. The

rendering style here is more fussy and less suggestive. Grand vistas, to balance the grand buildings, are absent in the later scheme. Howells and Stokes scheme emphasizes the block and the planarity of the walls which are come from the work of Charles McKim. In the California Competition Hornbostel had emphasized the plasticity of the wall, the silhouette, and the massing of the forms.

George Post's design, which placed second, uses a more gothic architectural idiom (figure 25). The planning of the scheme seems to be a curious mix of Beaux Arts axes and monastic courtyard design. In block plan the buildings except for the administrative group and the auditorium, appear as undifferentiated sheds. The rather narrow central axis runs up the slope between two circulation spines which step up with the topography. At the top of the axis sits the administration building with its high gothic tower keep. The cross entry axis is terminated to the north by the auditorium building. This is an apsidal building form whose facade is anchored by two smaller gothic towers. It has the appearance of the church. The third axis on the upper most-end of the campus also runs between a series of connected and gabled sheds.

The scale and detail of the design illustrated in perspective is quite a bit denser than what the block plan would suggest. Behind the central building ranges is an assorted compilation of building types and masses. It is as

if each complex were a separate little village in its own right, complete with the full range of buildings and courtyards needed to be independent. Yet, unlike the separate city blocks of previous schemes all the villages are linked together by articulated spines. The program gave Post reason to link these monastic villages together, "separate yet connected, different yet unified.."

The rendering of the drawings emphasizes a monastic quality of the scheme. Gothic towers predominate on the picturesque skyline. The pitched roof buildings use gabled pavilions to break up their facades and turn their corners. The central axis is like a medieval street whose corners are marked, in the flanking circulation corridors, by cupolas on square towers. Picturesque massing, varied roof pitches, decorated gable-ends, and chapel-like pavilions give a scenographic quality. The interior courtyards are intimate and green.

The Trustees no doubt did not support the notion of the campus' monastic separateness from its surroundings. Not only did Post use ranges of buildings to shield the interior of the campus but he also chose to visually set the campus above the hollow and the surrounding city suburb. The transition between the lower campus and the hollow takes place in a large rampart with scissor-stairs and terraces. The campus is put onto a podium.

Like Howells and Stokes, Post places the powerhouse smoke stack in the hollow but he uses only one stack centered on

axis. Thus the central axis is anchored on one end by the squat tower of the administration hall and on the other by the more modern pinnacle of the smoke stack.

This particular competition submission was illustrated in periodicals along with the detailed designs of the assembly hall and the administration group. These are the most ceremonial and least shed-like buildings in the program. In plan both owe a great deal to the Beaux Arts notions of poche and mosaïque in the architect's delineation of space and procession. Both buildings are symmetric in plan and elevation. The plans are composed of discrete building units strung along axes of circulation. It is as if in the individual buildings Post would allow the prevalent Beaux Arts style to reign while a more gothic approach was required in the overall composition of mass and facade and in the campus image. The fact that this is a sham gothic, no doubt, would not appeal to Carnegie's sense of simplicity and honesty. Yet the image of the campus is definitely that of a place for higher learning, a point of academic pilgrimage.

In the administration building (figure 26) the pyramidal Beaux Arts organizational device directs that in plan the ceremonial rooms hug the center and that on the elevation the masses build up to the tower in the center. The central entrance is marked by three portals at the base of the tower and by flanking gables with ornate bay windows and window surrounds. On the gothic tower is a large clock recalling the

clocks of both European campuses and the clocks on mill building towers. Time, efficiency, and academia are linked through the campus architecture. The cellular composition of the building is marked on the facade by bays framed with piers. Above the two story ranges are crenelations and the emphasized roof ridge. The ends of the building are anchored by pavilions whose corners themselves are anchored by battered buttresses.⁴

The Assembly Hall is a much more complicated building for a new functional requirement. However Post chooses to clad the building in gothic garb structured on a symmetric plan. The twin towers are the entries while the apsidal auditorium is hidden behind. No effort is made to create a visual reference to either the programatic form or the technology involved in such a building.

Thus the campus imagery combines the notions of the "city on a hill", the monastic quadrangle of introspection, and the campus as arcadian ideal. Each of these signal alone was approved by the academic society in the broadest sense. Possibly the mixed signals of such a scheme were not perceived as appropriate for a technical school which was to be geared to a community such as Pittsburgh's. The gothic style might have been perceived, also, as being out of date and too close to the city's ecclesiastical and commercial architecture. This was to be the efficient architecture of industry. Nonetheless the appealing image of the campus, and

the completeness of the design allowed Post to win second prize.

Palmer, Hornbostel and Jones' winning scheme is based on a more overt and thorough Beaux Arts precedent, both in planning conception and imagery (figures 27 and 28). The design was hailed, at least locally, as "by far and away the best work."⁵ This campus submission is composed of three major quadrangles around which the buildings are almost, if not visually, symmetrically disposed. The buildings in essence hug the periphery of the site. This makes for peculiar architectural conditions at the corners. The scheme also chooses to emphasize the long and broad vista with the buildings conceptually acting as frames for that vista. The buildings, by being on the edges of the site, act as walls to the campus. The central axis of each quadrangle is terminated by towers or other exuberant architectural masses.

In this first scheme Hornbostel as designer chose to place a gothic pile for an administration building at the head of the main axis. Near the other, lower end he places a lone pavilion (possibly a library) in a similar manner as he did several year earlier in his first submission for the University of California Competition (figure 29a). At the very bottom on the main axis he places a lone smoke stack (of some ornateness) and power house, just as Post does.

While the central quadrangles emphasize an open, central and linear path of circulation, Hornbostel chose to make the

enclosed and wondering circulation spine the other organizing element of the campus. I say wondering because across the campus the spine assumes different architectural guises depending on local conditions. Where the buildings were to be perceived as distinct entities, such as the separate schools in the program, the spine is a single story arcade linking building blocks, and their interior hallways. This situation is most prevalent in the north range of the central campus quadrangle. Change of topography is negotiated both by a change in levels within the buildings and by the arcades stepping down the slope. Belying the campus' axial symmetry, the circulation spine on the south side of the main quadrangle is encased in a long building which steps down the slope. The central spine here is a hallway with classrooms and office to each side. The shops, which were required in the program to have windows on three sides for light and air, are arranged perpendicularly off the spine. These pavilions are parallel to the topography change and were designed to "grow away" from the spine as need be. To negotiate the slope the central spine in this southern range, the campus which was the one first built, steps down the hillside.⁶ The hallway inside actually slopes at a fixed grade down the slope so that adjacent rooms on the halls have floors at different levels. In this range near the bottom the hallway emerges as a distinct element, free from surrounding buildings.

On the upper campus the arcaded circulation spine connects more disparate buildings. The arcade, while it allows some "leakage of space" to the smaller areas outside the quadrangle, is used to visually contain the larger quadrangle. Where the buildings are symbolic foci of the whole campus the circulation spine is subsumed by the large building mass. For example no reference to an interior corridor is made on the block plan or the exterior of the first administrative group (figure 29).⁷

This notion of organizing the program with vista and circulation of course comes from the Beaux Arts. However Hornbostel has chosen to make the spine malleable as well as eccentric. Local demands and odd requirements of the site are not blithely overcome, but rather celebrated. As mentioned above the corridor in a number of ways negotiates the terrain, both by covered arcade, and by enclosed gallery. In some places the spine emerges from the buildings to form a grand entrance. At the campus entrance the spine becomes the entry portals (figure 28). On entering the campus the student would move through the pair of grand arches and across the circulation which moves along the spine. There are number of places where the spine becomes a permeable enclosure to act as the entry into and the wall around the quadrangles. Single story arcades physically and visually separate the lower pair of quadrangles from the upper quadrangle which was reserved for the women's schools.

At least in plan the buildings are not differentiated by type as to the functions that they would house. On the block plan hand lettering identifies which academic group (group "A" through "I" as identified in an extended reading of the program) was to occupy which buildings. It is obvious that the head building would be administration. It is less obvious where the library might be and what the uniquely shaped buildings, seemingly designed "from the outside-in" to accommodate the site, might house. Hornbostel has chosen not to use the domed library block as the symbolic center of the campus.

In the bird's eye perspective (figure 28) Hornbostel's hand is evident in the quick pencil strokes and the delineated "presence" of individual buildings. While the overall Beaux Arts concept dominates each building is given a clear and rational architectural treatment. There is some specific organizational and hierarchical distinction between one group and the other for which the program called. Yet there is a wider variety of building details which act as means to identify what the building houses. For example in this phase the pavilions for the shops face the quad in a parallel series of gables. The gables are marked by extruded and industrialized Palladian windows on rusticated bases. Each gable is crowned by a chimney. The ranges behind the shop pavilions have hipped roofs. The facades of the buildings on the lower campus are marked by Hornbostel's characteristic

rusticated base, piano nobile of larger piers and arched windows, and heavy attic. Their is an elegant industrial aesthetic to this industrial side of campus.

The upper campus in elevation and plan is much more ornate and complex. The units of planning are smaller than the shops and lecture rooms of the lower campus. Thus the buildings are arranged in smaller pavilions. There is a variety of scale of buildings' masses, with the larger masses on the quadrangles being pared away as the buildings grow away from the center. To turn often obtuse corners Hornbostel will employ an octagonal turret or pavilion form.⁸ The building silhouettes are picturesque in their diversity. The individuality of each building within the neo-Grec canon is attained through a manipulation of roof lines, of towers, of plan geometries, and of facade design.

The most ornate and plastic buildings are located on the entrance axis that runs north-south. At the north end is an elaborate pavilion set within a surrounding courtyard building. This pavilion has the quality of a central pavilion of a French chateau. A central roof with skylights sits atop the pyramidal and symmetric pavilion composition whose corners are anchored by angled buttresses. The facade is plastic in a restrained planar sense with piers, gables, and bay windows accenting the center. The wings of the pavilion in their scale and detailing enforce the feeling of being in a courtyard of a French chateau. This smaller

courtyard vista would have been highlighted by the arrangement of the campus entry where one would be directed to see this pavilion and its wings in the distance through a pair of grand arches. Several other grand entries marked by tower of baroque plasticity on the main quadrangle create the extended chateau environment.

Meanwhile across the quadrangle, at the head of the main axis and yet to one side as one enters the campus, sat the peculiar mass for the administration group (figure 29). This complex contained a gymnasium, an auditorium, and a commons room, as well as the administrative offices. It appears that Hornbostel was never really satisfied with this rather complicated answer to the program as it goes through a number of quick changes after the firm won the competition. However, in this winning submission Hornbostel allows a picturesque asymmetry to inform the administration group. The exterior handling makes the group look like the ecclesiastic architecture of Oxford, both in the massing of the long "nave" and in making the entrance to the building from its long side. In plan the entrance to the building is directly on the campus axis but not in the center of the building. The entrance is marked by a tower which itself is asymmetrical in plan and elevation. This reflects the need to accommodate vertical circulation, a need that Hornbostel would celebrate through out his designs for the campus. Thus the extra bays for circulation located between the gym and

the central lobby (which is marked by the central, planar part of the tower) are carried upward. At the intersection of these bays of vertical circulation and the campus interior circulation, which runs across the front of the administration building in an arcade, Hornbostel places a rounded stair tower crowned by a belvedere. Thus the heavy gothic tower mass is joined by this thin, sculpted tower of French rationalist origins.

Hornbostel's eclecticism is carried further throughout the administration building's elevation in the bay system marked by piers and arcades. The front elevation shows the circulation spine as a single story side aisle or cloister. Above the cloister are piers which both support a heavy attic and balustrade (behind which is still visible the tile roof) as well as separate either large arched windows (for the library) or blind arches (for the gym). The north end of the composition is anchored by a projecting turret, again a stairway, which has no balancing counterpart either across the quadrangle or on the other side of the building.

Hornbostel arranges a smaller scaled wing for the actual offices for the administration in the south end of the administration and gym complex, along side the entrance. This wing is linked visually to the balancing classroom buildings on the other side of the campus entry arches. Thus allegiance to local symmetries drives Hornbostel to create a rather awkward administration block. In this immediate

juxtaposition of large and small masses he has some precedent in Oxford's Christ Church.⁹

The floor plans of this one building show the method by which Hornbostel assembled his Beaux Arts plans. Poche is sculptural but it does not assume a life of its own; it is regulated by an abstract grid and structural logic. The mass of the building is subservient to circulation and functional hierarchy. The additive and regularized bays are read on the elevation. The units of the bays form the building blocks of the larger rooms. Rooms of functional significance and visual prominence are given a more baroque, yet simplified, shape in plan.

Hornbostel's designs for such major rooms' volumes were equally as sculptural. The comment that is often made about Beaux Arts' architects and their preoccupation with plan and two dimensional space realization seems not to have been the case with Hornbostel, as we have seen in his other work. While he did design elevations in the formal Beaux Arts manner, his design perspectives allowed him to endow his exteriors and interiors with a greater plasticity. He was also willing to use new technologies to create those indoor volumes.

It is possible that at this early competition stage Palmer, Hornbostel and Jones might have made use of models to study the campus. This would also speak for Hornbostel's developing three-dimensional sensibility of design. The

model (figure 30) of the part of the campus to be built first was apparently released to the public very soon after the competition was won by the firm.

The overall campus composition was almost a cacophony of architectural pieces which responded to local requirements. Even the supposedly organizing element of circulation is unpredictably eclectic on a campus scale. The campus plan is held together by the quadrangle vistas and the uniform aesthetic of the facades and masses. Such architectural touches as the celebration of the circulation elements, the utilitarian sheds clothed in some ornateness, and the picturesque skyline did not overwhelm the campus' image as that of a technical institute. The campus was within an acceptable Beaux Arts planning tradition and it had an elegance based on a generally simple aesthetic.

The campus in its organization offered an example to the city. The campus is enclosed by its buildings, thus defined and controllable, and yet seemingly open to the land around it. The campus has a sensibility that straddles urban campus forms and rural campus forms; Hornbostel's scheme is not based upon the city block nor is it composed of free floating buildings in a pastoral setting. The campus does not make any overt aspirations to the "university as the heavenly city" complete with golden domed libraries and huge sports coliseum. This is a campus of an institute for the practical

applications of technology, where the industrial shop and the power house represent the temple of academia.

1. The entries of Post, Howells and Stokes, and Carrere and Hastings are in "Competition for the Carnegie Tech. Schools," Architecture, Vol. 9 (15 Dec. 1904), pp. 194-196 and Inland Architect, Vol. 45 (March 1905), plates; AABN, Vol. 87 (11 March 1905), plates. The scheme of Palmer, Hornbostel and Jones was widely covered in the Architecture Annual 1905 and 1906, (New York City: Architecture League of New York, 1905 and 1906); "Competition for the Carnegie Technical Schools," Architecture, Vol. 11 (15 Feb. 1905), pp. 26-29; "Carnegie Tech" American Architect and Building News, Vol. 87 (25 February 1905), plates after p. 68; and "Carnegie Tech. Schools, Pittsburg," Architecture, Vol. 13 (15 June 1906), pp. 104-107.

The entry of Wood, Donn, Deming in association with Pell and Corbett is illustrated in the 1905 Pittsburgh Architectural Club Yearbook. I can not find the entries of the local architect Billquist, of Cram, Goodhue and Ferguson, and of Newman and Harris, to name those that placed.

2. In some plans this block is referred to in another name, "The School for Mechanics and Artisans", which is the earlier name that Carnegie and his lieutenants gave to this curriculum.

3. The School for Science and Technology seems to have gotten in all the schemes, as a distinct curriculum and architectural entity, less emphasis in the beginning. It is possible this was the one school that the Trustees believed could be built later.

4. The building resembles a great deal John Russell Pope's later Gymnasium at Yale University.

5. Pittsburgh Architecture Club Annual Exhibition Book 1905. The issue talks extensively about the competition and the entrants. Other periodicals of the time do not discuss the winning schemes beyond simply illustrating them.

6. The gabled roofs diagrammatically show what happens with the classroom floors inside.

7. In fact in the administrative group the circulation is along the front facade. See below.

8. This is a formal lesson learned in his experiences in Paris with Girault and Blavette.

9. At Oxford the smaller scale dormitory quadrangle is jarringly juxtaposed with the college cathedral. Here too one enters the larger building on its long side, off axis, from a corner of the dormitory quadrangle.

Chapter 7: The Early Evolution of the Campus Plan

Following the announcement of the winners of the Carnegie Technical Schools competition in late October 1904, Palmer, Hornbostel and Jones were hired as campus architects. The first classes would actually be using the first buildings a year later in the fall of 1905.¹ The firm had revised and finalized the campus plan between their first meeting with the Director of the Schools, Arthur Hamerschlag, and the Trustees on the 29th of October 1904 and the date of the 1st of April 1905.² On April 3rd the ground was broken for the first range of shop and classroom buildings to be located on the south side of the main quadrangle.

Following the guidelines prescribed in the program the architects were directed to make changes in the campus plan in these months between early November and late February. What the specific demands were have not been recovered. It does seem simplification was one goal. The costs of the scheme no doubt were prohibitive in Carnegie's mind and his lieutenants no doubt scaled back Hornbostel's proposals.

With the creation of an internal building board for the Carnegie Schools the buildings could be more finely attuned to the needs of the curriculum. The voice of the educator Hamerschlag would be increasingly heard. Also, a rapport was established between the director and his architect which went beyond merely a working relationship.³

A second campus block plan from this period (figure 31), on drawings labeled Palmer and Hornbostel Architects, shows quite a few changes.⁴ The campus in general is still organized around three intersecting axes, two east-west axes and the connector north-south axis on the campus entry. The buildings hug the perimeter of the site and form the campus' outer boundaries. Vistas along and across the grand quadrangles are encouraged and bounded by the buildings-as-wall. On this main quadrangle there is a perceived, not actual, symmetry. The main entry sequence is the same although there are now more campus entrances, some through the buildings, created along the southern sides.

The lower campus has been simplified greatly with the elimination of the free-standing pavilion. Instead the power house has grown in plan and presence. The smoke stack has become the campus symbol on the lower campus and the major axis is terminated by it more forcefully. Also the campus is more open to the Oakland Civic Center beyond the hollow.

The shop buildings are much more regularized in plan. Whereas the circulation spines in the competition schemes had a persistent life of its own, now the sense of pavilion blocks in general is greater than a sense of the organizing spine. This is the case throughout the campus though especially on the lower campus. The shop pavilions to the south, still placed along the slope, are in parallel ranges as they alternate sides about a central axis of circulation.

Each pavilion sits a bit above its downhill neighbor as was the case in both the earlier competition scheme and in the dormitory scheme for the University of California submissions. The central hallway contained within the spine again rises on a constant slope. On the north set of ranges the shop pavilions toward the quadrangle mirror those across the way. There are no flipped pavilions forming the saw tooth similar to the south range, but rather "L" shaped additions. In comparison to the competition scheme the pavilions are fewer and larger on both sides.

At the top of the hill the entry's quadrangle is dominated by the "Museum and Auditorium" block. The administrative offices, as delineated on other detailed plans, have been moved to the other side of this quadrangle into a less commanding position. This would be their final location although their form would go through a number of transformations. The fact that the administrative offices had been moved to a visually less commanding position is of some importance, though they now have an even greater "command" of the entrance and the south elevation of the campus. It seems that the notion of the commercial headquarters as the linchpin of the composition had been rejected. Instead the communal function of the auditorium and the educational center of the museum would be the campus' spiritual and visual focus. Meanwhile the less imposing ornate pavilion remains at the northern end of the entry axis

and is now labeled the School for the Applied Arts. It has become a simplified cube with two courtyards.

The upper campus for the "Women's School" is completely separated from the rest of the campus' circulation system. It appears as if the upper campus is set upon a plateau with the change of topography negotiated by an interstitial set of terraces and scissor-stairs. These form the visual and physical separation between the men's and women's parts of the campus.⁵ The women's school is less complex in architectural form and has fewer buildings. The dog-leg shift of this upper axis is accomplished without the architectural gymnastics of the competition plan (with its pavilions and octagonal turrets). The building-as-campus wall is simply broken and shifted, thus allowing for the new geometry and the multiplicity of campus entrances.

The most visible addition to the plan is the stadium in the "Cut" to the north of the main campus. Not only does this herald the acquisition of lands to the north of the first campus site, and the expansion of the schools in that direction, but also this presupposes that Carnegie Tech. was taking a new appraisal of its students. Whereas the earlier competition schemes accommodated the program for a school of working students (primarily night students) in a technical or trade school, we see here a hint that the campus might come closer in the near future to encompassing more of the activities of a full college. The "Cut" would be the site

for a number of stadium proposals in the future, and it would signal the beginning of the campus designer's preoccupation with this gorge.⁶

There is a Hornbostel perspective which matches this plan. It is drawn from a bird's eye perspective above the hollow thus emphasizing the lower campus and the vista from the smoke stack up to the auditorium/museum building. This perspective has a quality that is similar to a birds-eye perspective of the dormitory group of the University of California scheme. In the foreground are pavilions, now with hipped roofs and broad eaves, which step up along the central axis to the cross axis in front of the main (auditorium) building. This building has a tower which anchors the upper end of the main axes.

The architectural quality of the shops in perspective matches the austerity of their plans. The facades still are composed of Hornbostel's tripartite vertical parti although the attic has been reduced in favor of more pronounced eaves. The arched windows of the shops, on the piano nobile, are framed by masonry piers. Each pavilion has almost become an industrialized Bibliotheque Nationale. The rows of parallel pavilions are punctuated by towers and gable-step-downs which mark the changes of level of the circulation spine necessitated by the topography.

At least in this view one senses an ascension from the raw industrial technology of the heating plant to the refined

academia of the museum. Both ends of the axis are marked by towers. The smoke stack, connected to an ornate power house, has a more developed picturesque quality of eclectic French rationalist sources. It is analogous the smoking beacons of ancient Greece. On the uphill terminus the central auditorium tower is squat without seeming as massive as its gothic predecessor in the earlier design. The picturesque quality in the smoke stack is similar to the first proposal for the bridge buttresses of the Hell Gate bridge (figure 6) and the stair tower appendage of the administration building design in the competition submission (figure 29).

In this perspective we are aware of the campus' forested surroundings and the rough quality of the land. The perspective takes some pains to show the scheme's approach to the topography. Hornbostel uses retaining walls and terraces to create level changes. In the courtyard in front of the power house the retaining wall is formed by arcades, like the Orangery at Versailles. The campus has neither been set in an idyllic grove in the arcadian hinterlands nor has it been set in the midst of an industrial city. The sketchy perspective gives a reading of an unfinished site set within rolling hills, set away from the city. Yet the campus, like any factory, is tied to civilization by the railroad umbilical cord, an outpost of the city nonetheless.

An article by Alfred Morton Githens appearing in 1906 in The Brickbuilder discusses the architectural merits of the

plan composition of the Carnegie Technical Schools. This article probably typifies the prevalent planning approaches of the time. The article discusses only the evolution of the block plan, up to 1906, and its similarity to historical "ideal types". Githens recognizes that Hornbostel, accommodating the competition program, had designed each group of buildings, for each school, to stand on its own. Thus the campus was composed of a series of "group plans" arranged in an "unsymmetrical composition on two axes" (referring to the main axis and the entrance cross axis). "Both ends of both axes are closed [his emphasis] by the buildings of the group; in neither case does the vista along the axis extend between the buildings to distant objects." Further a composition was defined as "an arrangement of several buildings and perhaps an open space in such a way that all produce a single architectural effect - it must be complete in itself." Githens goes to some length to show in history how the composition was an integral whole never to be subdivided. Taking part in the "classical verses picturesque" architectural debates of the time, he also sees Hornbostel's scheme as being monumental, and thus Classic, and not picturesque like the Gothic. He sees the latter as being the less desirable of the two for college campus or for any civic building in America. Gothic buildings, after all, he claimed were irregular "because they were built piecemeal

through successive ages". Symmetry and order were more logical.

Hornbostel's final campus plan of 1910 to 1912 will end my discussion of campus planning.⁸ This plan and perspective (figures 32 and 33) show a completely new upper campus configuration. The two major axes of the main campus exist with the women's school quadrangle quite reduced. The Women's Technical School is now placed in a large building complex still quite removed from the men's part of the campus. The physical separation of the facilities for the men and women in this plan is accomplished in the campus entry axis which has been extended across the "Cut" to Forbes and made a city street. Also the School of Applied Arts in a "U" shaped configuration is located at the top of the hill at the head of the main axis. The power plant at the lower end of the axis has been enlarged to encompass several engineering shops "that need direct connection to the mechanical and steam power supply."⁹ The smoke stack has been truncated and pulled back into the edge above the hollow.

The perspective has a number of novelties too. The stadium has been push up the "Cut" even farther (the present day tennis courts) and the bridge/viaduct appears to contain rooms (the gymnasium) between its concrete piers below the roadway. A second viaduct running north to the Women's Technical School forms the upper rim of the stadium

bleachers. Finally, Hornbostel has designed an eight story office tower to be located at the entrance. It has a square plan, a colonnaded base and an austere classical tower capped by a peaked roof. This drawing is unique in that one copy, not illustrated, has a thumb-nail sketch on it of the campus plan in the Oakland context of streets.

The rendered plan (figure 33) roughly from the same date shows just that context. At this stage Hornbostel is working with the Building Bureau at Carnegie Tech. so that fewer drawings are in his hand.¹⁰ This site plan, the first plan yet to show the existing neighborhood and the street pattern, depicts the simplified campus firmly established between Schenley Park, Junction Hollow, and the "Cut". Land for expansion is delineated. The campus is perceived in drawn form as being a growing entity planted within an existing and expanding city fabric. More specifically the campus has become part of the city's park and cultural civic center. It has become a civic institution in its own right.

1. Sometime within that year Hornbostel was asked to teach architecture at the School of Fine and Applied Arts.

2. By 1 April, 1905, the architects would receive their second payment for services after the initial award at the end of the competition. Previously, on the 2nd of February, the "Committee on Technical Schools" was instructed by the Trustees to assume the duties of a Building Committee, and "that it was given full power on the premises and authorized on behalf [of the Board of Trustees] to supervise and in general do whatever is necessary to the erection and

equipping of said buildings." (Meeting Minutes of the Board of Trustees of the Carnegie Institute, 2 February 1905; CMU University Archives). Thus Hamerschlag and McConway were given legal right to make the decisions about the campus, whereas before they always had to seek approval from the larger board. This begins the stage where the decisions about building were taken from the business leaders and put into the hands of the academics.

3. The CMU Archives have a box of correspondence between Hamerschlag and Hornbostel (dates 1906 through 1920). The letters are not particularly copious in number as the two men seemed to look forward to, and prefer, dealing with one another face-to-face. In the years before Hornbostel established residence in Pittsburgh (1922 or so), he would stay with the Hamerschlag family. At times his family would accompany him. Their correspondence covers topics of campus building, teaching situations and needs, and personal sickness and troubles. Hamerschlag could be jovial or quite remonstrative (see his note to Hornbostel concerning Hornbostel's coming permanently to Pittsburgh, above). They both were the same age. Hornbostel in theory was the product of a more elevated upbringing and class than Hamerschlag and yet Hornbostel in these letters always seems the less mature (and excitable) younger brother needing to be advised, at least in Hamerschlag's eyes.

Having abandoned the idea of a President's residence on campus finally in 1915, Hamerschlag commissioned Hornbostel (I presume from his own pocket) to design and build a residence for his family in Nicola's Schenley Farms subdivision of Oakland. It survives today as an anomaly. In style it is similar to Hornbostel's contemporary Carnegie Tech. dorms. It has a field-stone base and first floor, not nearly so articulate as H.H. Richardson's organic style, and a dark brick second floor. It seems that Hornbostel would use this field stone construction technique and aesthetic again in a lodge for Franklin Nicola around 1919 in Oakland, Maryland. [CMU Architectural Archive].

4. None of the original photographs of this particular drawing, or any of the subsequent campus plans and perspectives, are dated. Some were intended for publication. A very few of the drawings appear to be made solely for study. I would date this particular plan to this 1905 period because of a number of plan passages that match working drawings (and built products) of the buildings built in the first stage. It also had to be extant before the publication of Alfred Morton Githens' "The Group Plan I: A Theory of Composition, the Carnegie Tech. Schools," Brickbuilder, Vol 15 (July 1906), pp. 134-138. Also this plan appears in a June 1906 issue of Architecture.

5. Although, the School of Applied Arts would also house women. That is why this school is located near the upper end of campus.

6. The actual design of these early stadium proposals begins after the next (1910-1912) campus plan. In April 1916 the first specifications and drawings were sent out for bid. But in June 1916 the bids were rejected. Instead in December 1916 the Building Committee requested detailed gym and bridge plans; the later 1910-1912 campus plans show this causeway with gymnasium underneath. [CMU University Archives, Building Correspondence]

7. Githens, op. cit., p. 137.

8. Dating these undated drawings is a bit more tricky. They are definitely before 1912 when the power house and engineering shops (Hamerschlag Hall) on the lower campus and the Fine Arts Building on the upper were designed and started; this perspective shows a truncated smoke stack which had been redesigned as early as 1912 with a different configuration, closer to the way it was built. The wings on the 1912 Fine Arts Building were added in 1916. The buildings of the Women's School are those that had been fully designed by 1907 (although the full range was never built: see below).

Also the addition of the properties to the north of the original campus site seem to have been approved by the Building Committee after 1912 (meeting notes of that year). However the CIT Alumnus of 1915 says that the actual land purchases towards Forbes began in 1914 and lasted until the war.

The most conclusive dating of this scheme comes from its appearance in the 1912 Pittsburgh Architectural Club Exhibition Catalogue.

9. These are the mechanical and electrical engineering labs.

10. This might be the origin of the second version of the 1905 bird's eye perspective above the hollow.

Chapter 8: The Institutional Imperative and Building Form

On the campus as it was finally built there are four complexes of buildings whose evolution and final form are particularly appropriate examples of Hornbostel's reading of the Institutional Imperative. The four belong within his general oeuvre of 1904 to 1915, where French rationalism of the Beaux Arts was married to a pragmatic and often engineered form of the American technical institution. In an era where the architecture of Academic Classicism was usually applied to the edifices of civic institutions Hornbostel's relative "eclecticism", his virtuosity of industrial materials and building technologies within a Beaux Arts conception, still had its place for the few institutions that geared themselves to such innovation within the guise of acceptable tradition.

The first structure completed on the campus, finished enough to accommodate the first classes of October 1905, was the "Industrial Hall" complex.¹ The configuration of this complex of shops and classrooms matched Hornbostel's masterplan; a number of parallel shops sat along the contours of the slope while the corridors with their attached offices and classrooms stepped down the slope (figure 34). "The wings were situated in order that every lab and shop might receive light from two sides, a matter of importance in the Pittsburgh background of sub-normal sunshine."² Also the long corridors, 1/8 mile long, serve to link the extended

composition. The halls had a "4.25 per cent grade to conform to the slightly upward slope of the land, to permit the transfer of heavy machinery from one shop to another without the interference of steps."³ For the years 1905 through 1907 this complex contained all four schools of Carnegie Tech. Thus the large spaces were temporarily converted into "sub-rooms." The hallway and shop configuration facilitated this temporary measure.

These industrial sheds with hipped roofs and broad eaves are informed by the Beaux Arts ideals in their planning concepts and in their sense and craft of detail and material (figure 30). The sense of the building on the whole is less a molding of plastic masses than an arrangement of rather planar facades with plastic detailing. The building is, after all, a steel frame with the brick cladding hung on steel shelves anchored to that frame.

Hornbostel follows the French rationalist traditions and the style of his earlier work.⁴ There is an emphasis on local symmetries of facade and the hierarchy of the real and implied central axis of each block in the composition.⁵ In a "modernist vein" within the composition of each block there is a differentiation in scale and detail of its forms which symbolize particular internal functions. The piano nobile of the functional "served spaces", the shop floors and the large lecture rooms, has large arched windows. These pavilions are two stories tall and grow from the circulation spine. The

spine is series of classroom and hallway blocks three-stories tall with a stack of undifferentiated windows. The roof forms of the spine are much more complex so to step down the slope and to reflect the internal constitution of this spine. The architect made the nature of circulation readable on the exterior also through the use of stair-way windows. The form of the window reflects the rise of the staircase behind it.

Hornbostel has used the yellow industrial brick with tile roofs.⁶ Terra-cotta details, such as the band that runs around the attic level of the buildings (figure 34), and stone highlighted entries in color and texture contrast with the engineered brick piers and the industrial metal sash windows. The windows throughout the complex are framed by shallow piers and horizontal stone string-courses. Yet the windows with their muntins have a delicacy which gives a scale that belies a large complex or an industrial campus insensitive to human size.

Architectonic details on the exterior and interior speak for an engineered design aesthetic. The eave detail of the lab and shop pavilions is a complex affair that combines either single or paired ornate metal brackets with elaborate terra-cotta soffits (figures 35). The way Hornbostel has handled the corners throughout this first complex varies depending on the condition of "joint" from which they spring. The shop pavilions (figure 35) have a delicate corner where the brick layers are peeled away while the horizontal banding

and ornate cornice wrap around the corner to hold the building together. The corners of the circulation block, especially those corners at the juncture of shop pavilion with the central block, add to rather complicated juxtaposition of planar masses and openings. Like Mies' famous corner at the Illinois Institute of Technology of 30 year later, Hornbostel has cut the corner away (figure 36). The strongest part of the structure, in terms of the reading of it on the facade, has been cut away. The block thus reads as a volume contained by four walls, a reference back to the shed aesthetic. Here too the "artistic embellishments" of the moldings hold the industrial shed together.

Within the utilitarian shop and lab building Hornbostel has introduced a progressive, restrained design that supports the institutional notion of practicality and social refinement. The interior details of Porter and Baker Halls of the Industrial Group are quite well-known locally. The sparse industrial nature of the shops is emphasized through the use of the same yellow brick as the exterior. The long slopes of the hallway are quite unique (figure 37). The openings to the corridor are arched and corseted by iron straps with rivets. The trident lighting torches and the staircase railings were specified to be fabricated from one inch plumber's iron pipe (figure 38).⁷ The staircases are ornate in an industrial image.

This first building was designed while Hornbostel was in New York City. In fact the first series of buildings beyond the Industrial Group⁸ seems to have been designed and constructed by the firm at a distance. It was not until the designs of the post-1911 period that Hornbostel himself would take a more permanent place on campus with the "Building Bureau."⁹ As a result Arthur Hamerschlag, acting as both director of the Institute as well as engineer, fielded questions from the contractors and made construction decisions.¹⁰ Many of the structural decisions, planning concepts, and detail selections were very closely watched by Hamerschlag and the Board. In fact the engineers and businessmen thought that they could even make more-informed and "correct" decisions than the absent architects.¹¹ No doubt the engineered and sparse aesthetic of the resulting buildings had as much to do with their interjections as it did with Hornbostel's own design awareness.

Another edifice belonging to the first building phase is the front pavilion of the Margaret Morris Carnegie School for Women, named after "Carnegie's adored mother and inseparable companion."¹² The first scheme for the complex (figure 39) shows Hornbostel's "Carnegie Tech. style" used in two separate pavilions joined by a triumphal gate. The location of this first design might have been on the southern border of the upper women's campus (figure 28) where it forms this gatehouse function. The gateway itself seems to refer to the

kind of plastic arch that Ginain would have used (figure 2b) to join two parts of a composition. The street in between the blocks is bounded by wide porches with ornate aedicula entrances in a reference to domestic architecture. The project's elevations are composed of a rusticated base zone with basement (the small windows), a central zone of piano nobile with stacked windows between colossal piers, and a heavy attic zone with smaller windows under an ornate cornice and heavy terra-cotta eave. The planarity of the walls is again enlivened by plastic texture and color. The two pavilions are capped by a truncated hipped tile roof.

The first block of the complex that was actually built was relocated on the north edge of the women's campus and located on the edge of the "Cut". This placement makes the building act as a terminus to a cross axis. Thus its oval colonnade (figure 40) acts as a weir to receive the space of the axis, as is evident in the early plans (figure 31) and in the later 1910-12 perspective (figure 32). The placement of this building on the slopes of the rather unstable "Cut" also necessitated the construction of huge steel girder foundations. These were left exposed until the second addition was built and the "Cut" was later filled in. In photographs it looked as if the stone skirts of the classical building above had been lifted to reveal its steel armature.

The earlier front pavilion is most notable for this open oval colonnade and its polychromatic and textured facade.

Hornbostel and the Building Committee saw that it was appropriate that the most ornate building on the early campus should be the women's school. The front facade, quite distinct from the more somber side elevations, is characterized by an eclectic interpretation similar to Ginain's French rationalism. In the colonnade Hornbostel juxtaposes a system of engaged paired columns with an arched wall whose voisoirs are alternating cream and red (figure 41). On the building wall the arcaded-colonnade is transformed into shallow pilasters framing arched openings which frame aediculae curiously detailed (figure 42). The attic zone, the richly decorated eaves with the iron brackets, and the roof-top towers that mark the vertical circulation (one is an elevator penthouse) are even more exuberant than the terra-cotta decoration in the rest of the early campus.

The oval colonnade is open to the sky. The plasticity of the building's terra-cotta decoration and the play of the silhouette of the roof is apparent from the entrance. The message is that this is not an industrial shed but a more refined, traditional building with architectural references to the academic innovation of the new institution. The colonnade has the appropriate didactic inscription running around its inner circumference on the entablature. The motto pertains to the building's function and the goals of the institution. The sentiment of the inscription might have

shaped the general monumentality and character of the architectural form:

To Make and Inspire the Home;
To Lesson Suffering and Increase Happiness;
To Aid Mankind in its Upward Struggles;
To Ennoble and Adorn Life's Work, however
Humble;
These are Women's High Prerogatives.¹³

The building block in plan is an "I" shape with the forward notch holding the oval colonnade.¹⁴ The same Beaux Arts planning rationale is at work here as in the rest of the campus. The central axis and its bilateral local symmetry are inviolate; the plan and forms of the elevation show the importance of the center of the composition. The "I" plan is basically symmetric about two axis, although Hornbostel breaks this rigor in two ways. The west elevation has another but free-standing round colonnaded porch (figure 43) while the east elevation has a pavilion of sorts that bows from the center of the larger pavilion. In fact the two sides could not be more different formally. The extended west elevation, extended in the later 1914 phase, is made more elaborate in order to face the main campus quadrangle. Though more severe, in its ornateness it is like the original elevations of figure 39. Beyond the ornateness of the east side elevations of the front pavilion, the east facade is more industrial utilitarian in the treatment of wall and windows. A scheme from the early 1910s, of Hornbostel working in the Building Bureau, shows an unrealized and more elaborate courtyard facade (figure 39 at the bottom). In it

a loggia would have opened to a series of terraces, which housed the women's gymnasium, that faced away from the city out into the suburban wilderness.

In the second phase of construction two buildings of present interest were designed roughly at the same time by Hornbostel and the Building Bureau. Curiously, the two represent the philosophical spectrum of the campus design. Machinery Hall (1912, later called Hamerschlag Hall) replaced the temporary power plant while maintaining a very industrial image complete with smoke stack and shops. The College of Fine Arts (1911-12, 1914-15) is the most ornate French rationalist building on campus, full of artistic embellishment and architectural association.

Machinery Hall or Hamerschlag Hall is located on the edge of the hollow where the original masterplan called for the power house and smoke stack (figures 44 and 45). The complex, in a manner opposite to the rest of the campus, evolved from a simple form to a more complex and ornamental form. Whereas the earliest power house and stack resembled those of typical industrial plants subsequent schemes made the smoke stack and its relationship to the power house and shops more of the definitive campus statement.

For the first seven years of the campus there were no terminating elements on either end of the main axis. At the hollow was a temporary powerhouse which continued in

operation as the new complex was built around it and the site of the Fine Arts complex was empty until 1912.

In the meantime Hornbostel in all of his perspectives (of 1904, 1906, and 1910: figures 28 and 32) shows that at least the lower end of campus was to be terminated by a power house complex linked to smokestack. By the 1906 perspective the smoke stack had taken a muscular life of its own in a square tower combined with a cruciform building complex. A detailed perspective (figure 46) in Hornbostel's hand and contemporary plans (1912-13) show the envisioned ensemble. Both the architecture and the topography are rendered with his quick, sure strokes. He imparts a sense of the material and a sense of the component elements of the wall planes (the piers and attic treatment for example) in a few lines of shadow. The perspective also highlights his rather picturesque use of the building's silhouette as a means to create further visual excitement in the facades' planar composition.

At this stage the power house came to be linked to a pair of shop pavilions that grew from a central classroom and circulation block, basically a redesigned composition based on Porter and Baker Halls (the "Industrial Group"). On the terraces below this hilltop complex sat the industrial sheds of the power house with the smoke stack rising from the floor of the hollow below that. The smoke stack was now in the garb of a rationalized civic spire connected to the classroom

block by a "bridge of sighs" such as existed between Richardson's County Jail and the Courthouse.

The working drawing plans of this particular scheme show the complicated nature of this building.¹⁵ The circulation core does indeed run on the central axis about which the building is symmetric. Two shops are parallel and two shops are perpendicular to the circulation. The hallway runs across the bridge into the smoke stack shell and then seems to continue out onto another bridge of unknown destination.¹⁶

The elevations of the proposed central pavilion matches the tripartite French rationalist facades of the other shop wings on campus. The power houses which seems to grow from the stone of the retaining walls use a similar, but more industrially derived (but still ornate), brick architecture. The juxtaposition of the two roof elements of these lower sheds, a metal barrel curve and a factory gable with clear story, is handled almost as if Hornbostel wanted to show in this virtuoso performance all of the possible industrial roof types in one place. The drawings do not show the major elevation of the building as it would face the campus. However the presence of the tower would be the punctuating landmark for that end of campus. The tower is composed of a number of geometrical shafts, a central chimney and two corner air intakes, similar in complexity to the tower elevation (figure 29) of the earlier auditorium/gymnasium and administration building. The shafts are bundled together

with terra-cotta bands. This also has similarities with the Hell Gate bridge abutments on which Hornbostel was currently working (figure 6).

Hornbostel would go so far as to have several other alternative schemes detailed in full construction documents before the final complex was built in 1912.¹⁷ The final smoke stack has been masked by a colonnaded temple. This symbol of the temple industry sits on a terra-cotta encrusted terrace placed upon the central pavilion of the complex (figures 45 and 47). The two shop wings are balanced about the central pavilion. From the hollow side the smoke stack-made-temple sits upon a great retaining wall of the building, symbolically the prow of the campus.¹⁸ Below the colonnaded temple's terra-cotta plateau is a colossal niche which matches a niche on the other side of the buildings.

This elevation is essentially the back of both the building and the campus. Yet Hornbostel has lavished a good deal of attention on it because he has realized that the smoke stack and its podium form a symbolic gateway between the campus and the city beyond. The temple is the highest element on campus and located on the central axis. It is the "very apotheosis of technology".¹⁹ It has become the symbol of the school and the element that announces the campus to the civic center across the hollow. There is both a spiritual (associational) and physical power of the building. "But a smoking temple was something else: for that one had to look to the work of

Ledoux, or Benjamin Henry Latrobe's Philadelphia Waterworks of 1800."²⁰

The elevation of Machinery Hall (now Hamerschlag Hall) that faces the campus is, by virtue of the hillside, visually less imposing (figures 49). In fact in comparison to the shop pavilions that now frame the vista down the campus to Hamerschlag Hall this pavilion is small. The entrance facade, behind which in the distance is the smoke stack, has a similarity to Alberti's St. Andrea in Mantua with its paired colossal pilasters flanking a monumental apsidal niche (figure 48). The pediment gable is broken by the niche and five terra-cotta panels which were to have held five scenes of industry personified. The cornice detailing is both classically inspired and seemingly industrially scaled and produced. Only in the entry niche itself is the yellow brick replaced by a herring-bone pattern of Guastavino tile and terra-cotta. This entrance niche of industrial tenor contrasts with the blind niches of the Fine Arts Building, at the other end of the central axis, which are carved from stone in artistic depictions of the architectural styles.

The culminating building on campus, in terms of both its commanding position on campus and its architectural complexity, is the School of Fine Arts (figure 50). This building is Hornbostel's most elaborate statement about the importance of the architectural environment in the creation of an educational setting.²¹ The Imperative of the

educational institution and its founder is addressed and architecturally translated through-out the composition of this one building.

The siting of the building makes it the compositional linchpin of the campus. It occupies the campus high ground and terminates the central axis which is anchored on the other end by the industrial symbol of the smoke stack of Hamerschlag Hall. The Fine Arts building is actually cut into the hillside and as such creates a new campus quadrangle on the other side.²² Further, it acts as the pivot to attach the north-south (cross campus) axis to the east west axis of the upper (women's) campus. The Margaret Morrison Carnegie Building being the only built element of that group.

The central block of the building, designed and built in 1911 and 1912, was planned to house all studios, classrooms, exhibition rooms, and practice rooms for all disciplines within the fine arts. Today the building, its flanking pavilions added in 1914-15, houses the disciplines of architecture, sculpture, painting, drama, and music.

In plan, elevation, and section the building was designed along the Beaux Arts axiom of pyramidal hierarchy. The circulation occupies the central axes with the major rooms on the first floor clustered along the axes. "In plan poche predominated and mosaique, the depiction of floor and ceiling patterns, enabled the designer to stress the relative dimensions and richness of the decor."²³ In a small-scale

analogy to the original campus plan the office for the dean, like the first campus administration building, commands the intersection of the axes, visually commands the lower lobby, and sits just behind the circulation void (the hall, a miniature quadrangle) in the geographic center of the composition. The major spaces of theater and exhibition room flank the axis of the entrance and are double height spaces.²⁴ As the floors move upward, the rooms become smaller and more specialized. In the attic are the skylit painting studios and the tiny "loges", or rooms at one time used by the architecture students to complete their competition esquisse.²⁵

The elevations allow a reading of the edifice and show the hierarchical grading of the major spaces below from the smaller cells above. Hornbostel contrasts the planar blocks of the taller studio pavilions, of French rationalist precedent, with the almost baroque plasticity of the low monumental screen with exedra. The large public rooms behind are lit by skylights while the stacked studios have large regular windows. The elevations of the taller "U" shaped pavilion are much more planar with low relief brick pilasters and terra-cotta bands of huge scale which have the great sculptural quality. On the elevation Hornbostel uses the heavy base zone, the colossal piers of the piano nobile framing bays of stacked metal windows, and the heavy cornice

with terra cotta and metal eaves. He has eliminated the heavy attic zone and chosen to emphasize the tile roof.

The front elevations while physically reflecting the nature of the spaces inside also symbolically reflect the lessons and the glories of the fine arts. Hornbostel has used the didactic nature of the complex of the Ecole des Beaux Arts in which he studied twenty years earlier as inspiration (figure 51).

The predominant architectural motif in the design and construction of this building was thought that the best way to teach a knowledge and appreciation of art was to let the student see, in his immediate vicinity, to what degree of excellence art can attest... hence this edifice represents the most important architectural contribution up to the present time...²⁶

Hornbostel's arrangement of both carved stone and terra-cotta is a demonstration of the industrially produced element juxtaposed with the artisan crafted element. Textures and materials proliferate in the planes of the front elevation. If nothing else, the facade serves as examples of construction to the architecture students. The central screen has five exedra niches. The blind niches are set within brick arched surrounds on a brick screen (figure 52). The bricks are laid in Flemish bond with the headers a darker shade of the ubiquitous yellow. At the top of the screen wall are the granite inscriptions of the five disciplines of the School of Fine Arts. The inscribed plaques are part of an elaborate terra-cotta and granite cornice.

The exedra are lined with soft stone which was to have been carved with the architectural ornaments of five great ages; the Gothic, the Greek, the Roman, the Renaissance, and the Persian (or Moorish). Only the Renaissance niche was completed. The extant niche has a tripartite composition of aediculae, each of a different "sub-style" within the style of the "great age" (figure 53). The rest of the exedra have large uncarved blocks whose unfinished presence add a mysterious note to the rather prim facade.²⁷ Hornbostel's sketches remain for two of the other niches, the "classical niche" and the "oriental niche", both of which employ the tripartite scheme with aedicula (figure 54). Under each tabernacle is an inscription supposedly informing the student of which particular sub-style the aedicula is composed.²⁸

The central niche, of course, contains the building entrance while the other four niches have stone benches built from the wall. This ornate central screen was to have been flanked by a pair of ornate, terra-cotta lanterns, which possessed the same elaborateness as the lanterns and finials on Hornbostel's New York Bridges.

The taller end blocks, which were the later additions, sit behind the plane of the central screen. This elaborate front elevation of the blocks has cut stone and terra-cotta which are played against industrial brick (figure 55 and 56). The central screen's scale, brick-work, and granite and terra-cotta cornice are carried across to act as the end blocks'

base zone. In the repetitive nature of the mass-produced terra-cotta these bands have an almost over-scaled vegetative delicacy similar to Louis Sullivan's decorative designs. Hornbostel has also placed panels of diapered brick in this zone to form a visual base to the stacked window bays. The colossal piers of the piano nobile frame deeply recessed windows with stone muntins, surrounds, and relief panels. This contrasts to the side and rear elevations' industrial metal-sash windows. In these stone relief panels, and in those that frame smaller windows in the base zone below, busts and figures of art were to have been carved. Today most of the round and diamond-shaped stone corbels remain uncarved. A few have profiles of Shakespeare, musical instruments, and the like.²⁹ It is this peculiarly unfinished facade that forms the visual climax of the campus which itself was never finished according to Hornbostel's designs.

The interior decoration also follows the monition of educating the student through an architecturally illustrated example. The decoration of the floors, ceilings, and walls with floor inlays, murals, and sculpture is conceptually organized as if the building were an ornate museum. The first working drawings for the public spaces show that the elevations and vaults were to be lavishly clad with carved stone. The foyer was to be designed to have a Roman scale and be lit from above by *thermae* windows. While the scale was

retained but the walls and floors were ultimately finished with some less embellishment in limestone (figure 57). The ornate coffering of the vaults was eliminated and instead the Guastavino tile vaulting system was employed.

For some time the vaults remained plastered until they were used, along with appropriate wall panels, as the location for a series of murals depicting "artistic motifs".³⁰ These were coordinated with architectural plans marked by verde marble inlaid in the white marble floor. On the floor of the grand foyer is the ground floor plan of St. Peters (figure 58) while directly above it is the odd painting of St. Peters "surrounded by an unusual schemes of decoration."³¹ There are a series of larger panels set within a geometric pattern that suggests the curves and folds of the vaulting (figures 59 and 60). Scenographic views of the Pantheon, the Parthenon, and Notre Dame are in the larger panels which are painted on the mellow vault.³² "In the smaller panels are ornaments, details, symbols, and signs of the zodiac (all of which have value from a historical point of view)."³³ Over the grand stairs up to the transverse corridor there is an arch composed of more panels of lesser architectural icons and a barrel vault with panels depicting the great pieces of sculpture (figure 61).

At the top of the stairs, framing the officè of the dean, and adding to the importance of this administrative center in the visual composition, is the pair of straining caryatids

(or are they monumental termes?) holding up a massive balcony. The use of the group follows the era's preoccupations with cast reproductions of the original a source of edification; it is a cast replica of the door group of the City Hall at Toulon, France, executed by Puget in 1656 (figure 62).³⁴ Hornbostel seems to have wanted to romantically equate the administration of the Fine Arts building with the civic center of a whole town involved with the arts.

Inlaid in the floor of this transverse corridor are the plans of the Parthenon, the Temple of Edfu, and Chartres Cathedral (figures 63). Plaster casts of sculpture line the walls and at one point large candelabra, which were copies of torcheres in the Park of Versailles, were located at either end of the corridor.³⁵ In terminating the incomplete corridors these might have been to recall the large urn-shaped vessels which terminated the incomplete front facade.

Following the addition of the end pavilions, the spatial sequence at either end of the transverse corridor was extended through an elevated column screen (figure 63). This was another reference to the framed vistas and the spatial complexities of Hornbostel's Beaux Arts sensibilities.³⁶ The grand hallway cross axis continued through the column screen and ended in square volumes of some sculptural quality. These volumes contain a series of murals which depict the growth of the campus and the city.

In a progression of murals, beginning at the front entry and continuing to the far reaches of the halls, the work of Henry Hornbostel is depicted in its historical sequence as a didactic icon for the student to follow. Over the front door is a mural depicting the scene around the building of Hornbostel's own Hell Gate bridge, one of his first major public works. At the far end of the north wing a mural shows the construction of Hamerschlag Hall, his most recent civic monument.

In essence the building serves as container of functional units, as an industrial shed should. Yet in its form it was a series of didactic lessons of the power of the academic institution and of the Fine Arts. The building's unabashed decorations and educational mandate is the most ebullient of the campus. But after all this building does sit on the original site of the campus "museum".

1. Called buildings A,B,and C; Baker and Porter Halls.
2. Tarbell, The Story of Carnegie Tech., op. cit., p. 137. What is also interesting is that this statement implies that usage during the day, not use by night students, directed the organization of the buildings.
3. Ibid.
4. See the description of the University of California perspectives, for example.
5. The end elevations of the shop pavilions have the central bay articulated. All the entrances to the complex occur in the center bay of the block in plasticly articulated entrances.

6. Originally Hornbostel wanted the mortar joints to greatly contrast with the brick. [Carnegie-Mellon University Archives, Correspondence for Buildings A,B, and C.

7. Ibid. Apparently Hamerschlag did not approve of an earlier, more elaborate design of the torcheres as "it does not match in character the rest of the buildings." [Letter of May 2, 1905].

8. These buildings are Baker and Porter Halls, (Bldgs A,B,C) 1905, the Director's residence project of 1906 (on campus version), the Margaret Morrison Carnegie College of 1906 & 1914, and Doherty Hall [School of Applied Science - Engineering Hall] of 1908.

A letter of May 22 1909 from McConway to Palmer and Hornbostel ended the first phase of construction: "no further work is in sight. The matter rest entirely with Mr. Carnegie, and as we have no knowledge of his intentions, it is safe to say that any future additions to the buildings is in the indefinite future." It might have been that the Building Committee, besides being unsure of what monies would come the Schools' way in the future, was also dissatisfied with both Hornbostel's absence from Pittsburgh and the quality of his site supervisors.

9. June 12, 1911 letter from The Carnegie Technical Schools to Henry Hornbostel and the Building Bureau, for "public release": "Dean Hornbostel of the School of Applied Design has been appointed Architect-in-Charge of the Building Bureau for the erection of the new buildings. He is organizing his staff and drafting force and expects to begin work about March 1, 1911." [Carnegie-Mellon University Archives, buildings box]

It appears that Raymond Hood came with Hornbostel from New York to set up the Building Bureau, and stayed until the end of 1914 (see below).

10. A number of letters in late April 1905, three weeks after the April 3rd groundbreaking (and a month after the first bids were accepted), show the Building Committee's frustration that there was not yet a local representative of the architect. Later arguments would arise about the costs that Hornbostel would incur traveling back and forth to Pittsburgh from New York (and thus charge to the job) as well as the inefficiency of the copious correspondence involved.

11. See building correspondence in Carnegie-Mellon University Archives.

12. Toker, op. cit., p. 107.

13. Needless to say this is not currently a favorite inscription. The motto in fact went through a number of evolutionary changes. Hornbostel requested in September of 1906 from the Building Committee an appropriate inscription. The first reply was simply "The Margaret Morrison Carnegie School for Women". The second reply was "To Train Women for the Home. The Margaret Morrison Carnegie School for Women was founded by Andrew Carnegie in Memory of his Mother". The final proposal was actually drafted on Duquesne Club stationery; that is, it appears that after lunch at the exclusively-male club in Pittsburgh the Committee Members penned what seemed appropriate for women at the time. [Carnegie-Mellon University Archives: Building Correspondence].

14. I would be remiss if I did not point out that the symbolic center of the women's side of the campus is this oval contained within the arms of a pavilion, while the male campus had as its organizational center visual climax the ornate smoke stack.

15. The plans also show thumbnail sketches and redrawn partition locations typical of an architect's doodling on supposedly completed construction documents. With the exception of these doodles in the margins I have found very few drawings by his hand other than rather finished Hornbostel perspective sketches. The detailed elevations for the Fine Arts building's niches (below) are one example of a sketchy drawing in progress.

16. The perspective shows this somewhat ambiguous bridge. Professor Franklin Toker and I spent some time trying to decipher these drawings to see if this was another "Hornbostel bridge" to match the one that would have spanned the "Cut" to the north of the campus.

17. The Carnegie-Mellon University Architecture Archives has a framed working drawing with the smoke stack placed on the top of the central block of the cruciform. The stack itself, rather than a tower, is an ornate tapered shaft of terracotta and Guastavino tile.

18. In fact a concrete copy of the USS Pennsylvania's bow is planted on the slope between the building and the hollow.

19. J. Van Trump, "The New Brutalism," Charette, Vol. 46 (May 1966), pp. 8-11. Mr. Van Trump makes the argument that the campus projects the brutalist architectural approach of "an architect who met the facts of a new industrial age halfway, who enclosed the stark realities in a stylish framework, but who, even so, could make on occasion amazingly frank statements."

20. Toker, op. cit., p. 106.

21. Hornbostel was assisted in this building design by Raymond Hood. He had been with Hornbostel's Building Bureau since 1912. The box of correspondence for this building and the additions to the Margaret Morrison Carnegie School for Women has a number of letters which imply that Hood was their project architect. Hood left in October 1914, not before he might have had a decisive hand in the design and supervision of the School of Fine Arts and Central Hall. [Carnegie-Mellon University Archives, Building Correspondence]

Yet years later Hood would recall Hornbostel. "[When] Hornbostel got an idea... he grabbed a pencil and began sketching furiously. Before Hood's eyes a building began to grow on paper, blossoming rapidly like Japanese water flowers [!], the shading delicate and exquisite, the windows falling nicely into place, the perspective impeccable... architecturally there was little record of Hood, Hornbostel was the complete boss." ["Raymond Hood," Architectural Forum, Vol. 62 (Feb. 1935), p. 129.]

22. Composed of the gymnasium, the business school and the cross street which leads to the Margaret Morrison Carnegie School for Women.

23. Grossman, Cret..., op. cit., p. 15. The plans are in the Carnegie-Mellon University Archives, and reprinted in Clark Poling, Henry Hornbostel/Michael Graves..., op. cit.

Whereas poche was originally dictated by a masonry architecture here the structure is steel and the poche is for effect.

24. The story circulates that the theater was not originally called so, at least on Hornbostel's drawings. One article says that the space was described to Andrew Carnegie as a concert hall (because of his aversion to theater), and thus in design a wide oval space and thrust stage resulted. [Thomas Struthers, "Seven Theatre Spaces in Pittsburgh," Carnegie Magazine, vol. 50 (Feb. 1970), p. 68.]

Another source say as early as a 1903 meeting with Carnegie, Hornbostel "had to sell Carnegie on a Fine Arts Building in the first place, as Carnegie only wanted an engineering school.. [and then Hornbostel] tricked the great industrialist to have the famous Little Theatre in the Fine Arts Building by pointing [it] out in the plans as being a lab, and it was not until the day of the dedication that Carnegie discovered that he was the owner of theatre." [Luis Harper, "Ex-Aide Describes Colorful Career of Hornbostel," Pittsburgh Sun Telegraph, (16 Aug. 1954), p. 1.] I have no record of Hornbostel ever meeting Carnegie or that he had the opportunity to sell the Fine Arts Building to any one but the trustees. It seems from the competition program that a

school for applied arts was called for all along. This seems a bit of the folklore that grows around such a colorful character as Hornbostel.

25. As pointed out by Professor Toker, op. cit., p. 108.

26. Tarbell, The Story of Carnegie Tech., op. cit., p. 138.

27. I have been informed that there might be some funds to complete these niches following Hornbostel's sketches.

The story goes that the "Italian stonecutter having made a start with the Roman and Renaissance niches, returned home when the war [World War I] broke out and never returned." [Walter Kidney, The Architecture of Choice: Eclecticism in America 1880-1930, (New York City: 1974), p. 162.]

28. Reprinted in Poling's Hornbostel/Graves, ibid, from the Avery Architectural and Fine Arts Library Archives.

The "Oriental styles" drawing is done quite quickly, pencil on trace. The niche's motifs are the Hindu, the Egyptian, the Moorish, the Aztec, and the Persian. Hornbostel has used the tabernacle in between the three aedicula to create space for two more compositions. For each there is an appropriate reference to pointed arches, masonry stepped arch, or trebeated openings.

The classical, what appears to be Greek (with the Greek inscriptions), exedra has the Corinthian, Doric and the Ionic styled aedicula. This scheme is drawn in a much more linear style, possible by one of Hornbostel's assistants. The vaulting details show a number of classical vignettes that have the linearity and delicacy of a plaster (almost ceramic in delicacy) ceiling detail designed by the Adams brothers in Georgian England.

29. Photographs from the 1916 Pittsburgh Architecture Club Annual Exhibition Book show that any relief sculpture of the facade had still not been started (the Italian stonecarver had not gotten to them either). It is possible that appropriations for this exterior decoration and interior embellishments (see below) had not been made until March 1917 [see letter in Carnegie-Mellon University Archives Building Correspondence Box].

30. The muralist was James Monroe Hewlett (no relation to the dean of the school, Charles Russell Hewlett) who was both an architect and a mural painter of some note in New York City. He was the President of the Society of Mural Painters in the 1910s. Like Hornbostel he was a Columbia graduate, the class of 1890. He worked in McKim, Mead and White's office at either end of his year and a half in Paris where he studied the fine art of mural decoration (another source says he spent four years "at the Ecole"- this could still have

been in the study of mural decoration).

After a few years of apprenticeship he entered into the partnership of Lord and Hewlett in 1909 in New York City. Among other architectural commissions which they received in the city were the Carnegie Branch Libraries for Brooklyn. The firm also entered into a number of the competitions which would be won by Hornbostel. No doubt Hornbostel and Hewlett ran in the same circles. Hewlett came to have wider fame with his stage mural design, a talent that would have attracted him to the theatric Hornbostel. [Francis Swales, "Draftsmanship and Architecture: James Monroe Hewlett," Pencil Points, vol. 9 (1928), pp. 131-144.]

I can find no specific date for the painting of the murals. It occurred most likely after the March 1917 appropriation for decorations.

31. Tarbell, The Story of Carnegie Tech., op. cit., p. 138. Professor Toker points out that the depiction of Michelangelo's St. Peters is missing its four front columns. (Toker, op. cit., p. 109).

32. The CMU Architecture Archives has a pair of mockettes for the panels of St. Peter's and the Parthenon.

33. Tarbell, op. cit., p. 138.

34. Ibid., and Kidney, Eclecticism., op. cit., p.162. The Carnegie Institute museum at this juncture of time was being filled with plaster casts. One of its main attractions and source of some pride (besides the dinosaur collection) was the huge "Architecture Hall" filled with full-size plaster casts of antique building's facades and details.

35. The early working drawing set shows these full-size terra-cotta objects standing on the floor on either side of the dean's door, before the idea of using the Puget sculpture group.

36. The end pavilions also added space for a fine arts library and a basement "Romanesque-style modeling room" for the sculptors. This room has heavy wood timbering and a white stone screen of round arches resting on very peculiarly twisting and bulging columns (baldachin columns starting to melt). See Pittsburgh Architecture Club Annual Exhibition Book 1916, op. cit.

Conclusion:

The fragile balance between innovation and tradition within the broad American cultural discourse, specifically in the arts, architecture and education, was maintained at the turn of the century by virtue of the Capitalistic system. Specifically the support of the philanthropic patron, himself a product of the American potential for self-realization celebrated by Emerson, insured that the dichotomy of the collective and the individualism would be addressed. The architect sought to use his innovative capabilities within an accepted convention of meaning and form to create a physical environment which supported the idealized social directives of the progressive America. The architect in his own demeanor as well as his design of forms sought to address the dichotomy of the American individual and the American environment.

The American individual and the American environment have always had a complex interdependency. The landscape's untamed nature and vastness had supported the excesses of the American manifest destiny, the unbridled, Emersonian, individualistic pursuit of American uniqueness. By the turn of the century new dictates of the American consciousness had developed that called for a means of social and cultural control.

Within the rising economic elite, and in America this is synonymous with the social elite, there was the consensus

that the moderating power of the professionally managed society and the perceived need for national hegemony outweighed the uncertainty of undisciplined, popular action. The most financially capable and far sighted of the elite aspired to the new cultural role of civic patron.

Thus a social ideology predicated on the control and management of the energies of a growing urban population was given a moral imperative. In turn the reformers believed that this Imperative, following the thinking of the era, had its greatest power in the creation of normative cultural institutions and physical civic environments.

Using the same management and financial expertise which supported the new American corporation the new institutions aimed to inculcate the "lower classes" with values suitably supportive of the broad progressive "status-quo". The systems of formal education and informal "cultural" awareness, lessons learned through museums and symphonies for example, would teach a restive urban population its place within a productive and advancing society. The seeds of self-improvement would not only help the individual and his or her family but also the society at large. It went unquestioned that the mandate of "cultural" education had that power.

In conjunction with a rejuvenated educational system the enlightened management of the physical environment could effect an improvement in the character of the inhabitants of

that environment. The notion of beautifully designed objects and architectural compositions, on a variety of scales, that both reflected the cultural values of the city and directly supported the educational process of civilization was accepted without question. Environmental forms could be shaped in preconceived ways in order to create a desired didactic effect. Quite naturally the architectural shape of the civic edifices came to be of as great an importance as the institutional function which it housed. The profession of architecture encouraged the society's widespread acceptance of this role of the built environment.

It seems quite natural also that the cultural patrons should see the very campus forms which housed the institutions for higher academic learning as the single-most important cultural high-ground. The new college campus could join both notions of the improvement of the American society; through a planned curriculum and a planned environment the students could be shown, or indoctrinated to, the noble duty that they had within the larger group for the future good.

Thus the civic patron sought an hegemony of ideology within academia and architecture. Yet through out the process of evolution of both professions the emphasis continued to be on a tangible notion of American individuality and flexibility. The nationalistic stamp of the American citizen, a romantic reference to the nation's pioneer days, was his practicality and inventiveness now within acceptable limits. Rejecting

the strictures of canon or tradition the educational establishments within the American academia and the architectural profession sought a uniquely American mix.

Within the tenets of professionalism the architect was encouraged to attain a uniqueness of personality and an inventiveness of design. The resultant formal language of architecture was an eclectic mix of approved historic sources and technical and stylistic innovation based on the specificity of the American needs and environment. In the meantime social forces and professional obligation pushed the architect to become involved in all facets of the city and its culture. The architect himself became the symbol of the intellectual individual, educated along "renaissance notions" of the Fine Arts, who would shape the environment for the betterment of the larger population. His personal and architectural design eclecticism was almost a natural product of this schizophrenia.

The "moral zeal" of the architectural profession was supported by the patron, and his local lieutenants, who had the similar Social Imperative. Andrew Carnegie preached his fundamental ideals of an academic means to improve the quality of American individual. It was through such vision that the American college in its very scope and physical presence evolved and that the architect himself could exercise his individual contribution to society.

Henry Hornbostel's designs for his civic buildings and college campuses married the Beaux Arts tradition with modern building technology and an engineering aesthetic. He also believed in the necessity, especially on college campuses, of a classical (meaning for him, Beaux Arts) order and image. The ideal of the academic institution as the "heavenly city", the "new Jerusalem", or the "city on a hill" that represented the promise of the American city and its physical model did not allow for a complete break of tradition with the accepted monumental styles of Europe. Europe was, after all, the source of art, culture, and knowledge. Hornbostel had been trained in the American architectural scholarship where the role of the American artist and architect was to purify those European streams and make a new American statement within a loose canon. The American pre-occupation with utility and practicality encouraged Hornbostel in his search for and use of new materials, new variations within the canon, and new technologies.

Specifically the form of the Carnegie Technical Schools depicted to its community the potential of social organization and enlightened management. The campus and the curriculum were "object lessons" of a new and progressive concept of the American social environment. The designs of the buildings were based on pragmatic necessities of a technical education organized in an almost corporate hierarchy; the readily apparent arrangement of the "served

and servant" spaces was as didactic as it was utilitarian. Yet Hornbostel used economical compositional strategies and architectural embellishments to recall the grand academic traditions, to place the campus within in unique context, and to celebrate America's emerging building technologies. The architectural form made legible the social and academic realities of flexibility and growth as guided by the patron's vision. The campus in a way celebrated not only the ideal American urban environment but the idealized organization of the disparate group of American individuals.

The Works of Henry Hornbostel

Henry Hornbostel freelance:

Paris 1895-97: C.L. Girault and Blavette, Paris Exhibition Pavilions 1900: Grand and Petit Palais.

New York City 1887-1900: Stanford White with West Point Competition, and Carrere and Hastings with Buffalo Exhibition, 1901.

Henry Hornbostel Works:

New York Public Library Competition, 1897-8 [Wood, Palmer and Hornbostel].

University of California (Berkeley) Competition, 2nd place, 1899 [Hornbostel with Howells and Stokes].

Union Club Competition, New York City, 1901 [Wood, Palmer and Hornbostel].

Henry Ziegler Residence, New York City, 1902 [built; Palmer and Hornbostel]

Office and factory for Steinway Piano Concern, New York environs, circa 1902-3 [Palmer and Hornbostel?].

Office building for Quintonet Iron Works, Long Island (?), circa 1902-04 [Palmer and Hornbostel].

Alpha Club, (Columbia Fraternity), New York City, 1903 [built, Wood, Palmer and Hornbostel].

Williamsburg Bridge, and Approaches/subway station and boulevard for Delancey Street, New York City, 1903 [Palmer and Hornbostel].

Engineer's Club Competition, NYC 1904 [Palmer and Hornbostel].

George Palmer House, New York City, 1904 [built, Palmer and Hornbostel].

Brooklyn Bridge Terminal/City Hall Park project, New York City, 1904 [Hornbostel w/ George Post].

Carnegie Tech, Pittsburgh, Summer 1904 plan [initially NYC] competition.

Initial Phase

Baker and Porter Halls (Buildings A,B,C), 1905

Director's residence, proposal 1906 (on campus version).

Margaret Morrison Carnegie College, 1906 and 1914.
Doherty Hall (School of Applied Science -
Engineering Hall), 1908.

Second Phase

College of Fine Arts (School for Applied Design),
1911-12, 1914 & 1915 [Henry Hornbostel with
the Building Bureau, (design in Pittsburgh),
Raymond Hood assistant].
Hamerschlag Hall (Machinery Hall), 1912-13 [Henry
Hornbostel with the Building Bureau (design in
Pittsburgh)].
Central (Administration) Building, 1913 [Henry
Hornbostel with the Building Bureau, (design in
Pittsburgh), Hood assistant].
Baker Hall (Building D), 1913 and 1919 [Henry
Hornbostel with the Building Bureau, (design in
Pittsburgh)].
Porter Hall (School of Applied Industries), 1915
[Henry Hornbostel with the Building Bureau,
(design in Pittsburgh)].
Dorms for Carnegie Institute of Tech., Pgh.,
(Scobel, Welsh, Henderson, Boss, and McGill
Halls) 1915-16, 1918, [Henry Hornbostel with
the Building Bureau (design in Pittsburgh)],
final addition in 1939.

Pine Lawn Cemetery and Railroad Station, project [in
Architecture Annual 1905 and 1906], [Palmer and Hornbostel].

Rodef Shalom Congregation (Temple), Pgh, 1906-7 from a
competition entry [NYC office, Palmer and Hornbostel].

St. Louis Public Library Competition, 1907 [Palmer and
Hornbostel].

Allegheny County Courthouse Tower addition proposal, Pgh.,
1907 [Palmer and Hornbostel with R. Maurice Trimble].

New York State Educational Building, Albany, NY.,
competition won in 1907 [Palmer and Hornbostel].

Columbia Stadium, Naval Reserve and Public Recreation Pier,
NYC, proposal in 1907 [Palmer and Hornbostel].

Casewell House, Mamaroneck, NY, circa 1907 [Palmer and
Hornbostel].

Moffit Residence/House at Wading River, Long Island, 1907
[Palmer and Hornbostel].

Bridges in New York City: Hell Gate, 1907-14 [Hornbostel], Manhattan and Williamsburg Bridges, 1903 project [Palmer and Hornbostel], Pelham RR Viaduct, 1908 [Hornbostel], and Queensboro 1909 [Hornbostel].

"Western University of Pennsylvania" [University of Pittsburgh], campus masterplan competition, won 1908 [NYC office, Palmer, Hornbostel and Jones]
University plan uncompleted;

Thaw Hall, School of Engineering, 1908-9
State hall (School of Mines), 1908-9
Pennsylvania Hall (Medical School), 1910
Mineral Hall, 1912

Technical High School, Hartford, Conn., 1909 [Davis and Brooks, Palmer and Hornbostel consultants].

Soldier and Sailor's Memorial, Pgh, 1907-11 [NYC, Palmer and Hornbostel] Competition won.

City Hall, Oakland, Ca., 1910 competition won, construction until 1914 [NYC, Palmer and Hornbostel].

Dept. of Justice Building competition, Washington D.C., 1911 [Davis and Brooks with Palmer and Hornbostel].

Hartford Municipal Building (w/ Davis & Brooks), Conn., 1911, [Palmer and Hornbostel] competition won.

U.S. Bureau of Mines, Pgh., 1914 [Henry Hornbostel, Pittsburgh office, and with Building Bureau?].

Northwestern University Residential Group competition, accepted (built?), Chicago, 1914 [Palmer, Hornbostel and Jones].

New Castle County Public Building., Wilmington, Del., 1914, [John Dockery Thompson with Palmer, Hornbostel and Jones as associates], competition won..

Emory University plan and buildings, Atlanta, Ga., 1915 [Palmer, Hornbostel and Jones, later on his own].

House for Arthur Hamerschlag, Pgh., circa 1915 [Henry Hornbostel with the Building Bureau].

Holy Rosary Parochial (Catholic School), Pgh., circa 1915 [NYC Palmer and Hornbostel].

Pennsylvania State Building, San Francisco Panama Pacific Exposition, California, 1915 [NYC, Hornbostel].

Saint Francis College masterplan (including quad and chapel), Loretto, Western Pa., 1916 [Palmer and Hornbostel?].

City-County Building/Municipal Building, Pittsburgh, 1915-17 [Palmer, Hornbostel and Jones with Edward B. Lee].

House of Arthur Dwight, Great Neck, Long Island, 1916 [NYC, Palmer, Hornbostel and Jones].

Mortuary Chapel, Pittsburgh [Palmer, Hornbostel and Jones], date?

Oakland Tech. High School, Oakland, California, 1917 [John Donovan with Hornbostel as consultant].

Auditorium Building, Oakland, California; Two schemes: 1913, 1919-20. (Hornbostel w/ John Donovan).

[Henry Hornbostel residing in NYC until 1922]

Competition for Elks National Memorial headquarters, Chicago, 1922 [NYC, Hornbostel].

University Club, Pgh., 1923-26 [Hornbostel (with Eric Fisher Wood?)].

Schenley Apartments, Pgh., 1922 (w/ Rutan, Russell & Wood (?)).

Gymnasium, Carnegie Tech., Pgh., 1923, 1931-33 [Hornbostel].

Congregation B'Nai Israel, Pgh., 1923 [Hornbostel with Alexander Sharove].

Harrisburg Municipal Building, Competition, 1925 [Hornbostel].

Charles Arthur Chandler Residence "Callanwode", Atlanta, Georgia, 1920-1926 [Hornbostel].

Smithfield United Church, Pittsburgh, 1925-6 ("German Evangelical Church") [Hornbostel].

Beaux Art Institute Facade Competition, New York City, 1928 [Hornbostel].

Government Building, c. 1934 [Hornbostel], from CMU Archives.

South and North Parks Golf Club Houses, Pgh., 1937
[Hornbostel].

Music Hall alterations ? in Pencil Points 1926.

Montefiore Hospital, Pgh. ?

Henry Hornbostel with Wilson:

Santa Barbara Public Library, circa 1917.

Henry Hornbostel and Eric Fisher Wood:

Grant Building, Pittsburgh, 1927-30.

Webster Hall Residence Club, Pgh., 1925-26.

Warren Harding Memorial, Marion, Ohio, 1925 or 27
competition.

W.H. Seward Memorial, Seward, Alaska, 1929.

Westinghouse Memorial, Pgh., 1930 [with Daniel Chester
French].

Federal Reserve Bank of Cleveland, Pittsburgh Branch, 1931
[with Walker and Weeks].

American State Bank and Trust [?]

Joyce Kilmer Memorial Grove, Pgh, circa 1934.

Appendix 2: The American Architectural Competition

One persistent pre-occupation of the profession was the widespread use of the design competition in both public and private commissions. The competition had been a prevalent mode for the federal government to select architects and planners up through the Civil War. Corruption and waste necessitated the creation of the position of the Supervising Architect of the Treasury who would oversee the huge number of federal projects. These were primarily court and customs houses, federal offices, and post offices. The AIA was caught in the position of advocating to the government that it should open up the designs of these buildings to competitions.

At the same time the AIA took great dislike of the competition process in general. As a profession it saw the competition as a means for an unscrupulous client to solicit designs and take those designs without paying for them.¹ In a group boycott, throughout the 1890s the local chapters of the AIA refused to sanction national competitions. Burnham as Chief of construction at the Chicago Fair bypassed the "expensive and inefficient" use of the competition and instead selected the architects himself. Private commissions throughout the big cities came to be awarded to the big firms with social connections. This situation would greatly hinder the chances of the young and competent individuals and firms,

including the likes of Hornbostel, who were outsiders of the select few.²

Meanwhile the national AIA was active in legislation, as early as 1876, to promote open competitions for federal projects under the justification that private architects could give better and more efficient designs than the track record showed was the case with the Treasury's architects. The Tarnsey Act of 1893 allowed but did not require the Treasury to acquire outside architectural services. Until 1897 the Treasury ignored the act.³ The Act was in full force until 1912 when it was repealed.⁴

During this period of the federal competitions, the practice of private commission by competition became acceptable to the profession also because the profession had begun to codify the competition rules. Most of the major campus masterplans of the period were given to architects through open competitions. They attracted huge number of entrants in order to get a full variety of design inventions. The trustees could also hold closed or invited competitions. Though there continued to be debates about whether the AIA competition guidelines should be mandatory in all competitions (enforced by some "law"), the sub-profession of the AIA competition consultant became the widely respected means to assure that the competitions were fairly run.

The document that guided the consultants for these design contests was the 1900 issue of the AIA's "Code for the

Conduct of Competitions".⁵ Even at this late date the form begins by stating that the AIA recommends "that whenever possible an architect [should] be employed without a competition..." In the "payment of competitors" the form states that "in all competitions the first prize should be the award of the commission to design the building and superintend its construction, and the program should definitely state that the successful competitor will be so retained." Further, having defined the limited, the open, and the mixed competition, the AIA document calls for specific kinds of awards, in each kind of competition, to be given to the unsuccessful competitors.⁶ For the "professional adviser and jury":

It is highly desirable, in the interest of both the owner and the competitors, that a professional adviser should assist in the preparation of the program and that the professional adviser or a competent jury, consisting at least in part of experts [my emphasis], should assist in making the awards. The professional adviser or jury may have full power to make the award, or at least they may select a number of designs and, placing them in the order of merit, leave the final choice to the owner or his representatives. Where possible, the adviser or jury should make a positive report in favor of one design, and recommend the employment of its author as architect for the building [my emphasis].

Not only was this predicated on the Beaux Arts notions of competitions judged by experts, but the AIA also was trying to promulgate the concept that competitions were held in order to select qualified architects and not simply "schemes".

The remainder of the form describes the necessary particulars of the "program". Essentially the AIA implied that the more information given to the competitors the better.⁷ The AIA also strongly suggested that the competitions be anonymously submitted.

1. The competition would be held, drawings submitted, and the owners would decide not to award any prize. They would take a favorite design and give it to a select, often less expensive, builder (or architect). Or the owner might award the prize, some nominal sum, with no guarantee that the winning firm would actually get to carry out the project (and make enough money to recoup the real cost of doing the original competition).

2. Hornbostel, in fact, as an outsider to the building elite of New York City, chose a partner for his first firm whose family was in the city's social register [see below].

3. Lois Craig, et al., The Federal Presence, (Cambridge, Ma.: 1974), pp. 202-203. In 1897 Lyman Gage, who had been the respected president of the superficially successful Chicago World's Fair, was made Secretary of the Treasury. He was a long-time friend of Burnham and the leading architects of the era.

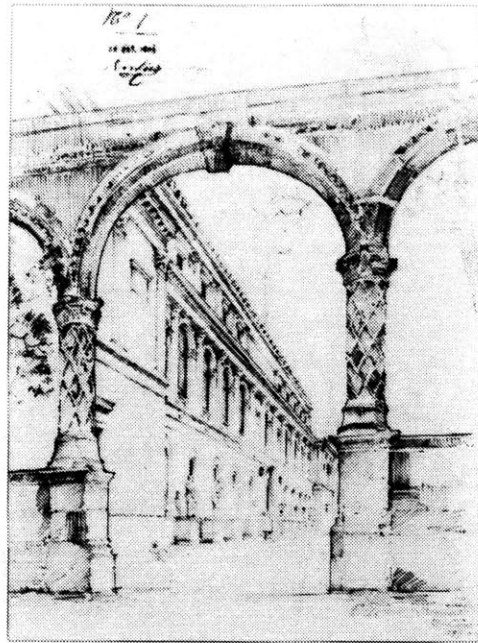
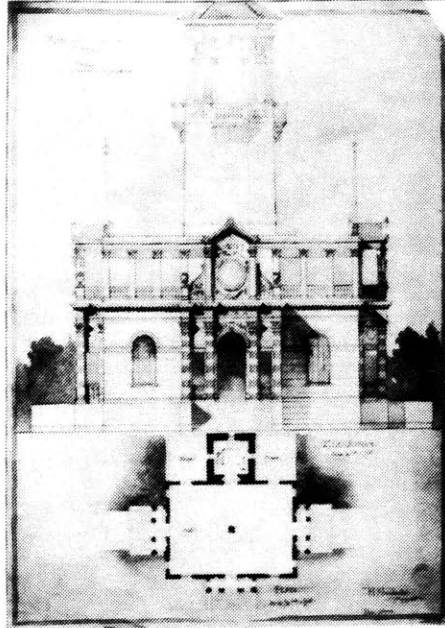
4. It had become apparent to Congress that private architects could not provide the same service as inexpensively as the Supervising Architect. There was also sentiment that the awards for the competitions were biased in favor of AIA members, who, after all, represented less than 20% of the practicing architects in the country.

5. I happened upon my copy in the Carnegie-Mellon University Archives, among the Carnegie Technical Schools' competition notes. It is dated December 14, 1900.

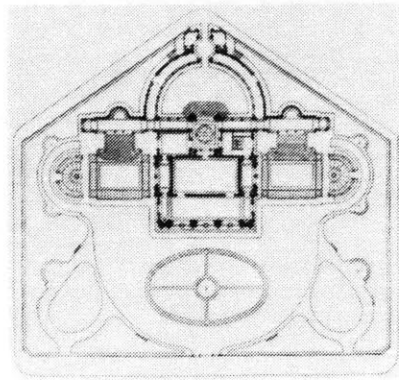
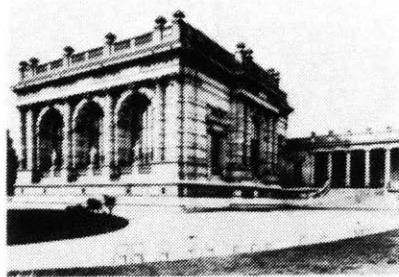
6. In the limited competition the few invited architects should be paid a fixed amount. In the open competition, "open to all who desire to enter from a certain class", prizes in fixed number and amount should be provided. In mixed competitions it is the combination of the two above schemes.

7. The present AIA documents include updated competition ethics in the owner-architect agreement contracts.

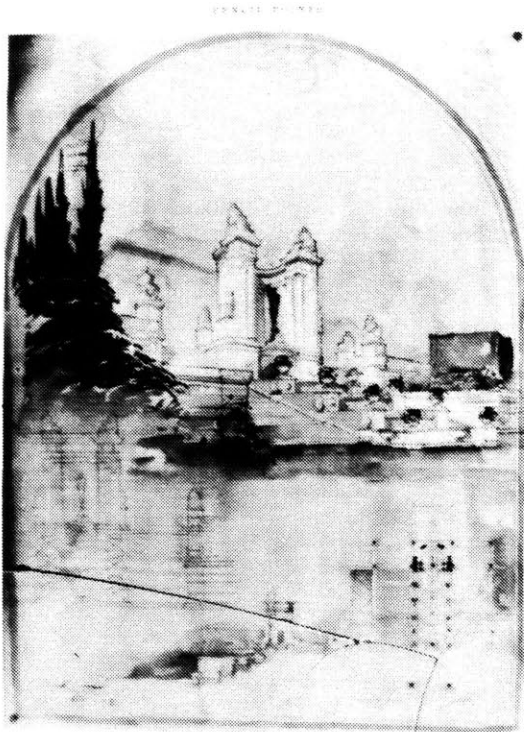
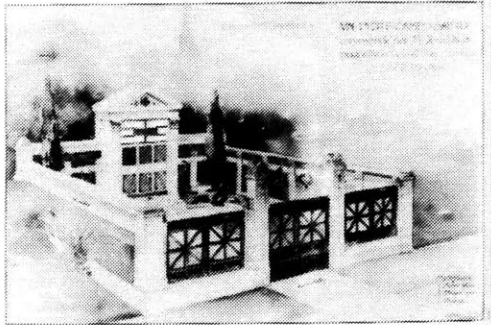
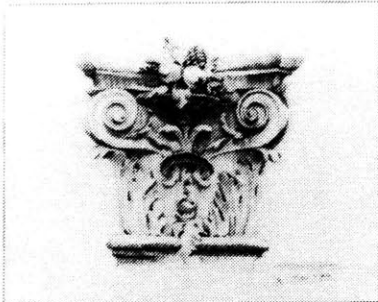
Figures 1 & 3:



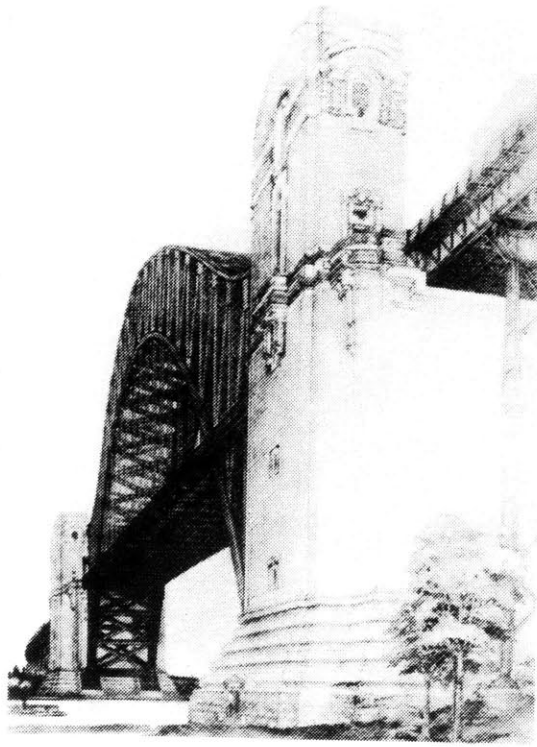
Figures 2a & 2b:



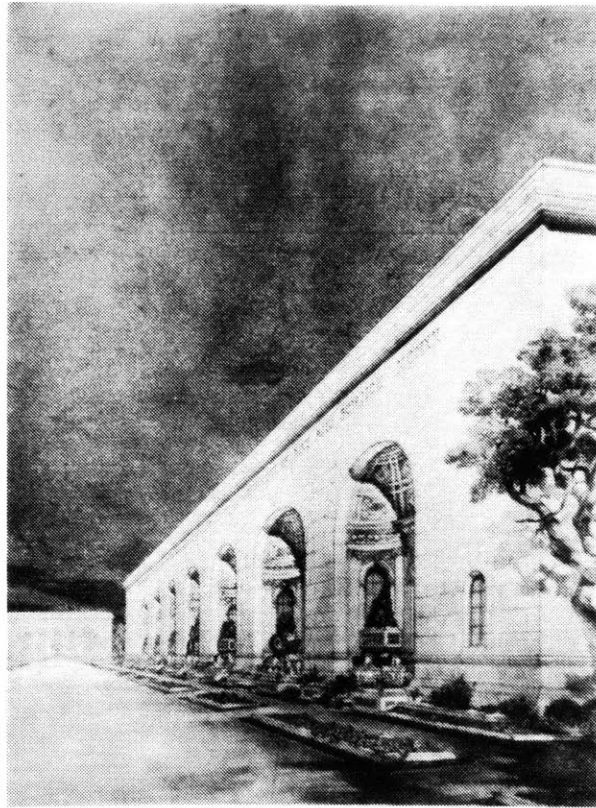
Figures 4 & 5:



Figures 6 & 7:

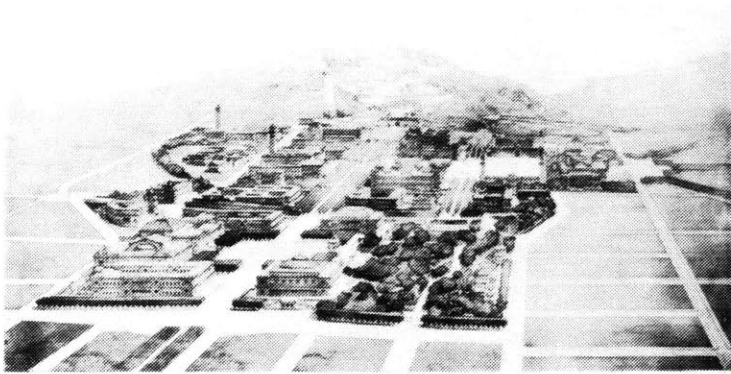


Figures 6 & 7: Architectural rendering of a building with a prominent tower and a large arched structure.

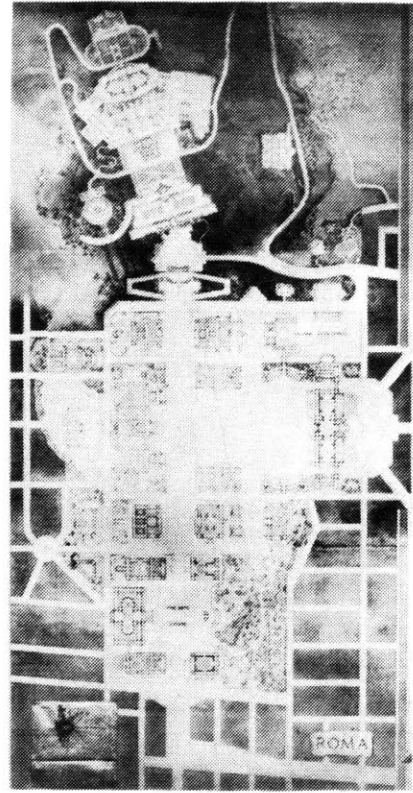


Architectural rendering of a long building with a series of arches.

Figures 8, 9 & 10:



GENERAL PERSPECTIVE
From Piazza—Monaco E. Biondi

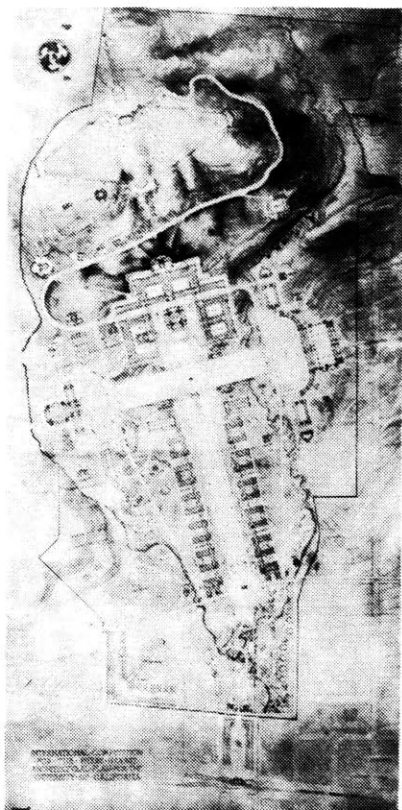


SIGNED SITE PLAN
From Piazza—Monaco E. Biondi

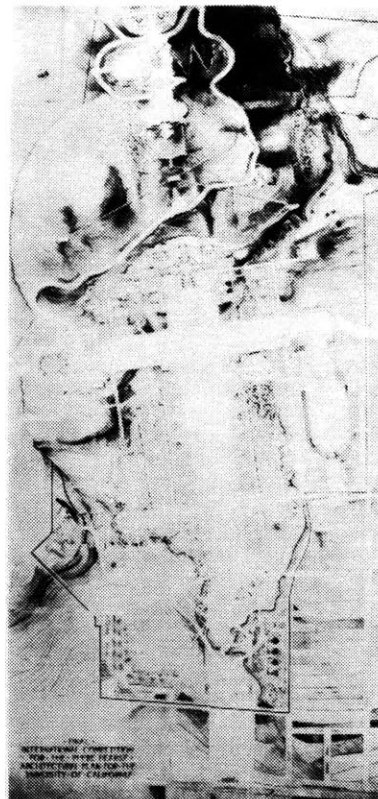


PERSPECTIVE VIEW OF STADIUM
From Piazza—Monaco E. Biondi

Figures 11 & 12:

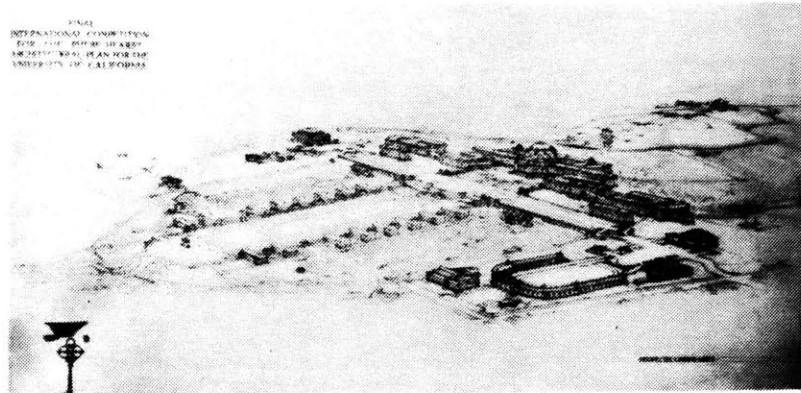


GENERAL PLAN
Main Entrance, Stairs and Hangar

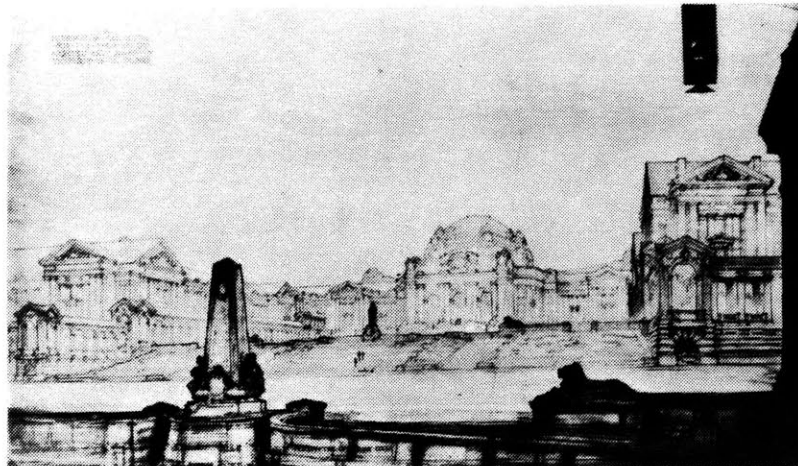


GENERAL PLAN
SECOND ENTRANCE—Main, Hangar, Stairs and Hangar

Figures 13 & 14:

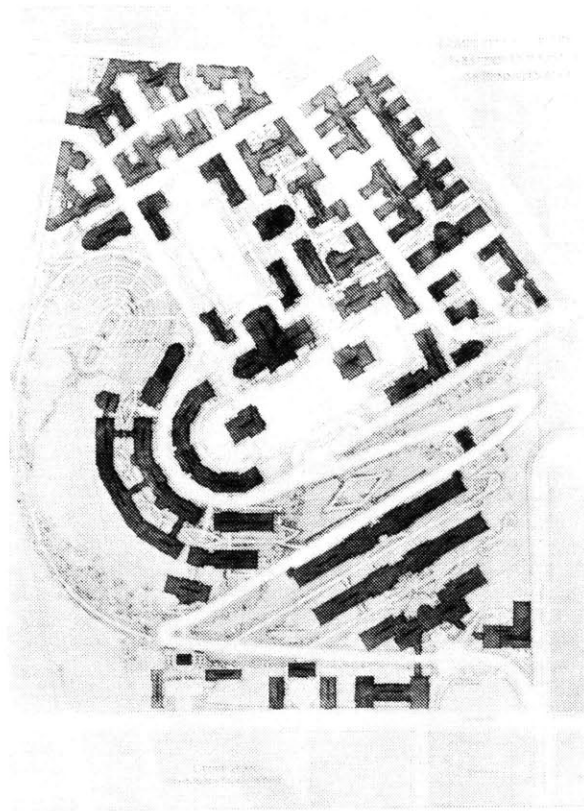


PERSPECTIVE VIEW LOOKING NORTH.
SECOND PRIZE—Moore, Howell, Stokes and Harwood.



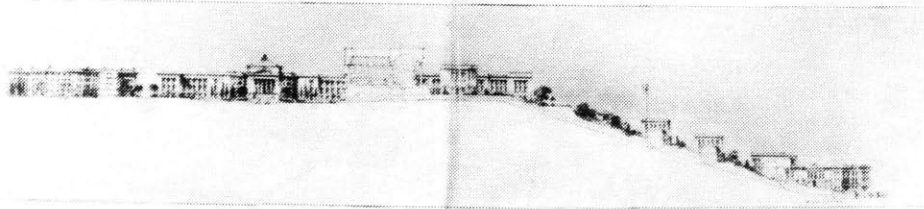
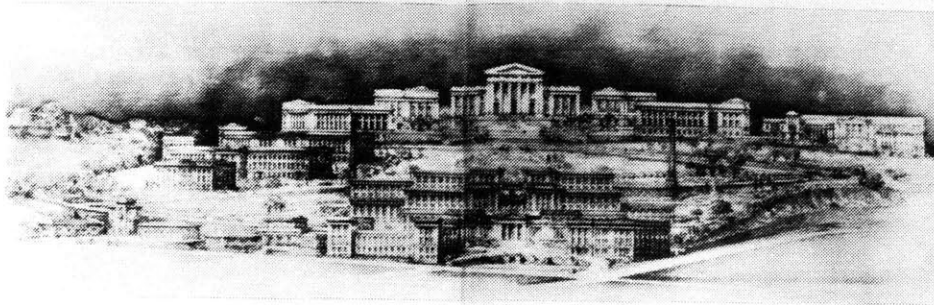
PERSPECTIVE OF LIBRARY COURTYARD.
SECOND PRIZE—Moore, Howell, Stokes and Harwood.

Figures 15 & 16:

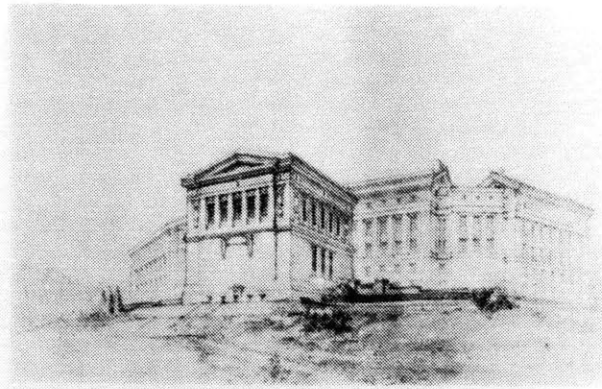


EASTERN UNIVERSITY OF PENNSYLVANIA, POTTSVILLE, PENNA.
1880-1885. ARCHT. BY J. H. WATSON.

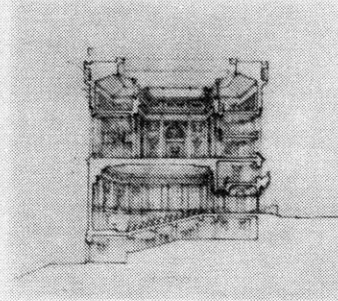
AMERICAN COMPETITIONS



Figures 17 & 18:

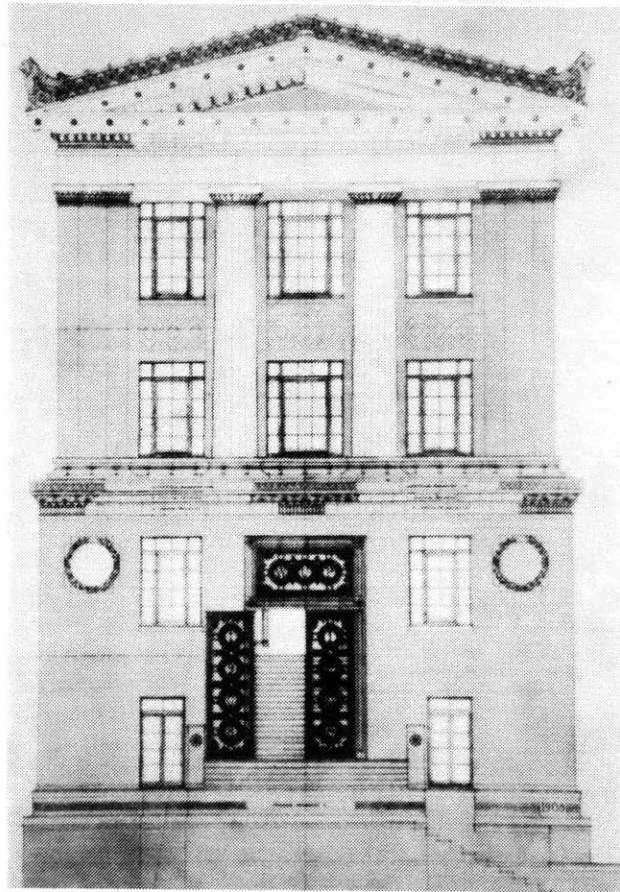


VIEW LOOKING NORTH



SECTION

PROPOSED MEMORIAL MEDICAL LIBRARY, UNIVERSITY OF PITTSBURGH
Palmer, Hornbush and Jones, Architects, New York



Figures 19 & 20:



Figures 21 & 22:

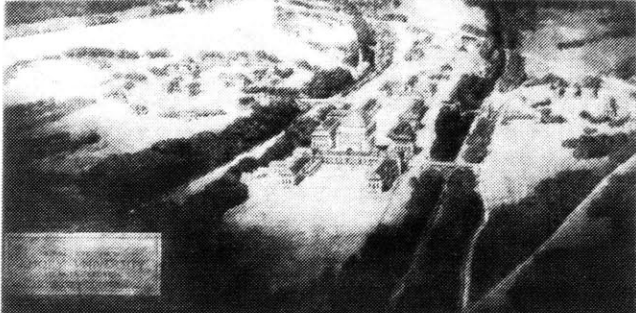


Figure 21: Aerial view of the University of the South, showing the main building and surrounding campus.

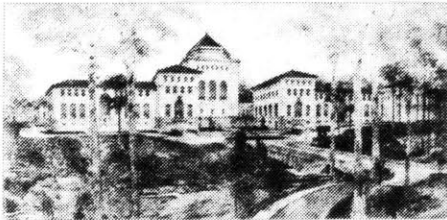
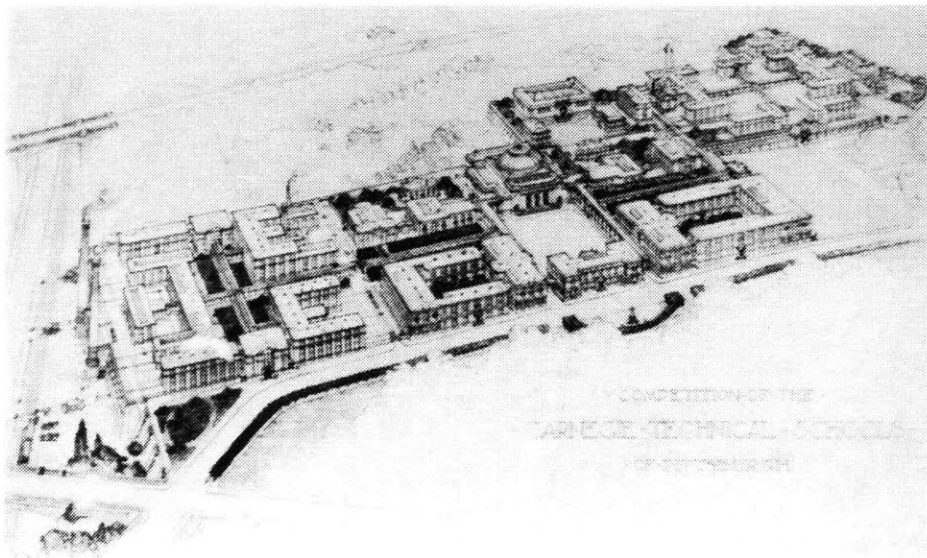
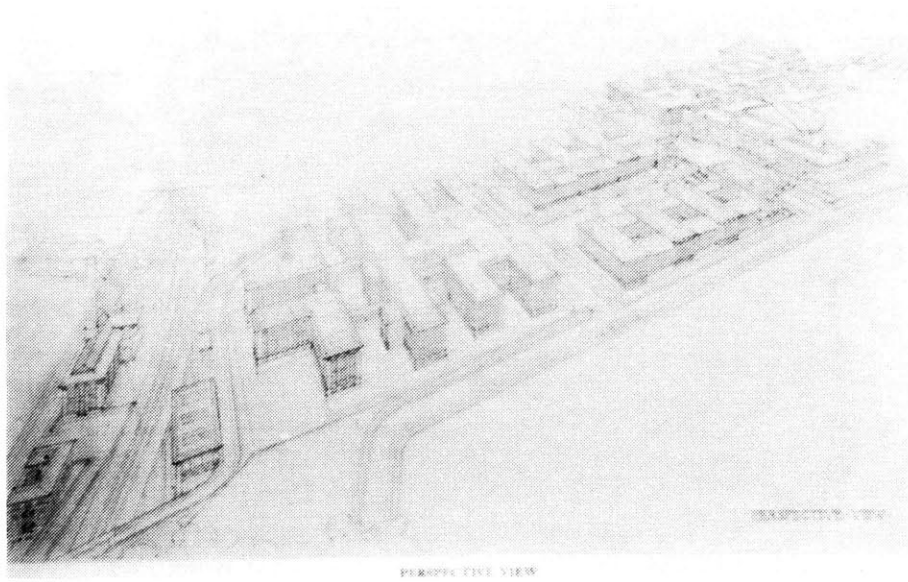


Figure 22: Frontal view of the University of the South, showing the main building and surrounding campus.



Figures 23 & 24:



Figures 25 & 26:

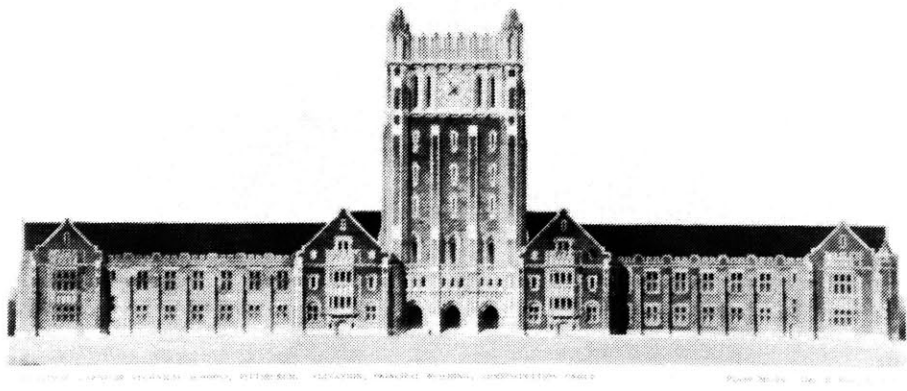
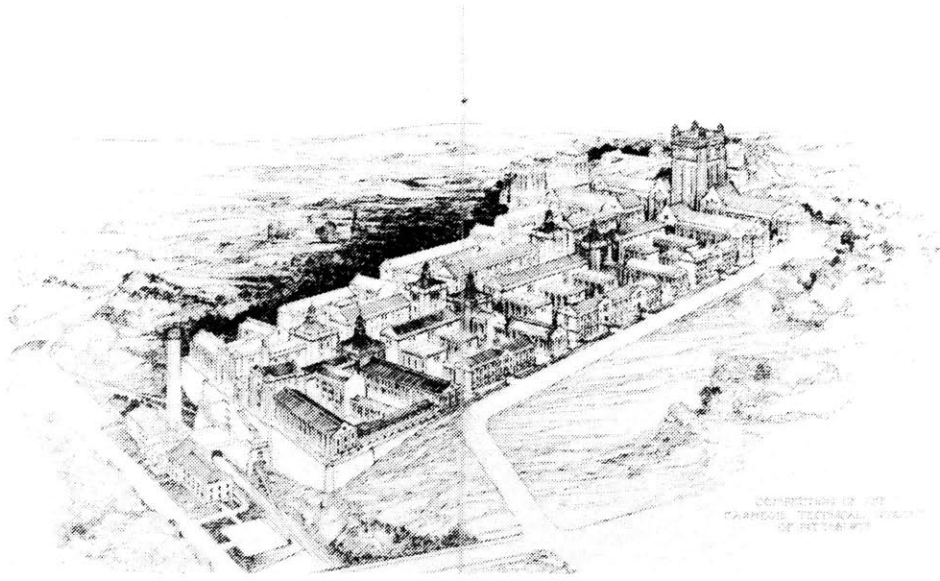


Figure 27:

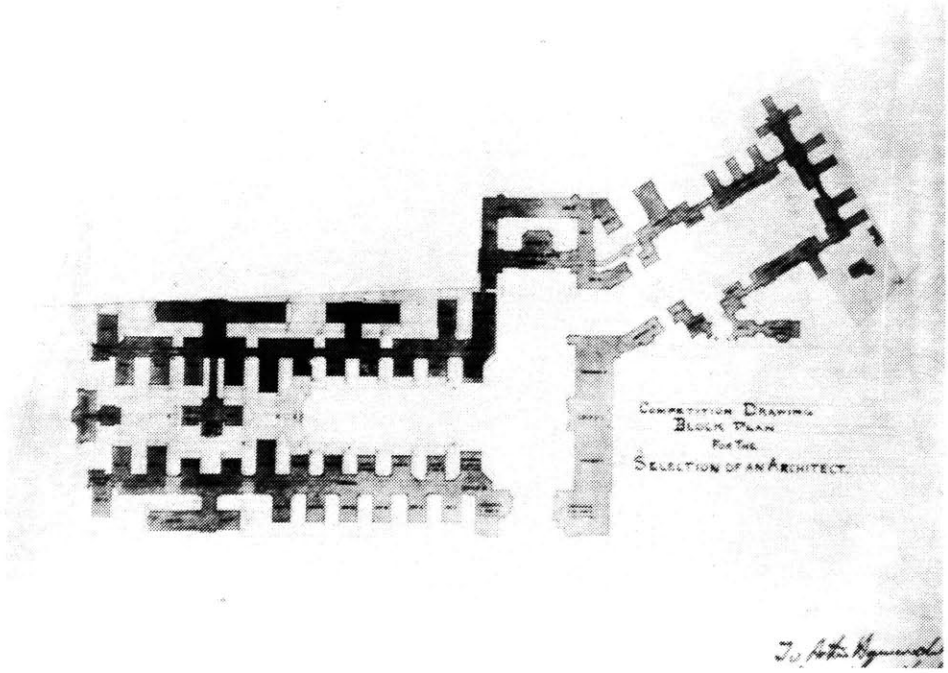
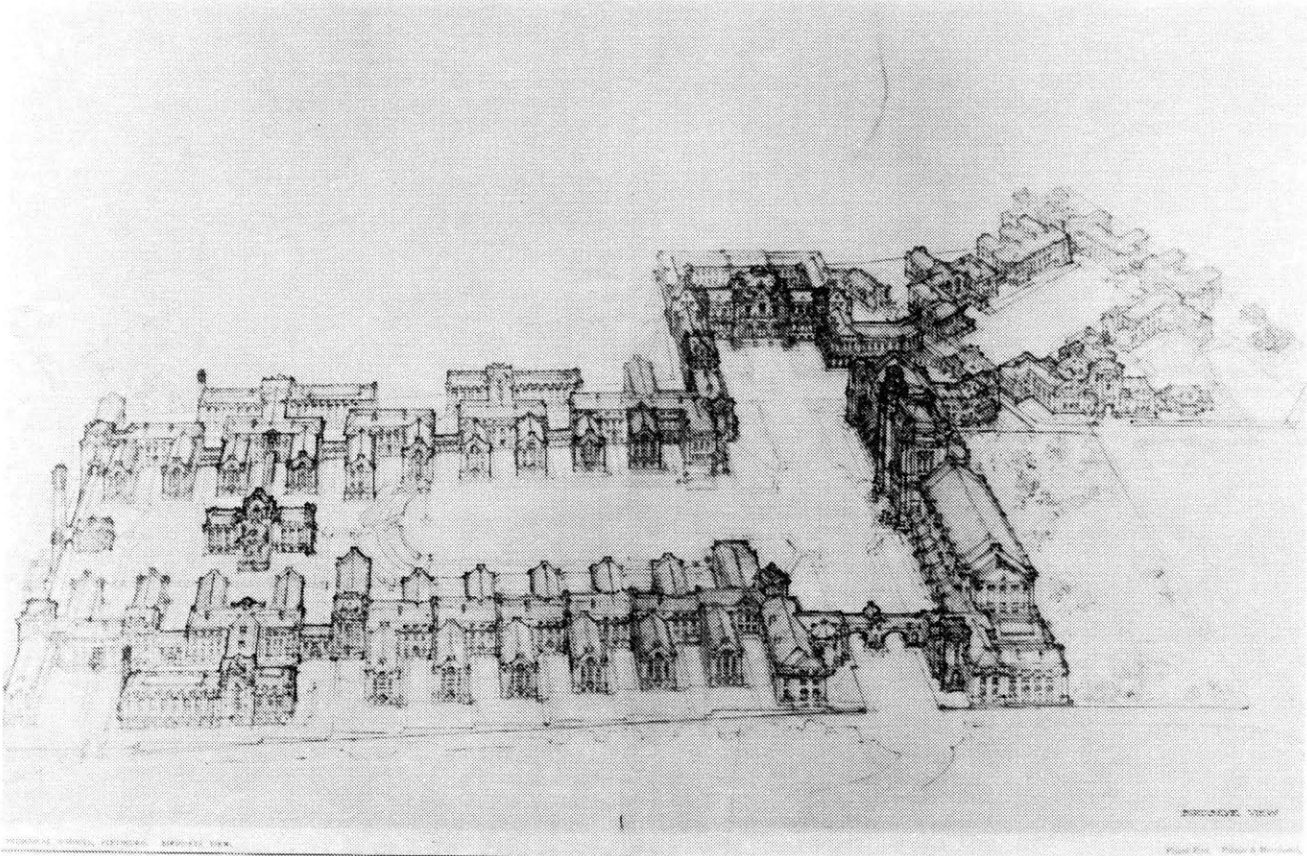


Figure 28:



Figures 29 & 30:

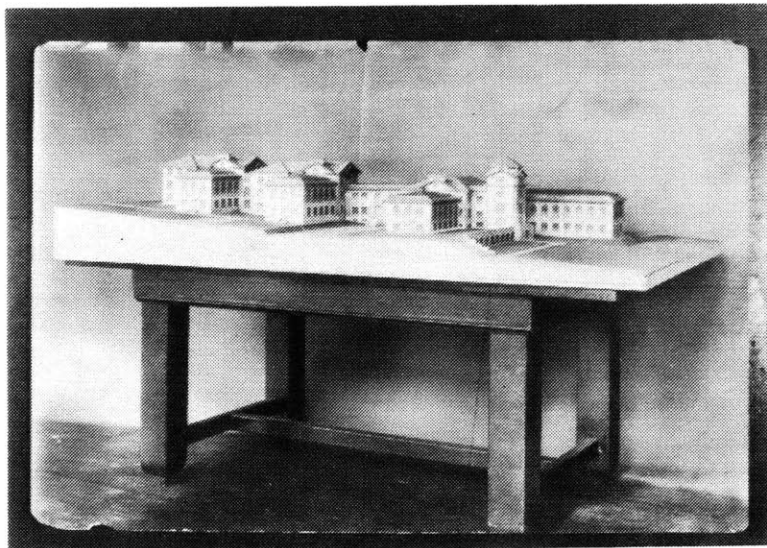
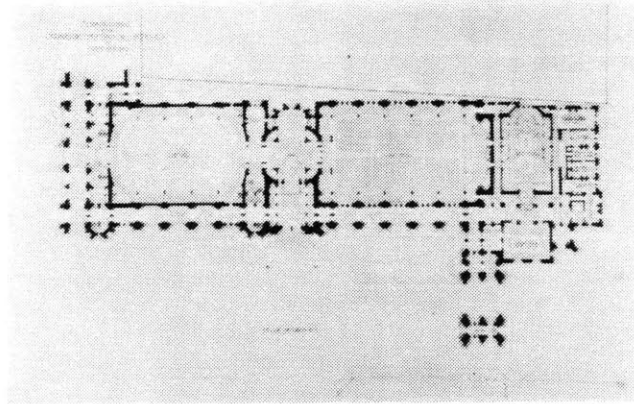
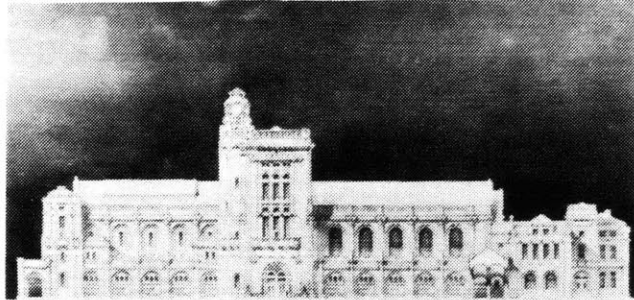
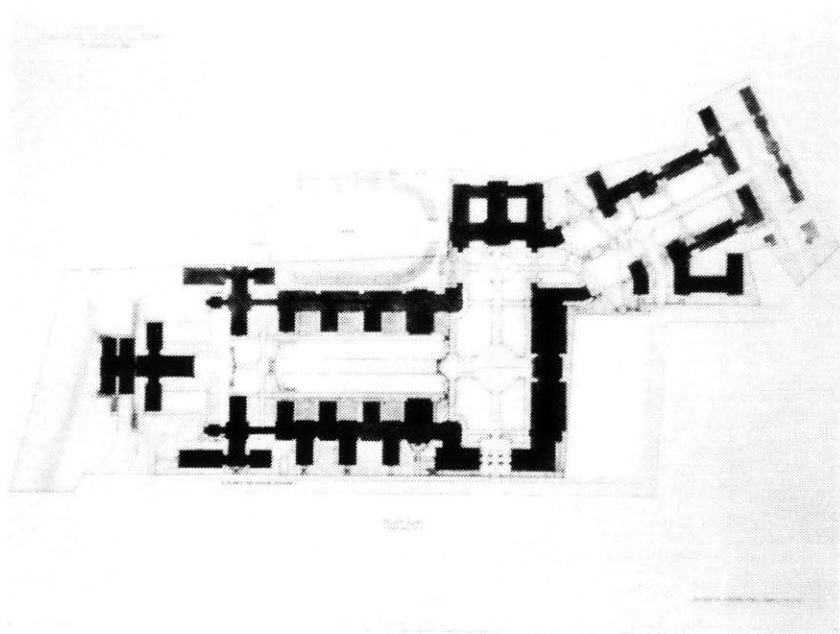
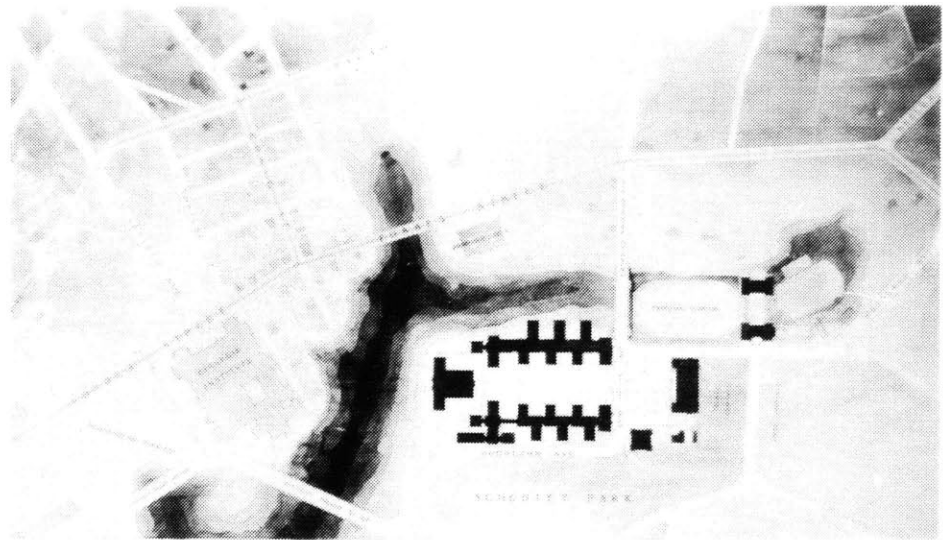


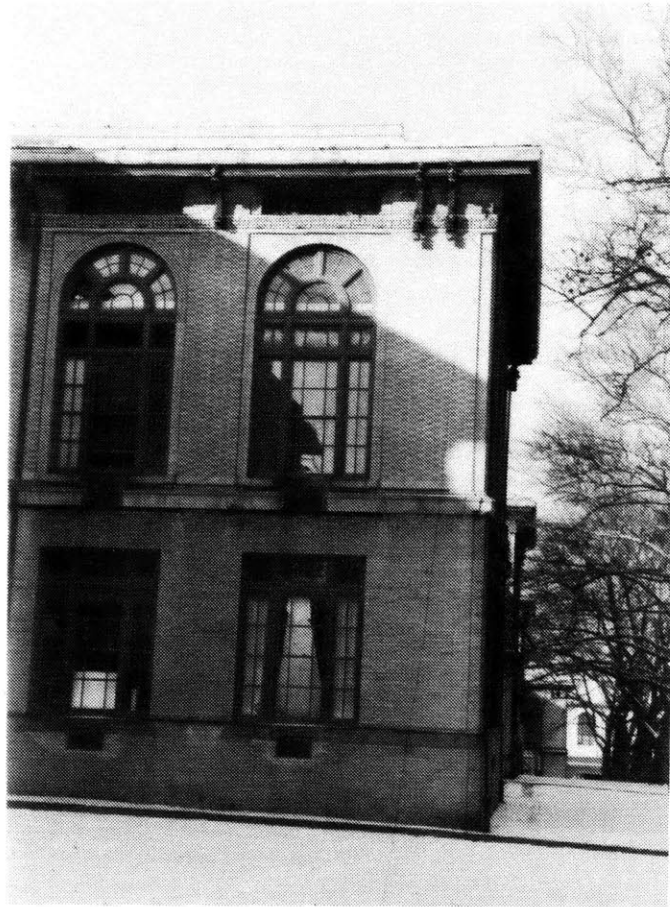
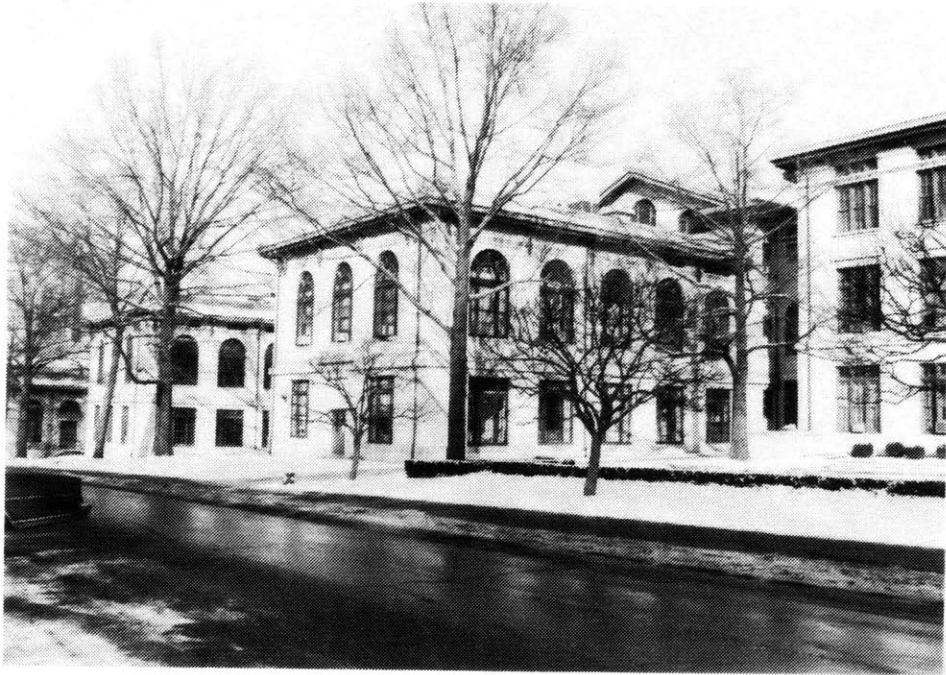
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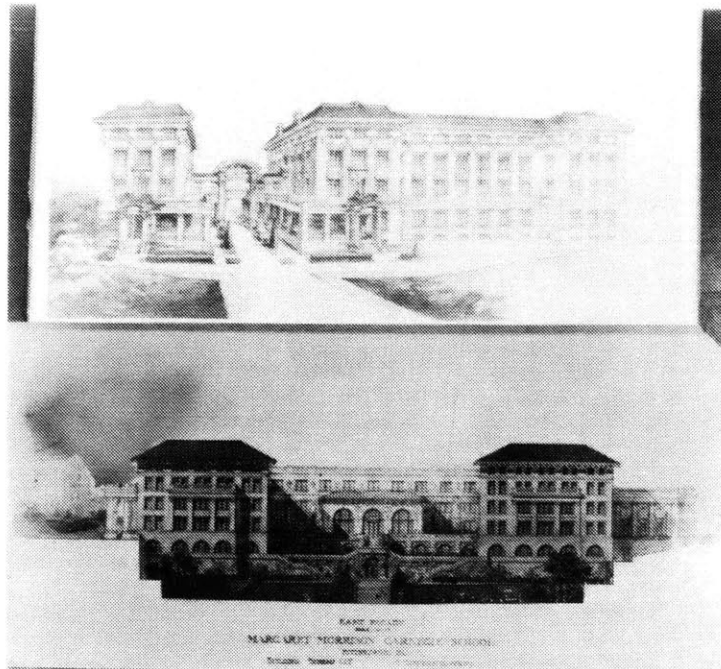
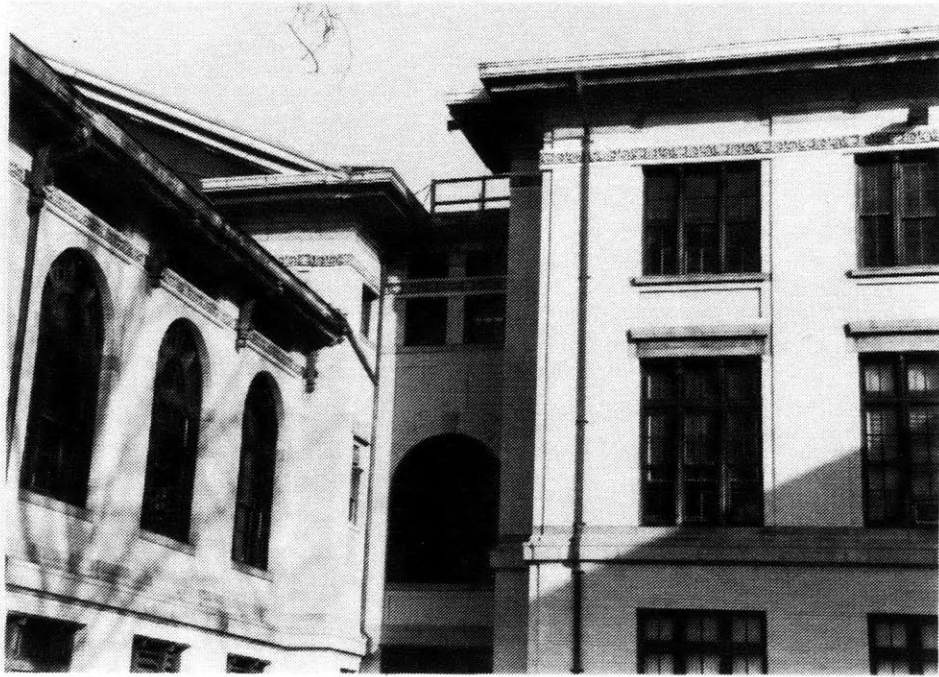
Figures 32 & 33:



Figures 34 & 35:



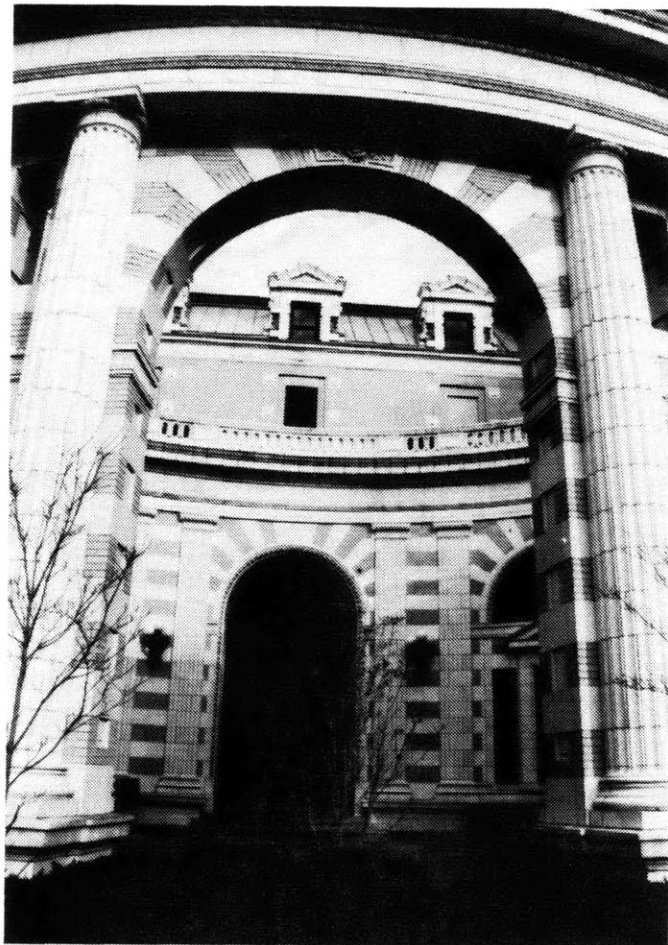
Figures 36 & 39:



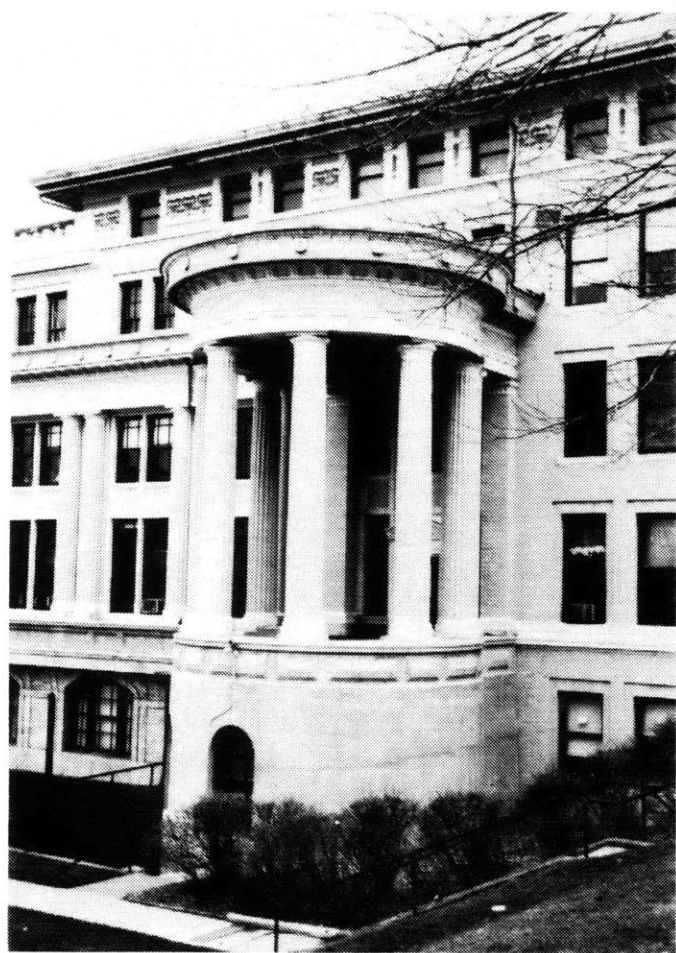
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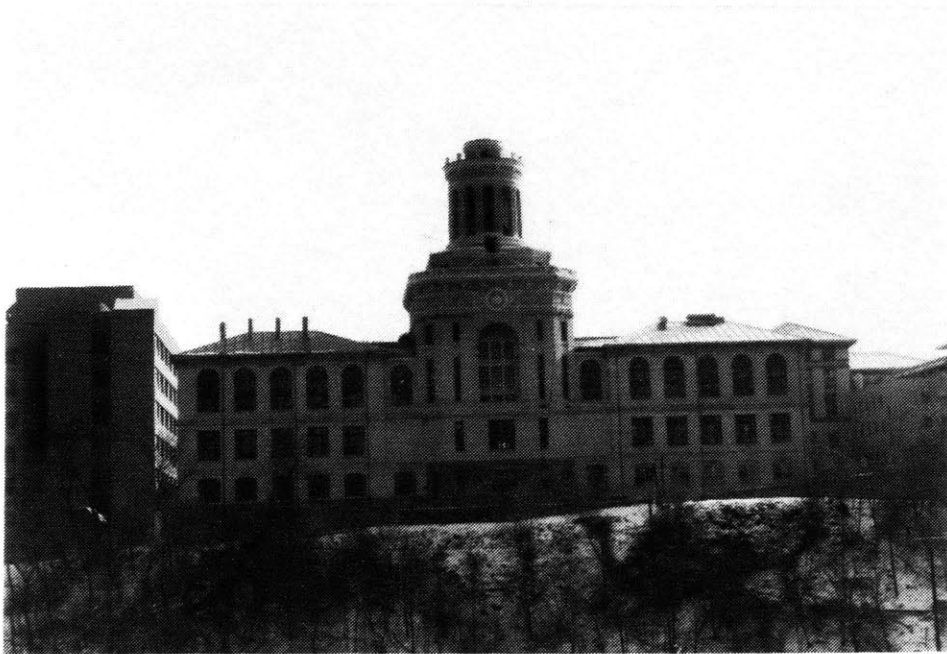
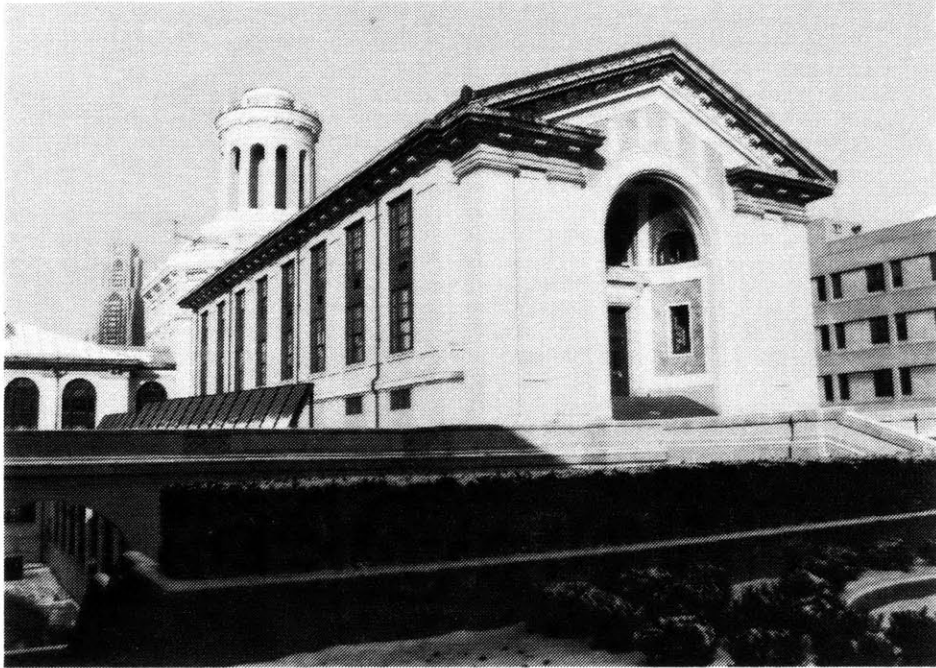
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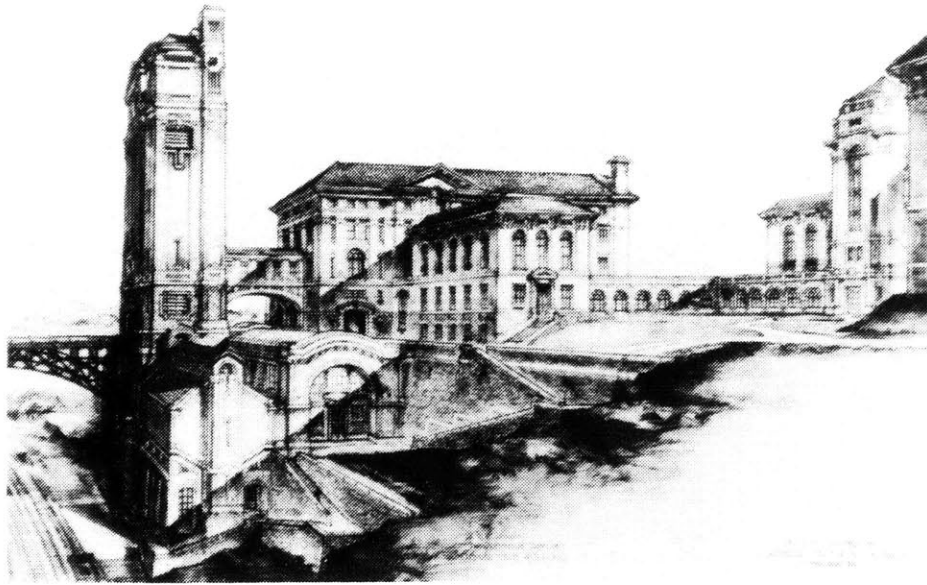
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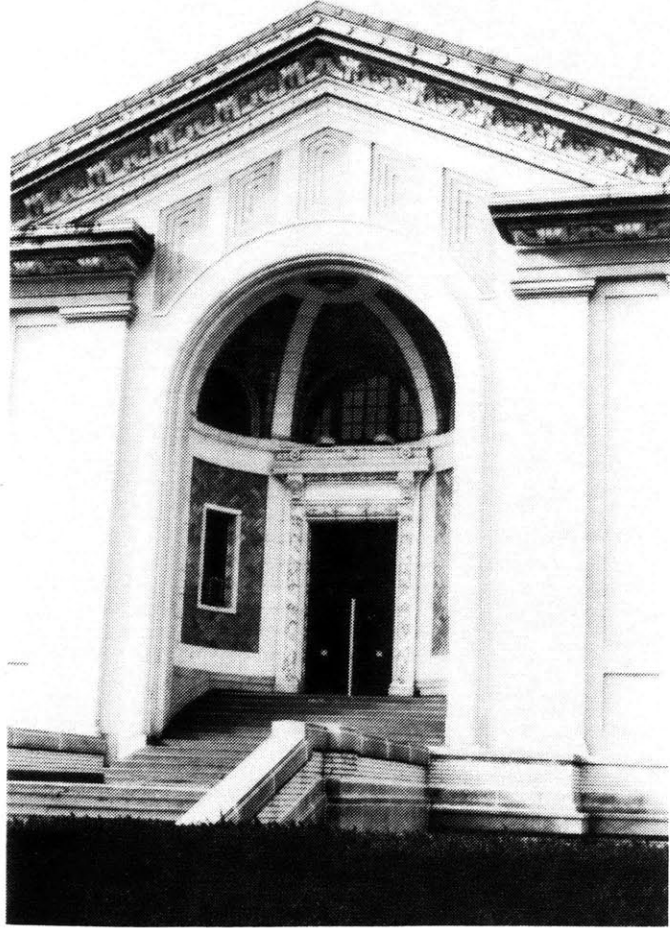
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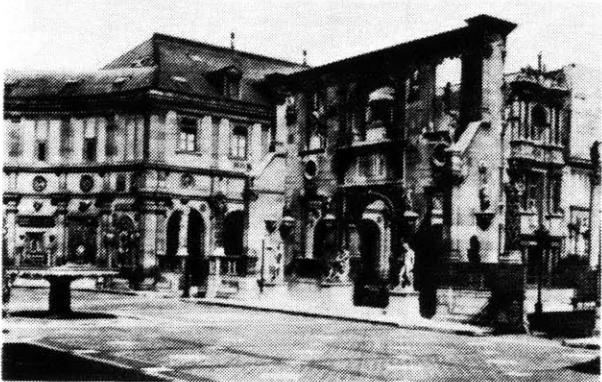
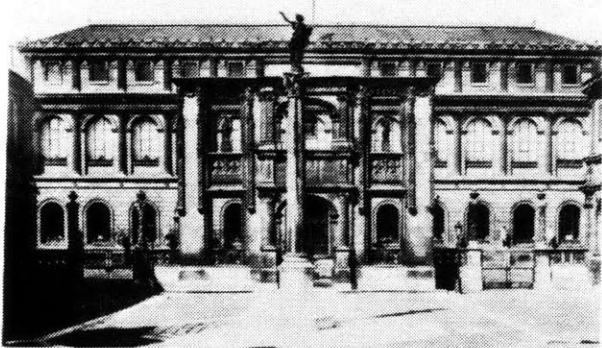
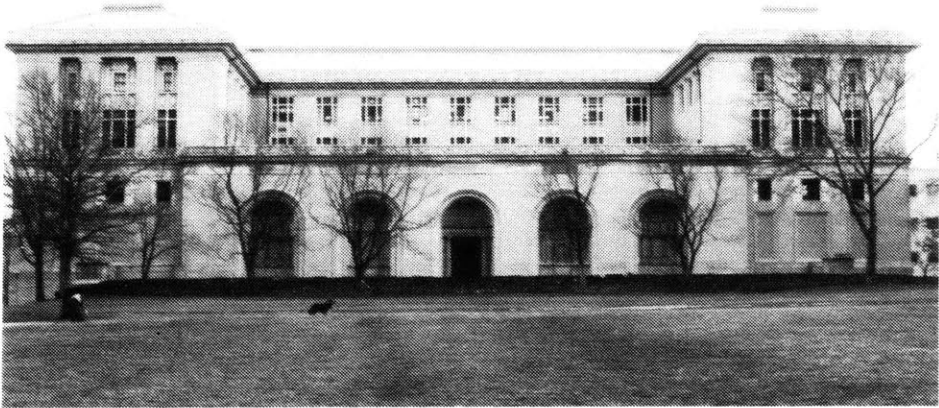
Figures 46 & 47:



Figures 48 & 49:



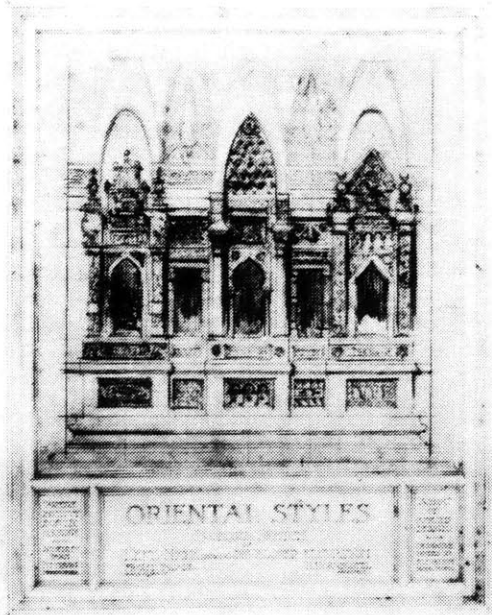
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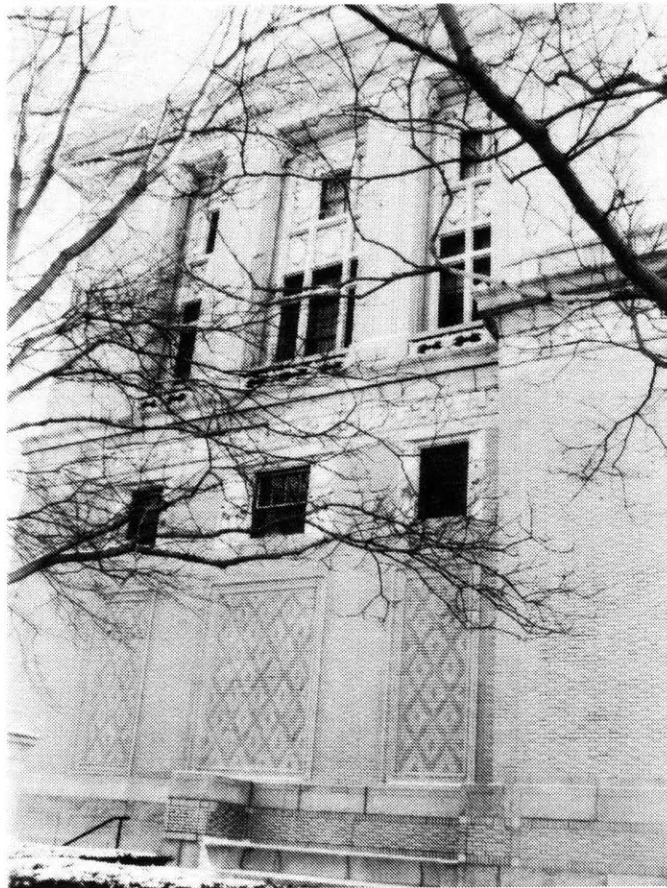
Figures 52 & 53:



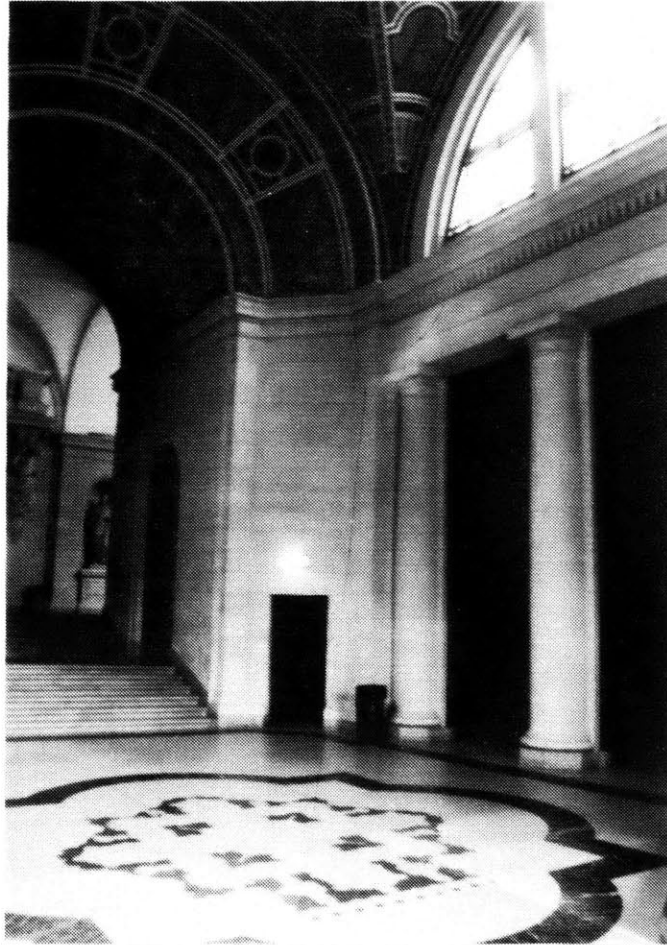
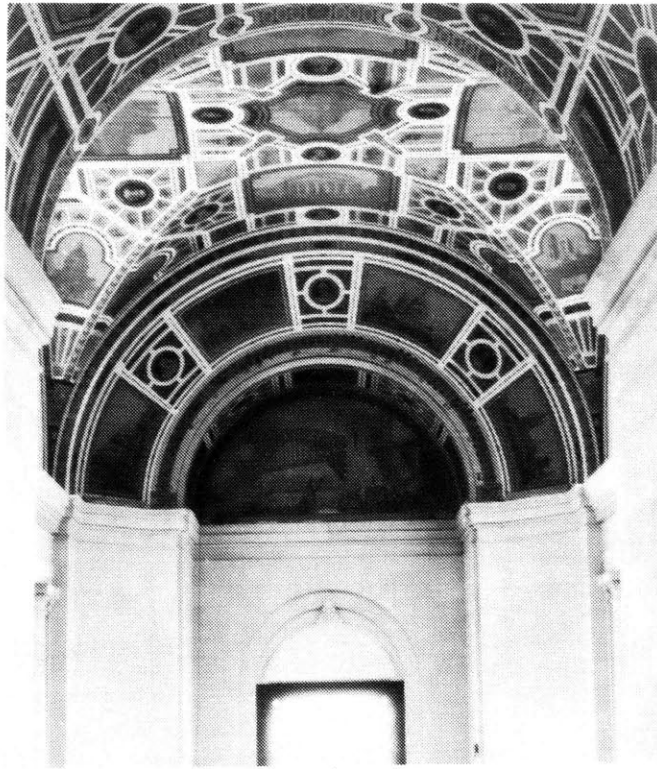
Figure 54:



Figures 55 & 56:



Figures 57 & 58:



Figures 59 & 60:

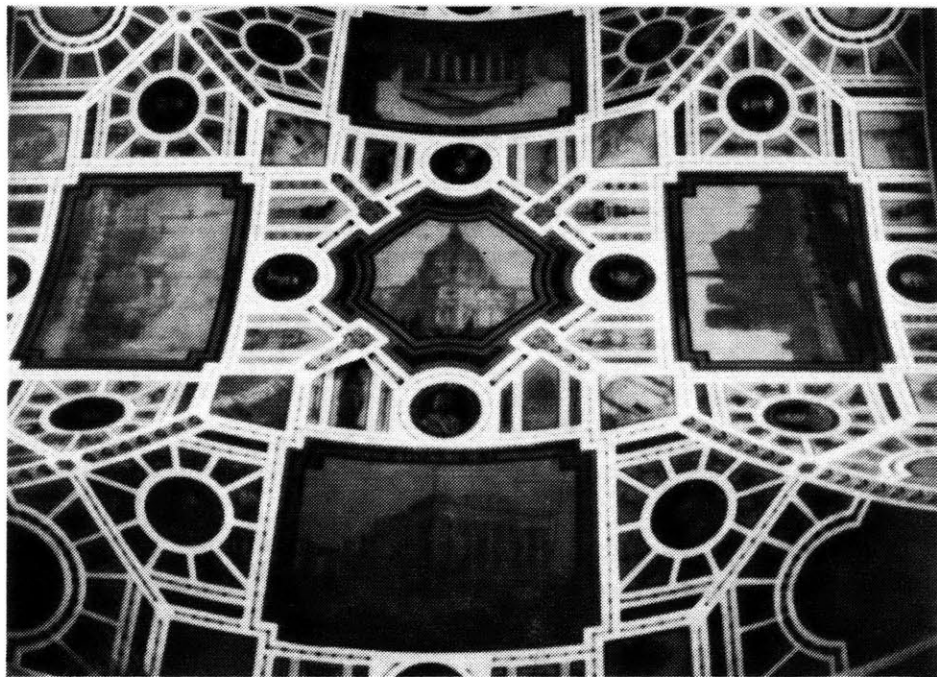
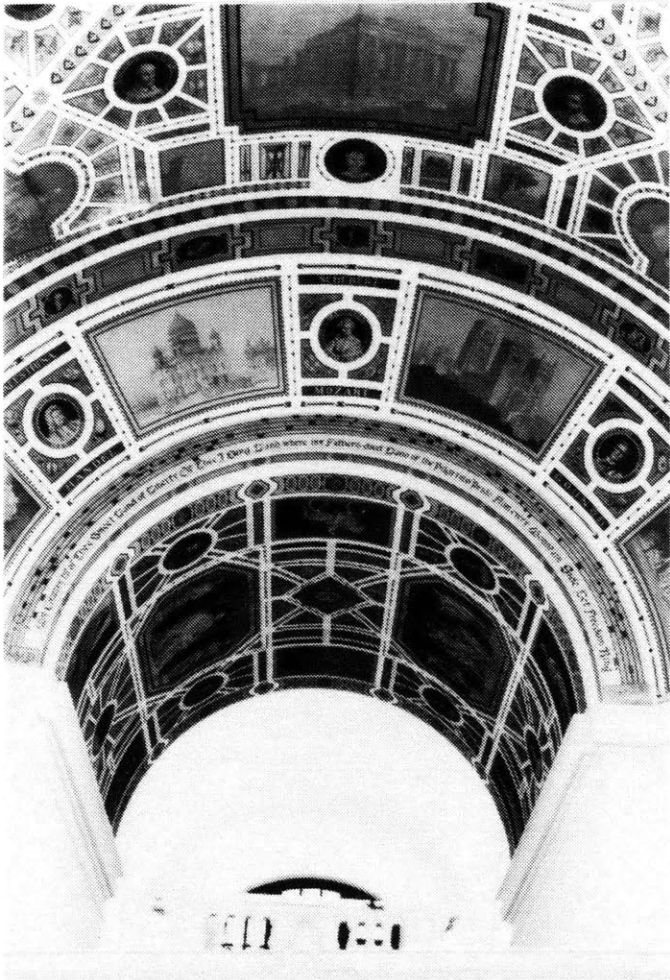


Figure 61:



Figures 62 & 63:



Photo Credits:

Henry Hornbostel photograph, Architecture, Vol. 8 (15 August 1903), p. 102.

1. "Monumental Belvedere," Columbia Design Examination 1891, at Avery Architectural and Fine Arts Library Archives, reprinted in Clark Polig ed., Henry Hornbostel/Micheal Graves: An Exhibit of Architectural Drawings, Photographs and Models, (Atlanta, Georgia: Emory University Press, 1985).

2a & b. Ginain's Musee Galliera plan and elevations in Arthur Drexler, ed., The Architecture of the Ecole des Beaux Arts, (New York City: MOMA, 1977).

3. Hornbostel drawing of the Palais des Etudes, Ecole des Beaux Arts, for Lloyd Warren, at Avery Architectural and Fine Arts Library Archives, reprinted in Clark Polig ed., Henry Hornbostel/Micheal Graves: An Exhibit of Architectural Drawings, Photographs and Models, (Atlanta, Georgia: Emory University Press, 1985).

4. "Columbarium" (perspective) at Avery Architectural and Fine Arts Library Archives, reprinted in Clark Polig ed., Henry Hornbostel/Micheal Graves: An Exhibit of Architectural Drawings, Photographs and Models, (Atlanta, Georgia: Emory University Press, 1985).

5. "Esquisse" for the Ecole des Beaux Arts in Pencil Points, vol 7 (Feb. 1926), p. 74.

6. Hell Gate Bridge Abutment in Robert A.M. Stern et al, New York 1900, (New York City: Rizzoli, 1983).

7. Auditorium Bldg, Oakland Ca.; First scheme [1913], perspective rendering in Pittsburgh Architecture Club Annual Exhibition Book, 1913 (Pittsburgh).

8 through 14. University of California (Berkeley) Competition [1899]; 1st place: Benard (figures 26-28), 2nd place: Hornbostel with Howells and Stokes (figures 29-31); in The International Competition for the Phoebe Hearst Architectural Plan, San Francisco: 1900).

15 and 16. "Western University of Pennsylvania" [Pitt] competition submission [1908], plan and site elevations in American Competitions, Vol. 2 (1908), (New York City: T-Square Club).

17. [Pitt] Pennsylvania Hall (Med. School) [1910], perspective and section of proposal in Pittsburgh Architecture Club Annual Exhibition Book, 1905 (Pittsburgh).

18. [Pitt] Typical facade scheme in American Competitions, Vol. 2 (1908), (New York City: T-Square Club)
19. [Pitt] Cornice and wall detail of Thaw hall, Rives T. Taylor.
20. [Pitt] Gable detail of Pennsylvania Hall, Rives T. Taylor.
- 21 and 22. Emory University plan and buildings, Atlanta Ga. [1915]; aerial perspective and interior in Clark Polig ed., Henry Hornbostel/Micheal Graves: An Exhibit of Architectural Drawings, Photographs and Models, (Atlanta, Georgia: Emory University Press, 1985).
23. Carnegie Technical Schools Competition, Carrere and Hastings submission in "Competition for Carnegie Tech. Schools," Inland Architect, Vol. 45 (March 1905).
24. Carnegie Technical Schools Competition, Howells and Stokes submission in "Competition for Carnegie Tech. Schools," Inland Architect, Vol. 45 (March 1905).
- 25 and 26. Carnegie Technical Schools Competition, George Post submission in "Competition for the Carnegie Tech. Schools," Architecture, Vol. 9 (15 Dec. 1904), pp. 194-196.
27. Carnegie Technical Schools Competition, Palmer, Hornbostel and Jones submission, Block plan (figure 45), Carnegie-Mellon University, University Archives: "Crown Jewels"
- 28 and 29. Palmer, Hornbostel and Jones competition bird's eye and administration building in Inland Architect, Vol. 45 (March 1905).
30. Baker and Porter Halls, (Bldgs A,B,C) [1905] model shots in Carnegie-Mellon University Architecture Archives boxes.
31. 1905-1906 Campus block plan of 1905 in Carnegie-Mellon University, University Archives: "Crown Jewels".
- 32 and 33. 1910-12 campus block plan and bird's eye in Carnegie-Mellon University, University Archives: "Crown Jewels".
34. Laboratory Group, Baker and Porter Halls; exterior, Rives T. Taylor.
35. Soffit detail of shop pavilion, Rives T. Taylor.

36. Shop pavilion and spine connection and corner detail, Rives T. Taylor.
37. Long hallway of Laboratory Group, Rives T. Taylor.
38. Stairway, railing, and torchere, Rives T. Taylor.
39. Margaret Morrison Carnegie College for Women [1906 & 1914], renderings of proposal in Carnegie-Mellon University Architecture Archives boxes.
- 40 through 43. Margaret Morrison Carnegie College for Women Rives T. Taylor.
- 44 and 45. Hamerschlag Hall, Rives T. Taylor.
46. Hornbostel perspective of proposed Machinery Hall (Hamerschlag Hall) and power house complex in Carnegie-Mellon University, University Archives: "Crown Jewels".
- 47 through 49. Hamerschlag Hall, Rives T. Taylor.
50. College of Fine Arts (School for Applied Design) of 1911-12, 1914 & 1915, front elevation, Rives T. Taylor.
51. Facade of Ecole des Beaux Arts in Arthur Drexler, ed., The Architecture of the Ecole des Beaux Arts, (New York City: MOMA, 1977).
- 52 and 53. College of Fine Arts (School for Applied Design), Rives T. Taylor.
54. Oriental niche in Avery Architectural and Fine Arts Library Archives, reprinted in Clark Polig ed., Henry Hornbostel/Micheal Graves: An Exhibit of Architectural Drawings, Photographs and Models, (Atlanta, Georgia: Emory University Press, 1985).
- 55 through 63. College of Fine Arts (School for Applied Design), Rives T. Taylor.

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