Copenhill Center, An Outdoor Performing Arts Center for Atlanta, Georgia

Jo Ann Grisham
Clemson University

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Copenhill Center
An Outdoor Performing Arts Center for Atlanta, Georgia

Jo Ann Grisham

Fall 1982

A sixth year terminal project submitted to the faculty of the Clemson University, College of Architecture as partial fulfillment of the requirements for the degree of:

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To my family, for their love and support.
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Problem Statement
PROBLEM STATEMENT

Atlanta has been the cultural center of the South since antebellum days. As the host of numerous expositions and festivals for over a century, the city of Atlanta has established both a national and international reputation in this area. In order to maintain this position of eminence, Atlanta must continue to expand its cultural offerings and the infrastructure that supports them. Examples of the latter include the Hartsfield International Airport, the MARTA Rapid Rail system, and the World Congress Center. Recent additions to the cultural ambience of the city include the revitalization of the Fox Theater, the new public library, and the new home of the High Museum.

The most recent opportunity to enhance the cultural image of Atlanta is the development of the "Great Park". This is proposed as a linear park extending from downtown Atlanta to the eastern suburb of Decatur. The focus of this park
will consist of an outdoor performing arts center capable of accommodating an audience of 12,000 and used for pop music, orchestra, dance, and opera performances.

This terminal project will address the problem of developing a performing arts facility appropriate to its park setting and capable of accommodating these varied activities.
ATLANTA: The Beginnings

Set in the foothills of north Georgia, Atlanta is the largest city in the South and serves as a regional center for transportation, culture, conventions, and commerce.

Atlanta came into existence as a result of the railroad. The State Legislature chartered the Western and Atlantic railroads to transport grain and meat to the rural cotton growing areas of Georgia in the first half of the 19th Century. These railways chose Atlanta as their base. What is currently known as Underground Atlanta was at one time the terminus for rail lines extending to Athens, Madison, Milledgeville, Forsyth, and Columbus, Georgia. Originally known as Marthasville, the Legislature granted a charter in 1847 changing its name to Atlanta. As the cotton trade expanded in pre-Civil War years, the city grew accordingly. By 1859 Atlanta's population stood at 10,000.
During the Civil War, Atlanta's role as a rail center was critical. Not only did Atlanta serve as the headquarters for Confederate quartermasters and commissaries, but also as a hospital center and a focal point for the manufacture of war implements, medicine, and machinery. Near the end of the war, General William T. Sherman of the Union Army watched the burning of Atlanta from a point which is now contained in the Great Park area. The rail lines, the life line of Atlanta, along with most commerce related structures had been razed by the fire.
ATLANTA: The Emerging Culture

After the Civil War, Atlanta was quick to begin the re-generating process. Only two years after its burning in 1864, Atlanta had re-built to the extent of providing gaslit streets. The population climbed to 20,000 as carpet baggers from the north moved to the South, and displaced rural Southerners moved to the city. With changing social patterns brought about by the War, Atlanta's reputation as the educational and cultural center of the South evolved. In 1867 the public library containing an art school opened. The young Men's Library Association sponsored a lecture series of noted speakers. Atlanta University opened its doors as an educational institute for blacks. By 1885 five other colleges had been incorporated into the complex. During the next decade, many colleges were established in Atlanta including the Decatur Female Seminary (currently Agnes Scott College) in 1889, and Georgia Institute of
Technology in 1888. After the turn of the century, Emory College at Oxford, Georgia, moved its main campus to Atlanta and became a university in 1914. The DeGive Opera House and the Kimball House, a luxury hotel, were opened in 1870 as cultural landmarks. The Metropolitan Opera Company began its annual tour of Atlanta in 1910, with performances continuing until the present with only one interruption due to the Great Depression of the 1930's. The Atlanta Art Association began sponsoring local and traveling exhibits in 1904 which led to the opening of the High Museum in 1926.

While these educational and cultural institutions were being established, Atlanta was cultivating a tourist industry. The Twelfth Night Mystic Brotherhood and Mystic Owls sponsored carnivals similar to New Orleans' Mardi Gras during the 1870's. A series of World's Fairs and expositions were hosted by Atlanta from 1881 to 1911. The World's Fair and Great International Cotton Exposition of 1881 involved seven foreign
countries, as well as, all the states. In 1887 emphasis was given to the relationship of agriculture and industry in the month long Piedmont Exposition. To promote economic expansion of the South and to stimulate trade with Spanish American nations, the Cotton States and International Exposition was hosted in 1895. A new spirit was kindled with the opening of this exposition with exhibitions by both blacks and by women. As Henry W. Grady stated in 1886, "from the ashes he (General William T. Sherman) left us in 1864, we have raised a brave and beautiful city; that somehow or other we have caught the sunshine in the bricks and mortar of our homes, and built therein not one ignoble prejudice or memory." With this new spirit, Atlanta was known as "the city of conventions" by 1911.

Not yet a metropolitan city, in 1925 the Forward Atlanta Campaign began promoting Atlanta as the "Gate City to the South." During the next five years, nearly one million
dollars were spent to promote the city on the national level. The result was an increase of over $34 million income to the city. However, this boost to business was short lived due to the stock market collapse of 1929 which led to a decade of depression.

After World War II, the Plan of Improvement was enacted changing the city to a metropolitan area rather than a municipality. This plan increased the city's area from 37 square miles to 118 square miles. The major concerns were to rebuild the CBD (no building had taken place from 1930 to 1950), and to build a highway system connecting the suburbs to downtown. A second Forward Atlanta Campaign began during the 1960's, surpassing previous campaigns both in goals and accomplishments. Implemented within ten years, the major points of this plan were to speed up expressway construction and urban renewal, the construction of an auditorium-coliseum and a stadium, and a program for large scale rapid transit.
ATLANTA: The Current Scene

With the flight to the sunbelt, Atlanta is growing with unprecedented vigor. Metro Atlanta's population increased 27.2% from 1970 to 1980. The MARTA rapid rail system opened its east-west line in 1980, the north-south line is under construction with five stations currently operating. The Hartsfield International Airport opened its new facility in 1980 as the largest airport in the United States. The Interstate system is also undergoing radical expansion and construction.

The downtown area is experiencing significant change. Three new high-rise office buildings within the Central City Park area are under construction. Central City Park is receiving a face-lift, along with the renovation of the Hurt Building, the Grant Building, and the Healy Building. Serving as a link between these projects is the Fairly-Poplar Street renovation project.
Points of Interest
A-High Museum
B-Piedmont Park
C-Fox Theater
D-Georgia Tech
E-Public Library
F-Civic Center
G-Omni International
H-Atlanta University
I-Georgia State
J-Atlanta Fulton Co. Stadium
K-Grant Park
L-Great Park
M-Emory University
N-Agnes Scott College
O-MARTA Rapid Rail

Atlanta
Within the CBD, a new public library by the late architect, Marcel Breuer, has opened, the Fox Theater has been given new life, and a new High Museum of Art designed by Richard Meier is under construction. Visitors to the city also enjoy the Merchandise Mart, the World Congress Center, the Civic Center, and major hotels as Peachtree Plaza, the Hyatt Regency, and the Hilton, all within the one mile radius of the CBD. The Fulton County Stadium, home of the Atlanta Braves and the Atlanta Falcons is also within walking distance of downtown. Major national corporations such as AT&T and Georgia-Pacific are moving their headquarters to the city.

It is particularly important at this time that Atlanta achieve a balance in growth if it is to remain a vital and attractive city. The commercial, transportational, recreational, and cultural activities need to be integrated in a manner to give human scale to the city. A unique opportunity to achieve this is the "Great Park" which consists of 217 acres already linked to the rail system and within a three mile radius of the CBD.
This area could be a tremendous asset as both a cultural and a recreational attraction to the metro Atlanta area.
The Great Park
GREAT PARK: Background

As early as 1946, plans have existed for a connecting expressway between downtown Atlanta and its eastern suburb, Decatur. Acquisition of land for such a roadway began in the early sixties by the Georgia Department of Transportation (DOT). Approximately 219 acres had been acquired, and over 500 housing units destroyed before protesting residents in the surrounding areas, concerned with the environmental impact of a four lane expressway on their properties, were able to obtain a court decision which in 1971 suspended construction. By this time less than one quarter of a mile of the I-485 expressway had been completed.

To evaluate the project, Governor Jimmy Carter appointed the Stone Mountain Tollway Commission in 1972. The Commission recommended work on the tollway to cease until the transportation impact of the proposed MARTA East-West rapid rail line could be evaluated.
In 1974 when the Georgia DOT Environmental Impact Statement for I-485 was rejected, the city of Atlanta withdrew its support. The Atlanta Regional Commission (ARC) consequently modified the Year 1978 to the Year 2000 Regional Transportation Plan. This plan omitted I-485, and called for an improved DeKalb Avenue to be connected to the I-485 stub. In 1977, the Department of Transportation plans no longer included land north of St. Charles Place. Thereafter this land was either sold at auction or returned to its original owners.

The first non-transportation alternative use for I-485 land came in 1974 when the City of Atlanta proposed a "Great Museum Park." A year later the Ad Hoc Great Park Committee created a rights-of-way plan. In 1976 the Ad Hoc Committee was replaced by the Atlanta Great Park Planning, Inc. with representatives from the neighborhoods, city, county, and state. This committee produced three documents, The Great Park I, II, and III, focusing on housing, recreation, and economic development. During this period DOT also proposed a plan;
the Marbut Plan. This proposal called for a four-lane highway connecting downtown to the Stone Mountain Freeway. Again, this plan met with opposition from neighborhood groups, the Atlanta Great Park Planning, Inc. and the City of Atlanta.

After a decade of controversy, Governor George Busbee hired the Atlanta architect John Portman to masterplan the Park in 1979. This was the first in a series of plans that followed over the next five years.
GREAT PARK: Alternative Approaches

In January of 1979 John Portman began work on a land use plan for "returning the property (of the Great Park) to productive public use." Portman formed the non-profit Land Use Consultants, Inc. (LUCI) to conduct the study. In November the report was presented to the Georgia General Assembly. The plan called for dense housing in the north and south legs of the Park. As the centerpiece, LUCI envisioned an amphitheater encompassed by an international village for exhibits. Also included in the plan was the Jimmy Carter Presidential Library and a Georgia Heritage Hall Museum. On the transportation issue, this proposal called for a four-lane road to be tunnelled through the west and south legs of the Park. Re-routing some of the neighborhood roads was also recommended. A trolley system from the MARTA station to the center of the site was incorporated in the south leg. This proposal was not implemented, principally because of its cost.
A-Amphitheater
B-International Pavilions
C-Georgia Heritage Hall
D-James Earl Carter Presidential Library
E-Martin Luther King, Jr. Center
F-Tunnelled Roadway
G-Trolley
H-Housing

Portman Plan
In 1980 the Great Park Authority was created by the General Assembly for "formulating a development plan and plan of implementation for the creation of a unique inner city Great Park within the City of Atlanta." The Authority was composed of seven members appointed by the Governor. This assessment of the best possible use included transportation usage studies.

After examining transportation alternatives proposed by other agencies, the Great Park Authority reached a conclusion. Upgrading DeKalb Avenue into the six-lane Decatur Parkway, as proposed in the ARC Transportation Plan, would accommodate transportation needs in the Park area through the year 2000. The Authority recognized the need of the Parkway to be connected to the I-485 stub in the west and to the Stone Mountain Freeway in the east. The HNTB Report offered three alternative routes to accomplish this connection, each with advantages and disadvantages (refer to next page). The Authority accepted
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| AB-1        | Requires little Great Park property.  
16 residences disturbed  
17 non-residential properties  
Major structure: grade separation for Southern RR tracks  
$14.6 million |
| AB-2        | 6 residences  
23 non-residences  
Curve unsafe for high speed traffic.  
No improved access to Martin Luther King, Jr. Historic District  
Long bridge  
$19.3 million |
| AB-3        | 4 residences  
Displaces portion of MARTA parking lot at Inman Park-Reynoldstown station.  
$9.0 million |
all three as feasible alternatives, with the final selection dependent upon future socio-economic studies.

To maintain the possibility of implementation of any of the three alternatives, the Authority recommended 18 acres, the maximum acreage needed, be put on reserve until further study. The Authority also recommended the other 201 acres be transferred from the Georgia DOT to the State of Georgia for use as a "state facility to be known as the Georgia Great Park."\(^3\)

Having reached a viable conclusion on the transportation issue, the Authority then turned its attention to cultural, educational, and recreational uses for the property.
A-Outdoor Performing Arts Theater
B-James Earl Carter Presidential Library
C-Transportation Corridor
D-Improved Ponce de Leon Avenue
E-Improved DeKalb Avenue
A-James Earl Carter Presidential Library
B-Housing Area
C-Presidential Parkway

Young Plan
GREAT PARK: Activity

In 1981, the Greak Park Authority was entrusted to develop a plan which would "exploit the potential for furthering the emergence of Georgia's Capital City as an International City." After reviewing previous proposals and conducting further research, the Authority recommended the pursuit of three major facilities for the Greak Park land. They include a Georgia Heritage Hall, the Jimmy Carter Presidential Library, and an outdoor performing arts center.
Jimmy Carter Presidential Library

Contributing to the educational concept of the Greak Park, the inclusion of the Jimmy Carter Presidential Library is proposed. Former President Carter was initially interested in locating his library in the Metropolitan Atlanta area due to its advantages in educational facilities and population over other parts of the state. Upon examining the available land in the metro area, the Greak Park land is the most desirable location. Only three miles from the CBD, the Park area offers close proximity to public transportation and to Emory University. (President Carter is currently serving as an Emory Special Guest Faculty Member.) As a part of the Library Complex, a Policy Center is proposed.

The Library will contain documentation of the Carter years in the White House. Pertinent material which helped formulate the policy which dominated those years will also be present. Scholars from all over the world are expected to conduct
research in this facility. The Presidential Library will be a great asset to the cultural-education concept of the Great Park.
Georgia Heritage Hall

Upon arrival to Georgia, a visitor expects to find remnants of the Old South abounding. In Atlanta there is presently no facility for exploring this rich culture. The concept of the Georgia Heritage Hall as a showcase for exhibits indigenous to the South would fill this gap.

The Georgia Heritage Hall is seen as a cultural-historic facility serving as a state museum to provide a comprehensive explanation of Georgia's economic, cultural, and social development. Exhibition space would provide a living display of the State's accomplishments. Space for the use of local artists could be included.

Although the Heritage Hall can conceptually range from a basic facility like an exposition hall to an education center as a museum, it will be an integral segment of the Great Park. Strengthening the cultural-educational theme of the park, potential festival exhibition space would be provided.
Performing Arts Center

Due to the amount of land involved, the Great Park Authority "recommends that the provision of a performing arts center assume the highest development priority for the Great Park." As the first construction on the property, the performing arts center will become the centerpiece of the Park.

This multi-purpose, spectator-oriented complex will be a major addition to the inventory of cultural facilities of Atlanta. The type of facility recommended is of a new generation, an outdoor facility accommodating over 10,000 patrons. A portion of these patrons will be housed under a cover, while the majority will have on-the-lawn seating.

The Atlanta Symphony summer pops series is expected to relocate to this facility. As the summer home of the Atlanta Symphony Orchestra, the center will offer patrons much improved facilities. In addition to pops concerts, the facility "will be a showcase
for major musical, dramatic, and ceremonial events."^6
Festivals throughout the summer are seen as participants of this structure.

The central portion of the Great Park, known as Copenhill, is the proposed site for the performing arts center. A natural bowl suitable for an amphitheater is located within this area. With the expectancy that the performing arts center and related needs will consume a great portion of this central fourteen acres, it is recommended that this facility be completed prior to any other construction. This facility will be known as Copenhill Performing Arts Center.
Development of the Theater
THEATER: Historical Survey

The first documentation of theater design was recorded by the first century Roman architect and engineer, Vitruvius Pollio. In his treatise, ca. 27 B.C., he includes writings on subjects varying from architecture to astrology, as was customary in his day. Book V, chapters III-IX, is devoted to theater design. His primary concern was the comfort of the audience. To ensure comfort, he notes adequate ventilation and seating not facing the harsh southern sun are required. "Seating in vertical section should be plotted as a straight line function." Also, division of seat banks by crossovers should be limited. He was of the belief that if you can see, you can hear. In the field of acoustics he proclaimed several questionable dictates which went unchallenged for hundreds of years. They included: 1) the site is inherently good or bad acoustically, and 2) wood is good for
resounding. Vitruvius' concerns of comfort, sight lines and acoustics remain the primary concerns of theater design today.

The next documentation of theater design was published in Venice by the early Renaissance Italian architect and writer, Sebastian Serlio. Serlio was knowledgeable of the work of Vitruvius and had studied many ancient theaters. In "Of Perspective" he formalizes seating according to rank in society and, more importantly, writes of static scenery with a single vanishing point. Vincenzo Scamozzi elaborated on this idea when he designed multiple vanishing points in the scenery of Andrea Palladio's Teatro Olympico in Vicenza.

The final theatrical development of the Renaissance was the horse-shoe plan evidenced in Aleotti's Teatro Farnese. During this period the architect had ultimate control over the stage design as well as the architecture of the theater itself. A deep enclosed proscenium and mechanized, movable scenery link the Renaissance and the Baroque periods.
Theater design during the Baroque period was dominated by the Florentine family Galli-Bibienas. As theater designers, three generations of this family served the Hapsburg court in Vienna and were "lent" to royal courts throughout Europe. The most elaborate work was the Opernhaus built at Bayreuth, Germany by Giuseppe Galli-Bibienas in 1748. Along with theatrical performances, the Opernhaus was the scene of balls and other court activities. With seats for one thousand, the plan was bell-shaped. This became a trademark for Galli-Bibienas designs. The reason for the bell shape is unknown, although there is speculation of a misconstrued corollation between actual bells and the bellshape in terms of acoustics.

In the Residenztheater of Munich, innovations in stage equipment were realized. Designed by the French architect Francois Cuvillies the Elder, with stage equipment by Giovanni Paolo Gaspari, this theater was built for the private court of the Wittenlsbachs. The orchestra floor was
mechanized with a counter weight device to change from a gentle rake for theater performances to a flush condition with the stage for balls. In 1795 the Residenztheater became public and was the theater for many important events such as the premiere of Mozart's "Idomineo".

Moving away from continental developments, the English theater of the Renaissance was centered around the popular theater and the Elizabethan playwrights of William Shakespeare and Christopher Marlowe. As a commercial venture, the Swan Theater was the earliest public theater. However, this open-air type of theater was short-lived due to its dependence on the natural elements, and the black plague which swept over London, causing the populace to fear large gatherings. These early ventures into commercial theater were usually primitive structures of wood and straw, very susceptible to fire. The stage was of a thrust variety, accommodating the special needs of the Shakespearean plays. On the court level, theaters were fashioned by the Serlio-proscenium prototype.
The emergence of the professional symphony-orchestra drew greater attention to the symphony hall. During the late 18th century continuing through the 19th century, writings offering different theories on the ideal geometry for theater were published. The first of these articles, Essai sur l'architecture theatrale, was written by the Frenchman Pierre Patte in 1782. He covered both optics and acoustics, claiming the ellipse with a concave shape was most desirable. Patte also recognized the need for fire-proofing. Eight years later, George Saunders proposed the circle as the ideal plan in A Treatise on Theatres published in England. In 1810 the German Card Ferdinand Langhaus wrote On the Theater, or Remarks on Katacoustics. This was the most important document on acoustics since Vitruvius. Separating acoustics into two categories, speech and music, was an important step forward. Four other advances by Langhaus were:
1) His explanation of energy reflections and their use in auditorium design,
2) Near success in distinguishing reverberation time and reinforcement value of early reflections,
3) Correctly proposing convex surfaces are the best for acoustics, and
4) Describing a wedge-shape auditorium as the optimum design.

In 1838 John Scott Russell published "Treatise on Sightlines and Seating." Although short and simple, this remains the guide for sight lines.

The last third of the 19th century saw innovations and improvements in theater design and theater engineering. Examples of this are found in the Bayreuth Festspielhaus, the Chicago Auditorium, and the Boston Symphony Hall.

Carl Brandt, working as a consultant to the composer Richard Wagner on the Festspielhaus, resolved three problems. First he lowered the orchestra pit to reduce its visibility. Next he limited angles of the seating to 30° both vertically and
laterally, thus producing a wedge-shaped auditorium. This wedge inadvertently solved reverberation problems by eliminating parallel walls. This building marks the beginning of 20th century theater design.

In Chicago Dankmar Adler was responsible for additional innovations in the multi-use Chicago Auditorium, designed by the firm of Adler & Sullivan. These innovations included an electrical generating plan for light and forced ventilation, a hydraulic stage, and recommendation for an acoustical shell over the performing area. It should be noted that the acoustical shell was never installed; as a result, the Chicago Auditorium never achieved the status of a great concert hall that it would have with the shell.

Wallace Clement Sabine was hired in 1899 as the world's first acoustical consultant when the Boston Symphony Hall was being designed. The Hall quickly became known as one of the world's best music halls, and Sabine as the "foremost authority" on
acoustics. His "Introduction to Architectural Acoustics" was published in 1906. This document remains the basis of acoustical studies today.

After World War II, theater design began to diverge from the traditional proscenium form as new forms of drama were explored. The arena type of theater, more commonly called theater-in-the-round, is used for experimental performances requiring a close audience-actor relationship. The thrust stage allows the actor more contact with the audience while still having total control of part of the stage. This type of stage is particularly suitable when performing classical Greek and Shakespearean plays which contain asides and soliloquies.

On the technical side, a systems approach is prevalent in theater design today. Consultants in structural-mechanical engineering, electro-electronic engineering, theater design engineering, and acoustical engineering are used in most successful theaters and concert halls.
THEATERS: Basic Types

Historically, four major forms of theater have emerged: the proscenium stage, the open stage, the extended stage, and the arena. Shifts in theater design have been generated by changing demands in the audience-performer relationship, the number and scale of scenery changes, technological developments, reactionary trends, and repertoire.

The proscenium stage continues to be the most popular today due to its versatility in stage design. Scenery can be refined and changed frequently. With the proscenium acting as a "picture frame," the entire audience experiences the performance from the same orientation.

The open stage, a partially enveloping stage, was popular among Greek, Roman, and Renaissance performers. With more spectators close to the performer than in a proscenium arrangement, the optics are very good. Also, many performers
enjoy sharing the same space envelope with the audience. However, problems exist with diffused orientation, entrances and exits of actors, and finally with scenery changes.

The third theater form is the extended stage. As a partially enveloping stage, the extended stage shares the same strengths and weaknesses as the open stage. Popularized by Shakespeare, this form allows for the aside and the soliloquy while movement is taking place on another part of the stage.

The most restricting theater form in terms of stage design is the arena or theater-in-the-round. Used in ancient civilizations, the arena form is now used in experimental theater. The actor and audience enjoy intimate contact. Abstractionism in scenery requires the audience to use its imagination during dramatic action. Since the audience surrounds the performing space, diffused orientation is an issue and actor entrances and exits must be extremely skillfully planned.
THEATER: Outdoor Setting

Extending from story-telling around campfires to gladiator fights in the megastructures of the Roman Empire, the open air arena has been a cultural attraction throughout man's history.

In ancient cultures, the principal theaters were large amphitheaters situated on hillsides to take advantage of inherent good acoustics and sight lines. During the Renaissance, theater design turned its focus on the development of the indoor theater as writers and composers produced works requiring more complex production facilities. As these changes were evolving, the outdoor theater took on new forms. One intermittent form was the Shakespearean theater. A combination of extensive stage facilities and boxseating comprised the built form. A large, open-sky area in front of the acting area accommodated the majority of patrons. The festival theater was the other primary form of the outdoor
theater which gained popularity. As annual festivals, which attracted patrons from long distances, became popular adequate theatrical facilities were required. These ranged from temporary wooden structures to more permanent shells with backstage facilities.

Today the outdoor theater is experiencing a resurgence in popularity. In the past decade, sophisticated festival theaters have emerged from rudimentary structures. Examples of these are Wolftrap, Saratoga Performing Arts Center, and Blossom Music Pavilion. Due to a short season, these theaters must accommodate large crowds and attract patrons from long distances to maintain financial security. Handling large crowds introduces traffic flow as a major design consideration. Acoustics in a facility of this size, 2000 to 18,000 is also a major issue.

Serving as the summer home of highly respected performing groups is a positive element integrated into many programs.
This increases the financial stability of a facility while giving it the capability to be an educational institute. Opportunities in the form of workshops are offered to the aspiring performer to work alongside the professional in a realistic setting.

The patron of the outdoor theater is given the chance to enjoy a variety of performances in a relaxed atmosphere. During the summer months, the popularity of the fresh air, informal theater is overwhelmingly greater than that of its indoor counterpart.
Case Studies
The Saratoga Performing Arts Center is located in the recreational magnet of the Saratoga Spa State Park in upper New York State. Operated by a non-profit membership corporation, the Center opened in 1966. SPAC has become the summer home of the Philadelphia Orchestra, the Juilliard Acting Company, and the New York City Ballet. Dispersed between these major performances, the Center enjoys musical comedy, chamber music, grand opera, film series, modern dance, rock, jazz, operetta, country and folk music presentations. Additionally, the New York State Department of Education has developed educational programs to give high school and college students the opportunity to study with the three resident companies in the summer.
The facility is divided into three major areas, lawn seating, the house, and support facilities. The seating consists of a 90° arc extending 150 feet from the stage. A balcony with close to 1,500 seats allows for more seats under cover without adding viewing distance between spectator and performer. The backstage area consists of two levels: the balcony level with dressing rooms and trunk storage, and the orchestra level with the rehearsal rooms, the green room, stage loading and the shop.

A major design element recommended by the acoustical consultant is a zigzagged side wall angled to the stage to reflect sound. Other acoustical provisions include an adjustable plywood enclosure for orchestra concerts. For ballet and orchestra performances a plastic canopy above the stage reflects the sound outward while a plastic surface on the underside of the balcony soffit reflects sound down to the audience beneath it. Amplified sound can be
provided to the lawn seating area by six channel sound reinforcements on the outside of the amphitheater wall. Non-sound absorbent materials such as steel, plaster, and wood are incorporated throughout the design as reflective surfaces to distribute sound.
FACILITIES

Backstage: 25,000 sq. ft.
Auditorium: 40,000 sq. ft.
Balcony: 16,000 sq. ft.
Proscenium: 100' x 60'
Stage: 100' x 60'
Stage House: 110' high
BLOSSOM MUSIC CENTER
North Hampton, Ohio
Architects: Schafer, Flynn and van Dijk
Acoustical Consultants: Christopher Jaffe, Heinrich Keilholz
Seating Capacity: 4,822 covered
13,500 lawn seating
18,322 Total

In 1968 Blossom Music Center opened as the summer home of the Cleveland Orchestra. The Center's convex, fan-shaped roof rests on a network of tubular steel pipe trusses, covering close to 5,000 seats. The structural arch is 94 feet above the stage level, with a roof spanning over one and three quarters acres.

The season at Blossom Music Center opens in June and closes in September. Concerts include not only the Cleveland Orchestra, but also performances in rock, country, jazz, opera, and ballet. The Center accommodates 2,500 cars and 25 buses with an overflow area for 5,000 cars. Jeep pulled trains transport patrons to and from their cars on performance nights.
A cedar acoustical shell above the stage helps project sound so that electrical amplification is needed for the fixed seating areas. Lawn seating receives reinforced sound through speakers equipped with a delay system. The pit area accommodates up to 120 musicians and can be covered for additional seating when not in use. Beneath the stage area there are two levels. The upper one houses dressing rooms and a lounge. The lower level is a mechanical space. An ancillary building is connected to the stage area of the pavilion area by a covered walkway. This building houses the green room, practice rooms, the music library, administrative offices, and a rehearsal room.
FACILITIES

Auditorium: 32,000 sq. ft.
Stage: 56' x 72'
Pit: 120 musicians
Proscenium: 71' x 31'
Ancillary Building
Picnic Shelter
Restaurant
Art Gallery
Gift Shop
|-------|------|------|------|-------|

**Activities**

- Set Up
- Ballet
- Sunday Concerts
- Pops Concerts
- Special Attractions
- Festival Concerts
WOLF TRAP FARM PARK
Vienna, Virginia
Architects: Edward F. Knowles
John MacFadyen
Acoustical Consultant: Paul S. Veneklasen
Seating: 3,436 covered
3,000 lawn
6,436 Total

Located outside Washington, D.C., Wolf Trap Farm was established in 1966 as the first performing arts facility under the National Park Service. In addition to the covered outdoor theater, the 168 acre site contains four cabins for resident artists and a building for permanent exhibitions tracing the history of the performing arts in addition to the theater. The season extends from June to September with performances ranging from Count Basie to "The Marriage of Figaro." Included in its program, the Wolf Trap Company offers a chance to perform and classes to talented students.

All patrons arrive by private car and park in one of the four lots provided. The pavilion is a 35° concrete fan
containing 3,436 seats, with an adjoining lawn seating for 3,000 spectators. Approximately one quarter of the covered seating is contained in a balcony level. Between the house seating and the stage is the orchestra pit, large enough for 107 musicians. The stage has a loft capable of handling 109 sets. Storage is located behind the stage area. Beneath the stage and storage rooms are the dressing rooms.
FACILITIES

Stage: 96' x 63'
Proscenium: 71' x 28'
Orchestra Pit: 107 musicians
Backstage: 2,775 sq. ft.
Understage: 6,750 sq. ft.
Activities

- Technical Preparations
- Dance Repertoires
- Opera Presentations
- Pops Concerts
- Special Attractions
MOVEMENT SYSTEM

The major movement through the Great Park is vehicular traffic moving on an east to west axis. The roadway carrying the majority of this load is the four-laned Ponce de Leon Avenue on the north side of the park. On the southern edge, DeKalb Avenue takes a lesser amount of traffic. North Highland Avenue and North Avenue also accommodate traffic moving on the east-west axis. A large share of vehicular traffic moving through the park on the north-south axis utilize Moreland Avenue, which cuts through the eastern leg of the park. Neighborhood secondary streets in the area are also heavily travelled during the morning and afternoon peak hours.

The Inman Park-Reynoldstown Station of the MARTA Rapid Rail system borders the tip of the park's southern leg. This station is on the east-west MARTA line. Bus routes in the Great Park area connect either to the CBD or feed into the rapid rail system.
LAND USE

The Great Park, within three miles of central Atlanta, links the city's oldest "suburbs". The historic Old Fourth Ward, a black post-Civil War neighborhood, lies between the west and south legs of the Park. The Victorian flavor Inman Park, built around 1900, occupies the area between the west and south legs. Restoration of this neighborhood began in the sixties, and continues today. East of Inman Park lies Little Five Points, the commercial and cultural focus of the area. Adjoining Little Five Points on the east is Candler Park, a single family, middle class neighborhood. Ponce-Highlands fills the area between the east and the north leg of the Park. Although the majority of dwelling units of this neighborhood is single family units, a number of old apartment houses do exist. The limited commercial development along this portion of Ponce de Leon Avenue is currently under study for up-grading and re-zoning.
A north-south rail line lies just west of the Park's north leg. Both sides of this rail corridor contain industrial development, including Ivan Allen, National Linen Service, and Mead Industries.
PROPOSED PLAN

After examining previous proposals and site data, a plan for the Great Park has been developed. In this plan the focal point of the Park is the Copenhill Performing Arts Center and the Carter Presidential Library. A monorail running through the north and south legs of the Park provides access to this central activity node. The monorail links a parking area and the MARTA station in the south leg and a parking area in the north leg. Up-grading both Ponce de Leon Avenue and DeKalb Avenue is recommended. In addition to improvements of these major arteries, a road is proposed to begin at the I-485 stub, tunnel through the central portion of the Park, and empty into DeKalb Avenue.

These proposed elements will serve as a base from which the Great Park can expand. The center of activity will be established by the Copenhill Center and the Carter Library. Movement within the Park will be limited to the monorail, and the existing network of neighborhood streets. Parking will be accommodated on edges of the Park.
Proposed Plan

A-Copenhill Performing Arts Center
B-James Earl Carter Presidential Library
C-Four-lane road
D-Improved Ponce de Leon Ave.
E-Improved DeKalb Ave.
THE SITE: Environmental Characteristics

Located 1,000 feet above sea level in the foothills of the Southern Appalachian Mountains, Atlanta enjoys a moderate year-round climate, and lies within 250 miles of both the Gulf of Mexico and the Atlantic Ocean. Hot summer temperatures are tempered by the mountains and as a result very hot temperatures nearing 100° are a rarity. The highest temperature ever recorded was 105°F in July of 1980. The winters are also mild and seldom disrupt outdoor activities. The lowest temperature on record is -9°F of 1899. The average freezing season is from the middle of November to the latter part of March.

Rainfall varies from a mean of 2.5 inches in October to 6 inches in March. Dry spells often occur in the latter part of summer. During the summer months, the Bermuda High pressure system dominates the city resulting in relatively small fluctuations on the barometric pressure.
In autumn the wind direction shifts to the northeast and accompanies unpleasant weather. On a year-round basis, the number of clear days greatly exceeds the number of cloudy days.
The Activities
Usage of Copenhill Performing Arts Center will occur during the warm months of the year, from the beginning of April through the end of September. Beginning with the Dogwood Festival, the facility is expected to be in use for a minimum of five days per week. Festivals dispersed throughout the summer will enjoy the use of this facility. Most performances will be one night engagements taking place in the evening hours. While most activities will revolve around musical repertoires, dance, opera, and a variety of other performing art forms will be presented. Depending on the type of performance, attendance will vary from 5,000 to 12,000 patrons. Picnic dinners will be encouraged in the lawn area, while concessions in a plaza area will be available. An informal, festive atmosphere will abound.
<table>
<thead>
<tr>
<th>Month</th>
<th>Proposed Activities</th>
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<tbody>
<tr>
<td>April</td>
<td></td>
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<tr>
<td>May</td>
<td></td>
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<td>June</td>
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<td>July</td>
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<td>August</td>
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<tr>
<td>Sept.</td>
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</tbody>
</table>

Legend:
- Set Up
- Ballet
- Opera
- Jazz, Soloists
- Special Attractions
- Symphony
- Festival Concerts
ACTIVITIES: Music

The majority of performances in the Copenhill Center will be contemporary music. This includes soloists such as Helen Reddy and groups such as Jefferson Starship. The expected attendance for these concerts ranges from 8,000 to 12,000 patrons.

The second major user of the performing arts centers is expected to be the Atlanta Symphony. The Symphony currently conducts a summer pops series. On Sunday nights a free concert is given in Piedmont Park which attracts over 12,000 patrons. On Wednesday and Saturday nights an outdoor concert with a guest performer is given in Chastain Park. A ticket price is charged and the concerts are typically sold out at the capacity of 6,200. Due to the inadequacies of the facilities in both these Parks, the pops concert will benefit by being held in the proposed facility.
The Jazz Festival is held in September with concerts given by soloists and group ensembles. As a central performing arts location, Copenhill Center would enhance the Festival. The attendance to these concerts would be from 5,000 to 8,000.
ACTIVITIES: Dance

The anticipated usage of Copenhill Center by dance groups is limited. Touring dance companies twice a season is expected. With close to a dozen dance troupes in the Atlanta area, recitals by city talents may be anticipated. These performances will range from traditional ballets to experimental dance forms. Attendance will be limited due to the necessary degree of visual acuity.

ACTIVITIES: Opera

Opera performances in Atlanta are annual or bi-annual events. The Georgia Opera is the only existing company in the area which promotes interest. However, the New York Metropolitan Opera Company makes an annual spring appearance in Atlanta. Usage of the proposed outdoor performing arts center will be expected. Due to the limited availability, opera performances are not seen as a often occurrence. However, when they do occur a house exceeding 5,000 is expected.
ACTIVITIES: Other

In addition to contemporary music, symphony, dance, and opera performances, various other types of entertainment are anticipated. The possibilities include mime, drama, experimental theater, and usage by regional educational institutions.

Another opportunity for the center is the development of a summer program designed to promote young performing artists in the development of their careers. Such a program, conducted by nationally recognized artists, would integrate the aspiring artist with the seasoned professional artist. Such a program would be unique in the region, as well as beneficial in nurturing and keeping performing artists in the city.
Design Criteria
DESIGN CRITERIA: Acoustics

Acoustics in a large multi-use performing arts center must be integrated with the design from the conceptual stage through to completed construction. Basic conditions to insure good acoustics and to add to the success of the experience of the performer and patron, can be examined before construction. Giving careful attention to the requirements of each type of anticipated performance, the following conditions should be examined:

1. The noise level and reverberation in the facility,
2. The relationship of the performer to the audience,
3. The shape of the room in terms of echoes and interfering echoes.

The acoustical environment of the site is of primary importance, particularly in an outdoor setting. Background noise must be eliminated or screened through careful design and orientation of the facility. Equal distribution of sound is also highly desirable. The performer should be facing
the audience to direct sound outwardly. People in the back row should receive as close as possible the same sound energy as the people in the front row. Hot spots and dead spots must be avoided. The design of an acoustical shell in a concert hall should enable the sections of an orchestra to hear each other for synchronism, provide early reflections for all seating, and blend composition sounds of all performers while projecting the music uniformly.

Raking the seating will reduce noise levels while allowing sound to reach greater distances. For auditoriums and theaters the recommended Noise Criteria (NC) is 20 to 30. Although narrow, rectangular halls have been the most successful in the past, careful design can result in good acoustics with other shapes. One general guideline is the ceiling should be more than one half the width in height. In an outdoor facility enclosures to the sides as well as above the sound source, will help direct the sound.
It is critical that a multi-use hall be designed with the optimal dimensions to achieve optimal timing of reverberations, the optimal growth and decay characteristics at all frequencies, and to properly diffuse reflected sound. In the case of long distances between performer and audience, a time-delay system should be considered. Where a wide range of programs is held, running reverberation (AI) must be varied along with the reverberance time (RT) to provide good acoustics.
DESIGN CRITERIA: Optics

Of primary importance in theater design is optics. Each member of the audience must be able to see the stage clearly with little head movement. Seat desirability is directly related to vision. As illustrated Area A is the most desirable and Area F is the least desirable. The degree of necessary visual acuity is dependent on the type of performance:

1. Details of facial expression and small gesture are important in legitimate drama, vaudeville and burlesque, intimate revue and cabaret.

2. Broad gesture by single individuals is important in grand opera, presentation, musical comedy, and the dance.

3. Gesture by individuals is unimportant and movement of individuals from place to place is the smallest significant movement in pageant.

Several basic design considerations have developed to produce good sightlines. Curving the seats orients the occupant towards the stage while staggering the seats provides better vision. Radial aisles which do not intrude upon sightlines
are the most desirable. A maximum vertical angle of 30° is the limit for viewing the stage with acceptable distortion. This holds true in viewing from the balcony as well as from the first row. As a function of sightlines, the proscenium dimensions for maximum effectiveness are represented in the following chart.

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Usual</th>
<th>Reasonable Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drama</td>
<td>26</td>
<td>30 to 35</td>
<td>40</td>
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<tr>
<td>Vaudeville, Revue</td>
<td>30</td>
<td>35</td>
<td>45</td>
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<tr>
<td>Musical Comedy Operetta</td>
<td>30</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Presentation Opera</td>
<td>40</td>
<td>60</td>
<td>80</td>
</tr>
</tbody>
</table>
DESIGN CRITERIA: Codes

The theater building type falls under the large assembly category in the Standard Building Code. The following recommendations apply.

Stage Area

The principal concern is isolation of the stagehouse volume and the auditorium volume.

The wall between the stage and auditorium should contain no openings except the proscenium opening, one doorway at each side of the proscenium opening at the stage level and the orchestra pit level. These doors must be self-closing with a 3-hour fire rating and be less in area than 21 square feet.

The walls of the stage should have a fire resistance rating of 2 hours and extend from the foundation to 2 feet above the roof.

An approved system of automatic sprinklers should protect backstage rooms.

All walls and partitions enclosing exit routes should have a 2-hour fire rating.

The proscenium opening should be protected.
Auditorium Area

The concern of the auditorium area is with seats, rows, and crossovers affecting exits.

. Rows of seats between aisles should not contain more than 14 seats.

. A row of seats adjacent to only one aisle is limited to seven seats.

. The back-to-back minimum spacing between rows of seats is 30".

. Exits must be within 150'.

. Seats must be securely fastened.

. Aisles must be at least 42" plus an additional 1.5" for each five feet from beginning.

. Cross-aisles must be at least 3'6".

. Balconies with more than 20 rows of seats must have a cross-aisle of at least four feet.

. Railings of balconies should not be less than 26". If at the end of an aisle, the railing should be 36"; and if at the foot of stairs, the railing should be 42".

. Aisles should have a slope of 1 in 8 or less.
Isolated stairs are not allowed.

If the change in level can be overcome with the gradient above, steps are not permitted.

Steps must extend the complete width of the aisle.
**AUDIENCE**

| Box Office: | Located near entrance to theater.  
9 windows for individual sale  
1 window for reservations |
| Toilets: | Placed for easy access during show and intermission. More water closets for women than men. |
| Covered Seating: | Fixed metal seating for 5,000 patrons.  
Sight lines and acoustics of primary importance. |
| Lawn Seating: | Grass area for 7,000 patrons to picnic and view show. Sight lines and acoustics of primary importance. Less expensive than covered seats. |

**PERFORMER**

| Orchestra Pit: | Flexible area used by musicians during ballet, choral, and drama presentations.  
Direct linkage to stage desirable. |
| Stage Space: | Area where performance occurs. Size, shape and arrangement dependent on type of performance. Recommended level at 3 feet above the lowest row of seats. |
Stage Manager Space: Located in backstage area, close proximity to stage.

Quick Change: Minimum 50 sq. ft. per actor. Immediately adjoining stage. Toilets may double as quick change.

Dressing Room: Minimum 16 sq. ft. per person. Performer changes from street clothes to costume. Make up is applied. Location should be near stage but not necessarily adjoining stage. Included in this area: One toilet/six persons One shower/six persons One lavatory/four persons

Wardrobe: Minimum 120 sq. ft. storage and care of costumes.


First-aid Room: Minimum 50 sq. ft. Treatment of accidents.

Rehearsal Rooms: Area for individual and group rehearsals. Acoustical considerations employed.

PARKING

2000 cars Based on one car/three patrons. Adjustments made for linkage to MARTA rail and proximity to residential areas.
### AUDIENCE
- **Box Office**: 10 windows
- **Toilets**: 40 stalls - women, 30 stalls - men
- **Covered Seating**: 40,000 SF
- **Lawn Seating**: 70,000 SF

### PERFORMER
- **Orchestra Pit**: 1500 SF
- **Stage**: 3000 SF
- **Stage Manager Space**: 100 SF
- **Quick Change**: 150 SF
- **Dressing Rooms**
  - Individual: 3 @ 200 SF
  - Chrous: 1200 SF
- **Wardrobe**: 200 SF
- **Greenroom**: 500 SF
- **First-aid**: 50 SF
- **Rehearsal**
  - Group: 2000 SF
  - Private: 3 @ 200 SF

### TOTAL:
- 10,500 SF
PRODUCTION

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<tr>
<td>Technical Director's Office</td>
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<tr>
<td>Administrative Assistants</td>
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<tr>
<td>Lighting &amp; Control Booth</td>
<td>200 SF</td>
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<tr>
<td>Storage</td>
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<td>Loading Platform</td>
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<tr>
<td>Receiving Space</td>
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<tr>
<td>Janitor</td>
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<td><strong>TOTAL:</strong></td>
<td><strong>2,050 SF</strong></td>
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PARKING

<table>
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<tr>
<th>Space</th>
<th>Size</th>
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<tbody>
<tr>
<td>2000 Cars</td>
<td>800,000 SF</td>
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</tbody>
</table>
Spatial Relations
The Proposal
FOOTNOTES


2 Ibid., p. 10.

3 Ibid., p. 30.

4 Ibid., p. 31.

5 Ibid., p. 37.

6 Ibid., p. 38.
LIST OF WORKS CONSULTED


Bullard, Melinda, City of Atlanta.


Perry, Roz. *Atlanta Arts Festival*

Roark, Randy. *Atlanta Bureau of Planning.*


