

A COMPOSIUM IN FOUR QUARTERS

by

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Thank you Mr. Hunt, Mr. Kilper, and Mr. Ferrari for allowing me the freedom to choose my direction while encouraging me throughout the year.

Thank you Mr. Regan and my friends in Alexandria for rekindling my enthusiasm.

Thank you Matthew Harwood for photographing the models and for the long hours spent on the road.

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ABSTRACT

Sonata Form The form commonly employed for the first movement of a sonata and indeed of other works not so called - trios, quartets, etc.- as well as concertos and symphonies, which are structurally similar. Two contrasting themes, in two related key areas, are announced in the exposition which may be repeated; then comes a development section based on this material, perhaps treated motivically with modulating passages, followed by a recapitulation which generally resembles the exposition though without the key change between first and second themes (properly called 'subjects'). The second-subject section may have more than one theme, but these will share the same key. An introduction may open a sonata-form movement, and a coda may end it (Headington, p. 134).

compose to make or create by putting together parts or elements
 to create or produce (a literary or musical piece)
 to make (one's mind or body) calm or tranquil; to quiet
 to arrange aesthetically or artistically

symposium a convivial meeting for drinking, music, and intellectual discussion among the
 ancient Greeks

composium compose + symposium

(The American Heritage Dictionary of the English Language).

INTRODUCTION An opening section, short or long, to a piece or movement normally containing material that does not recur... (Headington, p. 70).

This thesis evolved from a desire to create a place for the study of music. By specifying that the musical activity center around the creative act of composition, I was able to explore several ideas. These include the applicability and limitations of the use of analogy in architectural design, similarities and differences in attitudes and methods used in composition and architectural design, and the use of analogy as a means of extending a project from the realm of problem solving to something more exciting - at least for the designer. My attempt to enrich the programmatic concerns of a conservatory for composition has led to a project with no historical precedent, no model, no name. However, the place is an arrangement of building elements housing a creative activity in a retreat-like environment, all features giving rise to the title "A Composium in Four Quarters."

Study of the general nature of composition at this composium is made through the interpretation of specific works of four masters: Johann Sebastian Bach, Ludwig van Beethoven, Richard Wagner, and Arnold Schoenberg. Therefore four distinct and isolated quarters exist, one for the study of each composer, in which students live, as well as practice, perform, and compose music. The

concentration of activity within each quarter will include studies of the sociopolitical, philosophical, scientific, and artistic settings in which each particular composer lived. By gaining an understanding of the attitudes and techniques of these composers, as well as by placing their works into proper historical context, students can explore their own developing styles with greater sensitivity.

Transcriptions, transformations, and variations upon the themes of each composer are written and performed within the appropriate quarter. However, original student works are composed and performed in spaces which exist inside a continuous wall which connects all four quarters. This wall is analogous to a time line and acts as the foundation upon which the four isolated, yet powerful, entities of the four selected composers rest. The quarters are arranged upon it in a linear fashion implying the chronological order: Bach (1685-1750), Beethoven (1770-1827), Wagner (1813-1883), and Schoenberg (1874-1951). The students experience their six month study of each master in this sequence which permits them to assess the contributions that each made to all who followed. The works of other important composers are housed in spaces along the wall in correct chronological position also. The wall is thus a continuous ribbon. It acts as a unifying element in terms of human experience and in terms of architectural composition. It acts as a boundary which encloses the quiet, calm, introspective environment of the composium and yet provides a stage for public exposure.

EXPOSITION The opening section of a fugue, in which the voices (parts) enter in turn. Also the opening section (discounting any purely introductory material) of a sonata-form movement, in which the first and second subjects are stated (Headington, p.50).

The two subjects of this project are 1) the analog: the use of music as an analogy can be a method for generating architectural ideas or it can become a device for examining parallel ideas in music composition and architectural design, and 2) the place: a composium is a place for living music. The two themes, analog and place, are necessarily interrelated and become more so in the development section of the work. One is process; the other is product. It is often difficult to isolate the two.

Theme 1. The analog

"In the course of the twentieth century it has become recognized that analogy taken in the most general sense plays a far more important role in architectural design than that of simply following functional requirements or solving pure technical problems" (Ungers, p. 102).

"Designing with images, metaphors and analogies is by far more complex than the simplistic extrapolation of statistical data. It supersedes any 'functional' approach and turns the design process from a solely materialistic expression into richer, more imaginative visionary concepts" (Ungers, p. 105).

The use of analog in design should also enhance the meaning and experiential value that a place holds for its users. The contributions of Bach, Beethoven, Wagner, and Schoenberg are given as a tool for design of this composium. This is done in an attempt to create a place which reinforces the musical education of its students with visual, tactile, and other environmental stimuli.

There are attitudes and techniques developed by every composer which result in a personal style. The four composers represented in this composium were chosen for their marked individuality. There is no confusion in the differentiation of a Bach fugue and a Schoenberg string quartet. However, there are common elements which these composers have manipulated to express their musical ideas.

The first step in the use of a music/architecture analogy must therefore be the identification and exploration of such basic features. Their translation potential will be described in this, the exposition, section. The identification of specific features of each composer's music will follow in the development section accompanied by drawings of the corresponding quarters. Finally, the two themes of analog and place will be reinterpreted in the recapitulation section. The reverse translation - i.e., from architectural experience to musical connotation - will be explored there in order to simulate the student's interaction with his environment.

The common features of music which I have chosen to interpret are pitch, duration, organization, three dimensions: melody, harmony, and rhythm, flow of musical idea/mood over time, and interpretation. The meanings of these terms, as well as their role in the use of the analog, are described below.

All sound has pitch and duration. Music is the organization of these fundamental elements for self-expression. "For the true product of the mind - the musical idea, the unalterable - is established in the relationship between pitches and time-divisions" (Schoenberg, p. 326). Pitch and time-division are not absolute or unchanging. Over the centuries, the scales of pitch, i.e. arrangements of notes in order of their frequencies, used in Western music have undergone gradual evolution. The system of scales used until the seventeenth century was known as modal. The modes were

seven note (diatonic) scales named after ancient Greek styles of melody, and these modes contained two principle notes corresponding to the modern tonic and dominant. The key system, which superseded modal techniques and is utilized today, provides sets of notes related to each other through the principle note - the tonic. The notes of the key are indicated by a key signature of sharps and flats at the beginning of each line in a composition. The technique known as polyphony, the art of combining melodic lines in two or more parts, necessitates a concern for the consonance or dissonance of tones which sound simultaneously. The Greek geometer and philosopher, Pythagoras, is credited with first noticing the consonant intervals of the fourth, the fifth, and the octave. A five-note pentatonic scale, commonly used in folk music, can be generated from these intervals. If this scale is extended through the use of fourths, fifths, and octaves to fill in the two missing tones of the diatonic scale, the Pythagorean scale results. A strange closure error, in which the B# is actually higher than its equivalent C, characterizes this scale. As the major and minor third became acceptable consonant intervals, the Pythagorean scale gave way to numerous scales based upon meantone tuning which averaged out this closure error. The use of major and minor thirds led to the development of the major triad and the just scale which follows from it. This scale is generated by the addition of a minor third to a major third in the frequency proportion of 4:5:6, the foundation of Western music for several hundred years. But this produces two sizes of whole tones which become too restrictive in music which utilizes free modulations, or key changes. The more practical

tempered scale, in which the size of every whole note is a constant, was developed to alleviate this problem and was popularized by J. S. Bach in "The Well-Tempered Clavier" (Backus, pp. 116-129).

It is interesting to note that although the relationships of pitches are fixed by the selection of a type of scale, the standard of pitch remains subjective. It is customary to fix the note A above middle C as the standard of reference. However the frequency of the standard A has gone up over the years. Handel's A was 422.5 cycles per second but by the end of the nineteenth century, the standard A had risen to 455 cycles per second in England and 461 cycles per second in the U.S. Although the International Standards Organization suggested the adoption of A-440 in 1953 as the standard frequency throughout the world, individual performers and ensembles continue to select their own standard (Backus, pp. 131-132).

The scale of time divisions is straightforward although its interpretation can be even more subjective than that of pitch. It can be represented mathematically as a 2^n series in which a sixteenth note is half the length of an eighth note which is again half the length of a quarter note. These are arranged in a metre, or pattern of beats, which is indicated by a time signature. However, the speed or tempo of a section in a piece is indicated with such terms as largo, adagio, allegro, etc. These are subject to the interpretation of the performer and are generally treated only as a standard around which the speed may fluctuate.

These basic elements of pitch and duration and their associated rules for organization are translated into a basic architectural element which is manipulated to create a form language. Just as composers arrange notes which possess pitch and duration, an architect can arrange parallel walls which possess size and position in space. In both instances, a strict primary structure exists in which secondary elements are more loosely arranged to provide variation.

If one considers the spacing of walls to be analogous to time-divisions in music, the in-between spaces can be viewed as analogous to pitch. Rules can be established to govern the spacing of walls, but like those which apply to pitch and time-divisions, they must not be absolute or unchanging. They must adapt to site and program requirements. The walls give rhythm and sequential experience to the composium while the spaces give shape to the body. The use of parallel walls establishes a grain. One moves vertically with the grain (down the slope) and horizontally against the grain (with the slope). Thus the geometry of the walls must accomodate vertical circulation and the geometry of in-between spaces must allow for a slope acting as a mass retaining wall, a necessary feature on the steep site. This slope is carved by various amounts to accomodate habitable spaces.

The musical idea - "the unalterable" - which Arnold Schoenberg referred to is more than a relationship between pitches and time-divisions. It is the basic organizational unit upon which the composer performs operations throughout a work or section of a work. It can be brief or fragmentary in which

case it is known as a motive or figure. Or it can be a melodic idea of distinct nature forming the main body of a piece or section of a piece. This is the definition of a theme or subject. A theme should be memorable, especially in sonata-form where two themes undergo simultaneous development. The listener should be aware of changes in previously stated thematic material. The techniques applied to the basic organizational units include modulation (key change), contrapuntal treatment (the knitting together of themes), transformation (change of character, but not identity of a subject), and change in tempo of the flow of an idea.

Basic organizational units exist in architectural design also. A special music place exists in each quarter of the composium. It is in essence the heart of the studio. An organ shaft, an outdoor romantic space, a flexible theatrical set, and an instrumental design workshop are the focal points of the Bach, Beethoven, Wagner, and Schoenberg quarters respectively. These spaces become the organizational devices by embedding their functional arrangements into larger organizations. The functional units vary in type of activity and scale, but all arrangements can be treated in a manner analogous to the development of motives or themes. The resulting organization must not be treated with insensitivity to architectural needs, but it can introduce order which must then be evaluated in terms of context, light, balance, beauty.....

There are three dimensions in music - melody, harmony, and rhythm. The succession of sound, known

as melody, is translated to form a succession of spaces/walls along the site. The simultaneity or overlap of sound, known as harmony, is translated to establish vertical organization of spaces on the slope. The flow of music and its shaping, known as rhythm, is translated to create a flow of spaces/walls. By varying the thickness, spacing, and deformation of the walls, the horizontal and the vertical are integrated. Rhythm, the time element, assumes a similar role in music by tying melody and harmony together. The mapping of three dimensions of music onto three dimensions of space suffers in credibility from its obviousness, and yet it provides a means of exploring vertical and horizontal tone relationships in architectural language.

The linear organization of spaces is a direct reaction to the flow of music over time. By experiencing the spaces sequentially, one is aware of the synchronic aspect of architecture. Techniques for the connection of musical ideas and shifts in mood are features which are translated into spatial sequences. Scale, material, light, surface texture, color can all be manipulated to create drama, perhaps even music, in architecture.

The interpretation chain which exists between composer/performer and performer/listener is the final potential explored in the use of the music analogy. A composer documents his musical ideas by fixing them upon a score with symbols of pitch, duration, dynamics, tempo, and mood. He does this to ensure that his musical idea will be performed as true to his image as he desires. And yet, he

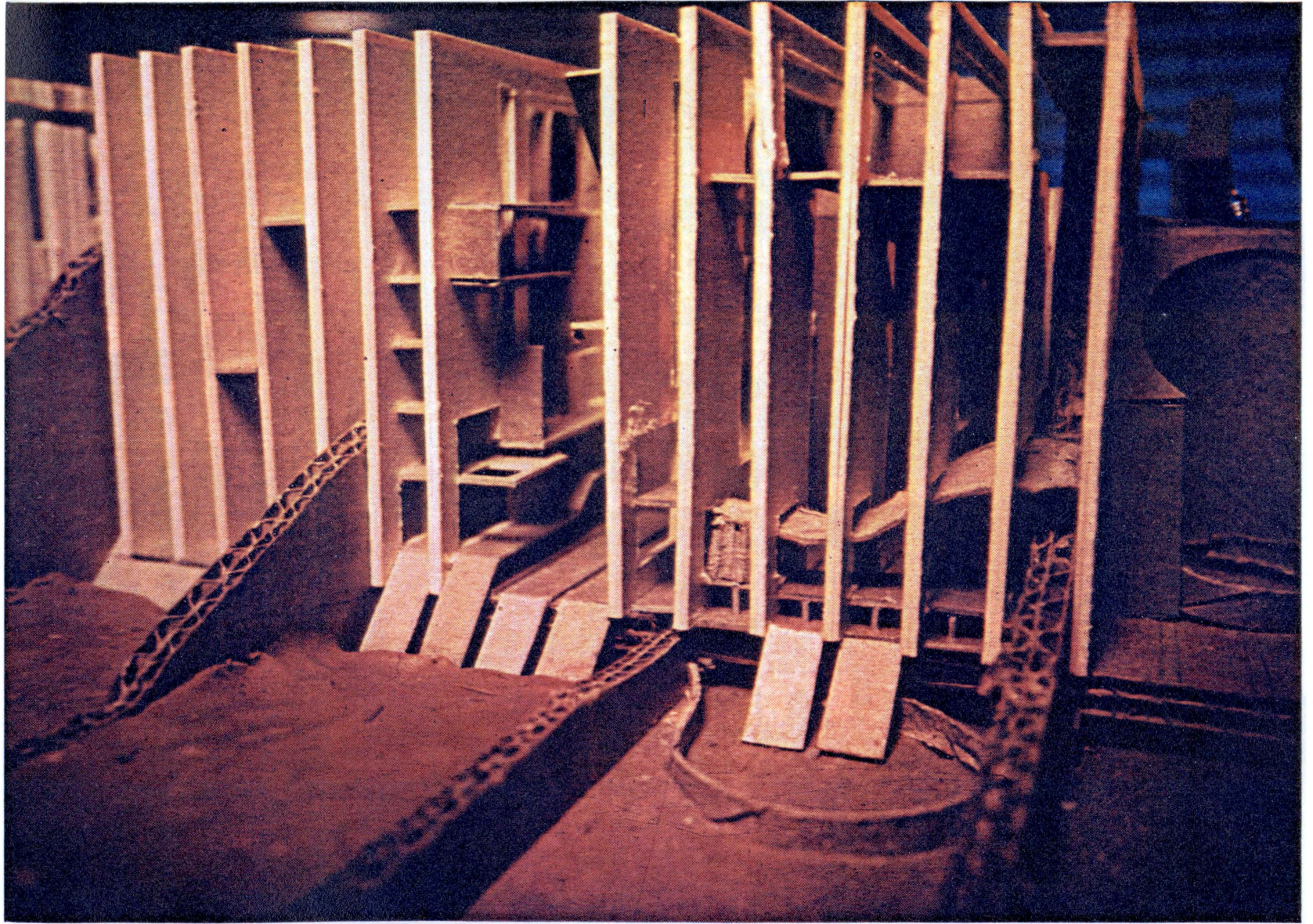
realizes that each performer will interpret his symbols differently. Furthermore, each listener will have different feelings evoked by any given performance. The balance of constants and variables in the interpretation of a piece is controlled to varying degrees by different composers. This balance of what is constant and what is variable can be controlled in architectural design also. Allowing the users (performers) more or less involvement in determining their environment is one way of doing this. Providing spaces which call forth a broad range of reactions in different users (listeners) is another way of translating this composer/performer/listener chain of interpretation.

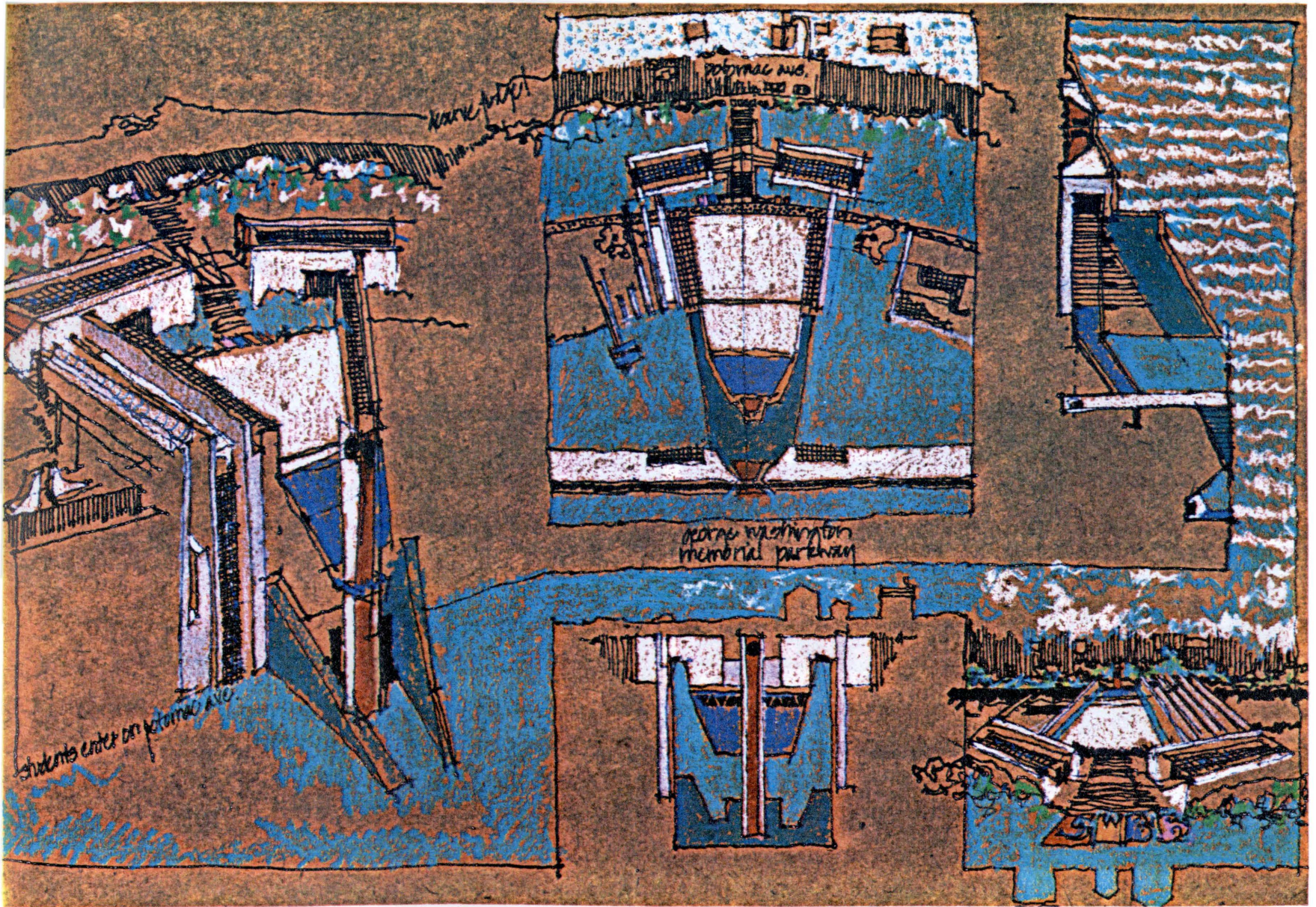
The analog

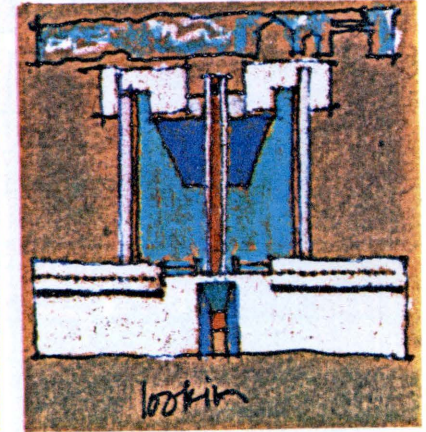
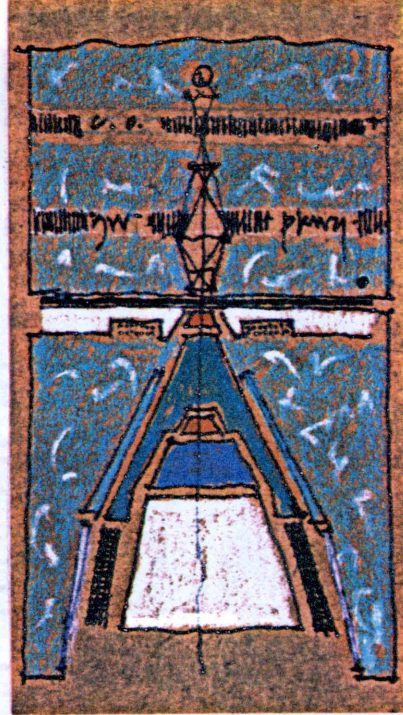
Figures

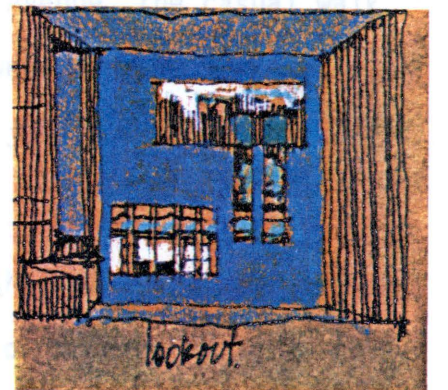
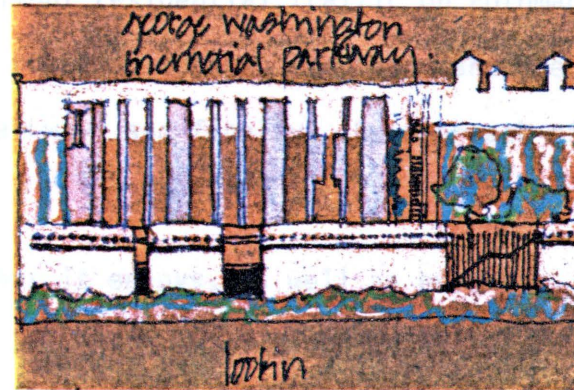
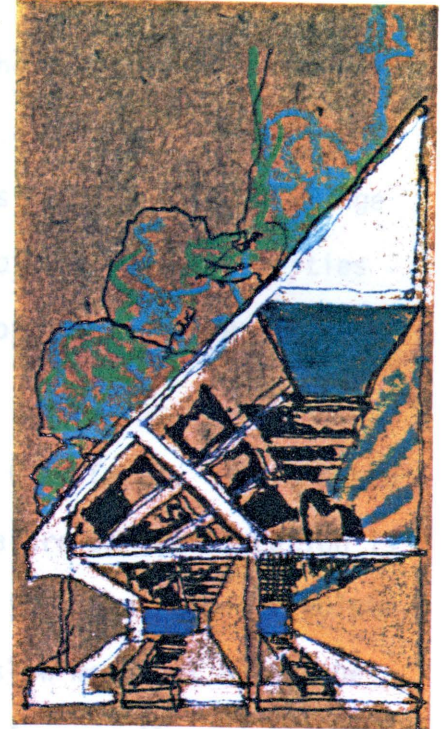
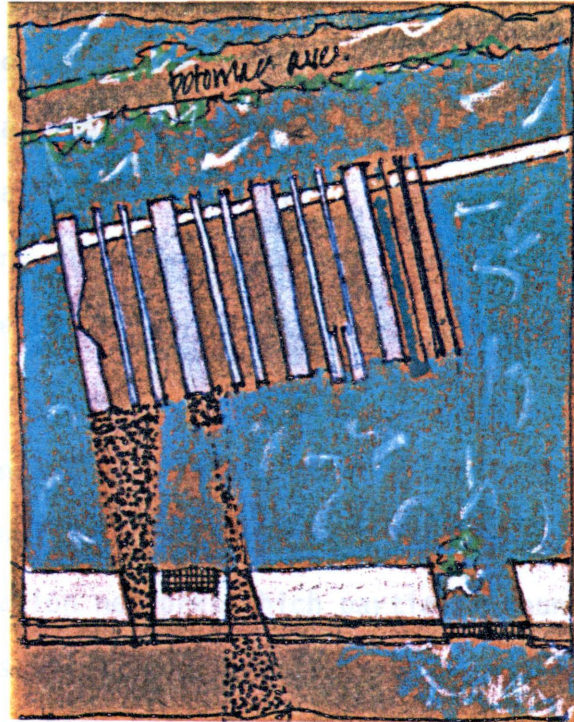
Study in form language

Sketches of the "time-line" wall









Theme 2. The place

The composium must provide a calm, quiet environment and yet it must also have access to a musical/cultural community. For this reason, a site was chosen that would provide a natural setting within a metropolitan area. It is located in the District of Columbia, just north of Chain Bridge and three miles upriver from Georgetown. The Kennedy Center, the Library of Congress, facilities of the Smithsonian Institution, and the city's universities are just some of the resources from which the composium can draw.

The site is a narrow strip of land, running parallel to the Chesapeake and Ohio Canal. It is owned by the U.S. Government for use by the National Park Service. The linear nature of this location is reinforced by the six linear transportation networks which partially bound it. The range of volume and speed of traffic along these routes is considerable. It includes the slow movement along the canal and its adjoining bikepath, the light residential traffic on Potomac Avenue, the casual walk of local residents along the abandoned railroad tracks, the rapid and frequently heavy traffic along the George Washington Memorial Parkway, and finally, the approach of jets to the National Airport.

The site is a steep wooded slope and thus it enjoys, as well as protects, the privacy of the residential neighborhood above. However, the lack of privacy and acoustic isolation created by the parkway below and the airplanes above has been recognized. The design involves the use of the continuous

"time-line" wall as a buffering element. It acts as a rampart upon which the students can walk while it encloses and shelters the composium. Its height does not block the view of the upper portion of the quarters from below. Thus, people who drive, canoe, or bike past can experience the rhythmic patterns and formal composition of the composium. The abandoned railroad bed is integrated into the design as part of the rampart wall. Students walk along the railroad remnant and look out across the top of the quarters. The composium has only these two faces: one that is experienced at a relatively high speed from below and one that is experienced at a leisurely pace from above. They are articulated accordingly.

As the seasons change, the canal and its parent, the Potomac River, pass into and out of view through the everchanging screen of foliage. These seasonal changes, nature's performance of trees and water, may be viewed as a source of pleasure for the students.

The place

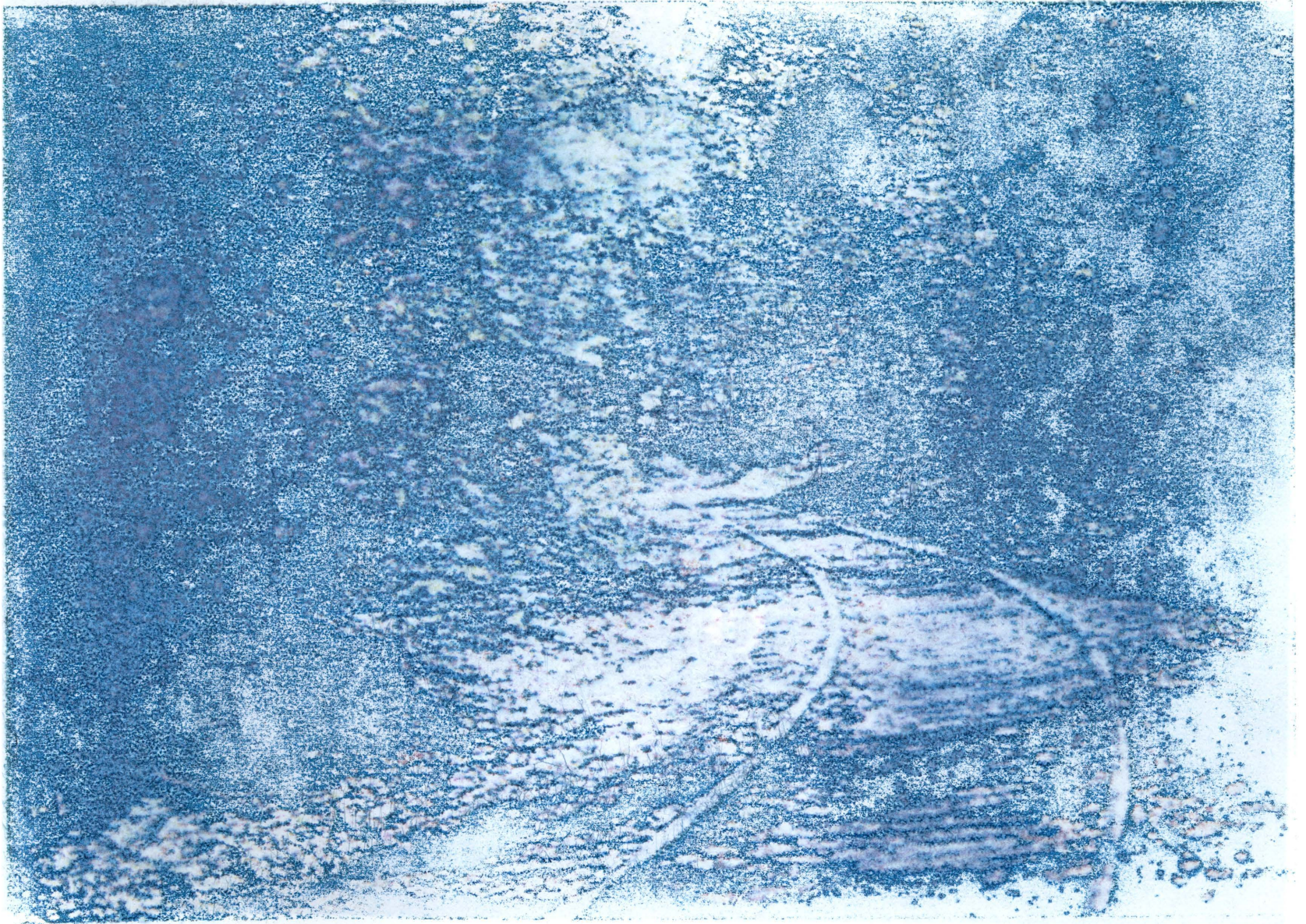
Figures

Railroad remnant: private facade

Reflections in the canal: public facade

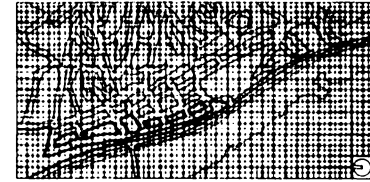
Linear transportation networks on the site

Scale relationships of the site

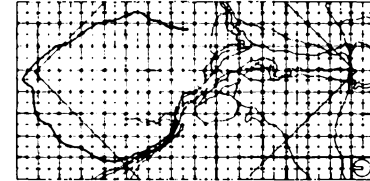




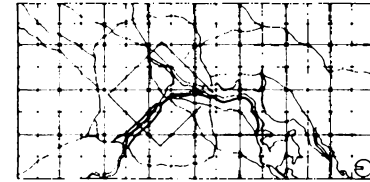
Potomac Avenue



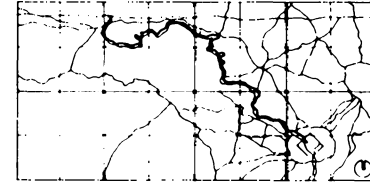
Baltimore and Ohio Railroad



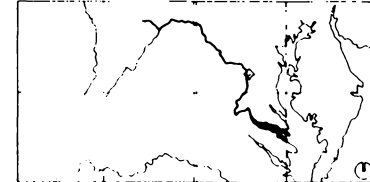
George Washington Memorial Parkway



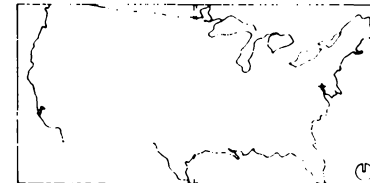
Chesapeake and Ohio Canal



Potomac River



National Airport





DEVELOPMENT An exploratory and expansive treatment of musical material such as occurs in the development section of a sonata-form movement. The techniques involved include key change (modulation) and the contrapuntal treatment of already stated themes or of shorter motives derived from them (Headington, p. 42).

The two themes which were stated in the exposition - the analog and the place - are explored further in the development section. The basic elements common to all composition - i.e., pitch, duration, organization, three dimensions, flow of musical idea/mood, and interpretation - are examined specifically in the works of Bach, Beethoven, Wagner, and Schoenberg. The specific translational devices used in the design of each quarter are not explicitly stated. These operations are specialized applications of the analog which was described on a general level in the exposition section. They are personal and are admittedly quite subjective. It is my belief that the act of any composition - of music or architecture - contains much that is personal. Therefore the work must be evaluated not in terms of intention, but in terms of itself. For this reason I present the quarters separate from any description of a one to one mapping process. This does not reduce the importance of the analog or of any design method. It merely allows the composition a life of its own.

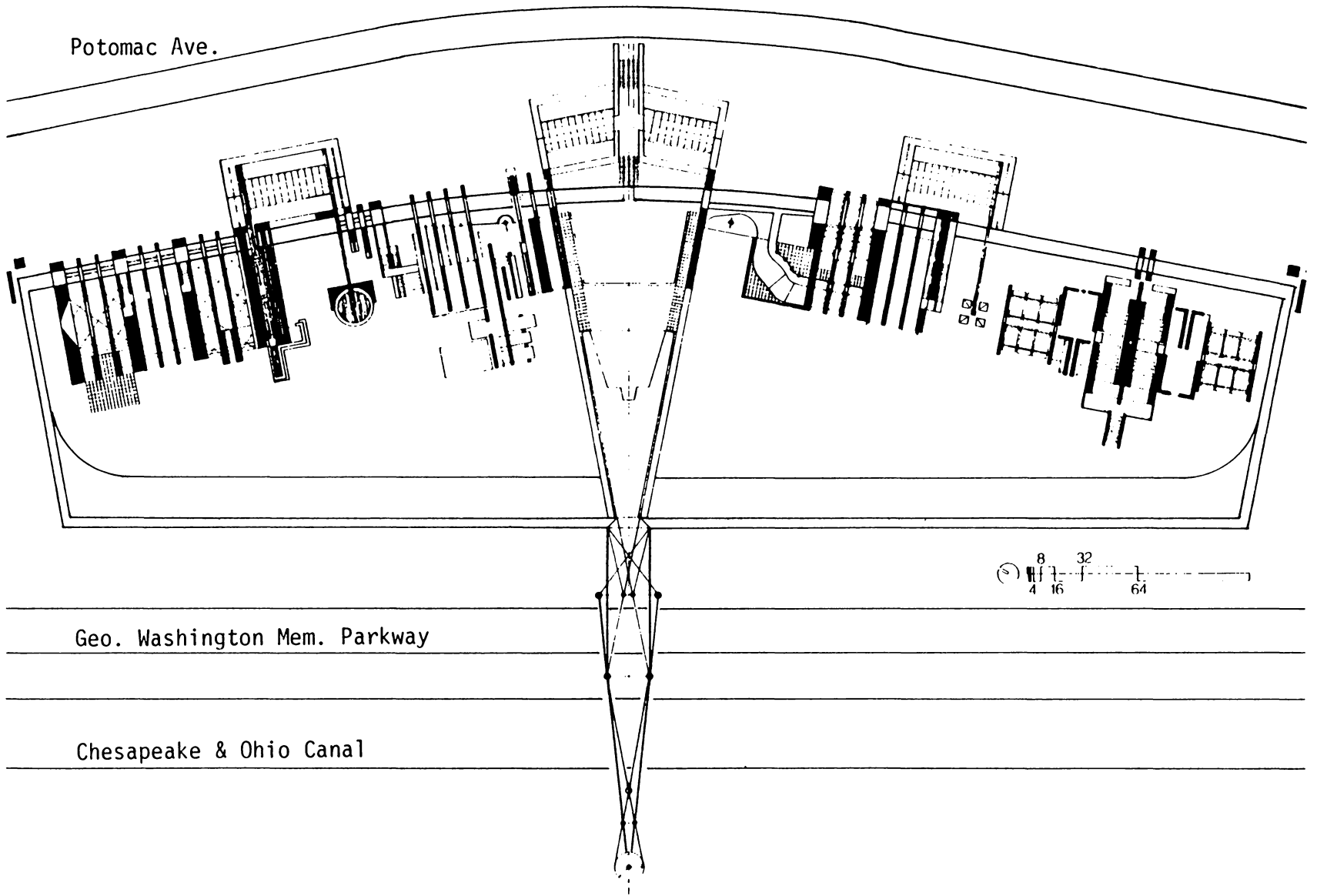
Figures

Plan of composium

Elevation of composium

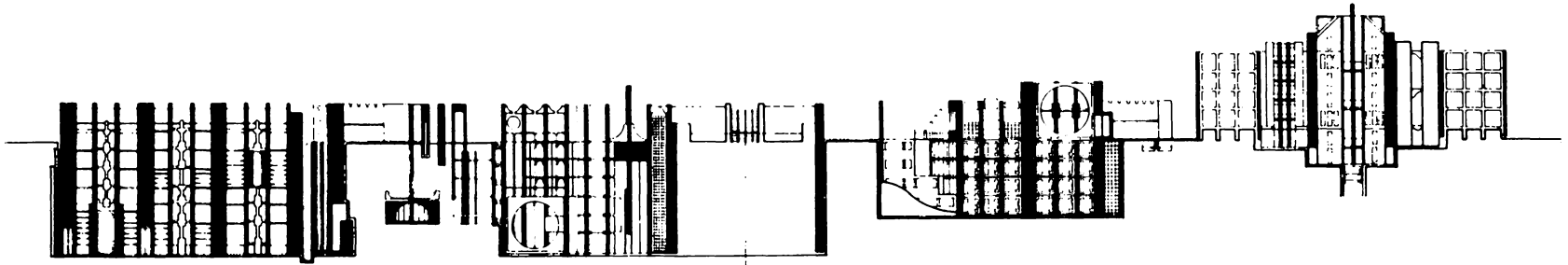
Cross section of composium

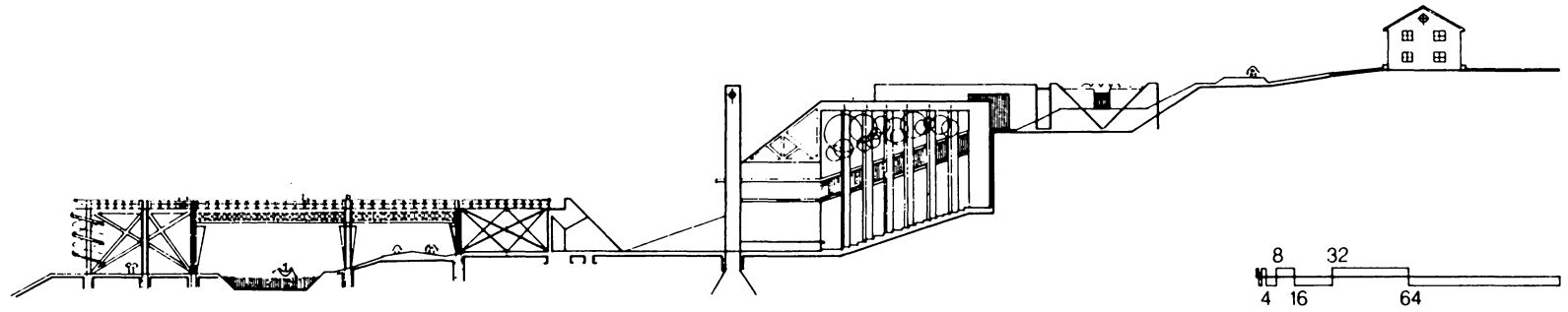
Potomac Ave.



Geo. Washington Mem. Parkway

Chesapeake & Ohio Canal





JOHANN SEBASTIAN BACH (1685-1750)

"... I chose music in keeping with my needs. If I chose to interrupt my thinking for a while there was piquant jazz; when I wanted impetus for a spurt there was the speculative Bartok; if I desired a feeling of freedom, there was the Beethoven of the quartets; when I wished to concentrate on a point, there were the spiral movements of Mozart; and then, Bach. He was best for times when I needed spiritual balance."

Kobo Abe
(Abe, p.16)

The most methodical type of composition attempted by Bach was the fugue. A.E.F. Dickinson describes fugue as a form which "has never been fashionable, or historically necessary - there is rarely a prophetic meaning or religious doctrine or mass-consciousness round the corner" (Dickinson, p. 7). But Bach was writing for church and family - not for the general public. His music is a model of discipline and his attitudes pertaining to his work and life are lessons in devotion, submission, and faith.

Changes in the keyboard were occurring during Bach's time which made a complete set of common relationships in every key and between keys possible. The first volume of "The Well-Tempered Clavier," published in 1722, contained twenty-four preludes and fugues written one in each major and minor key. Its effect was the popularization of the tempered scale. This methodic endeavor was followed by another volume of twenty-four preludes and fugues and the total work became known as the "Forty-Eight" (Boyd, p. 48).

Counterpoint is essential to fugue. It is the essence of a Bach fugue. Christopher Headington defines

counterpoint as "the art of combining two or more melodic lines.... Melodic and rhythmic shape are equally important in contrapuntal writing, where the ear must perceive the music both horizontally and vertically to absorb it fully: that is taking in both melody and harmony" (Headington, p.40). Throughout all of Bach's fugues a strict metronomic beat must be maintained in order to relate the contrapuntal lines precisely.

The organizational structure of a fugue consists of the delivery of a musical idea, a characteristic phrase known as the subject, in the first voice. Following voices enter at various intervals in imitation. After due exposition, the subject develops in fresh contexts of key, accompaniment, and voicing. The subject returns to the tonic in the final section of the piece. Bach viewed the subject of a fugue as all important. After completing the "Forty-Eight", he desired to work on a longer, more methodical series based upon one ideal subject. This became "The Art of Fugue." Bach's philosophy can perhaps be approximated as follows: "Method is the composer's business...if he can nourish a work of art by fugue on one main subject, it will have the advantage of a persistent symbol and a broadly consistent structure" (Dickinson, p. 145).

A definition of counterpoint describes the three dimensions of music as necessarily interrelated. They are especially so in Bach's fugues. Melodic lines depend not on lyricism but on the knitting together of short, incisive and memorable phrases. Every single melodic line suggests polyphony,

the art of combining melodic strands in two or more parts, creating a rich texture (Boyd, p. 11). Harmony and melody are inseparable in Bach's works. Harmony is the vertical overlap of the melody in various voices, but it is not an accidental result. It is controlled to produce a coherent whole. The ideal contrapuntal texture, found throughout Bach's works, is one where the various parts are at any moment melodically interdependent and rhythmically independent. The rhythmic characteristics of a fugue are established in the opening and remain unchanged throughout (Boyd, p. 21).

Flow of the musical idea through a Bach fugue is derived mainly from the "movement of the harmony implicit in the polyphony or in the melody itself" (Boyd, p. 10). The mood remains the same, however, throughout such short works. Only the settings of the subject vary.

Bach developed a unique means of demonstrating the inner logic of his fugues in "The Art of Fugue," writing each voice in its own clef (Dickinson, p. 117). This individual means of communication with each voice, i.e., with each performer creates a uniqueness which exists within a disciplined framework exemplifying Bach's true originality.

JOHANN SEBASTIAN BACH

Figures

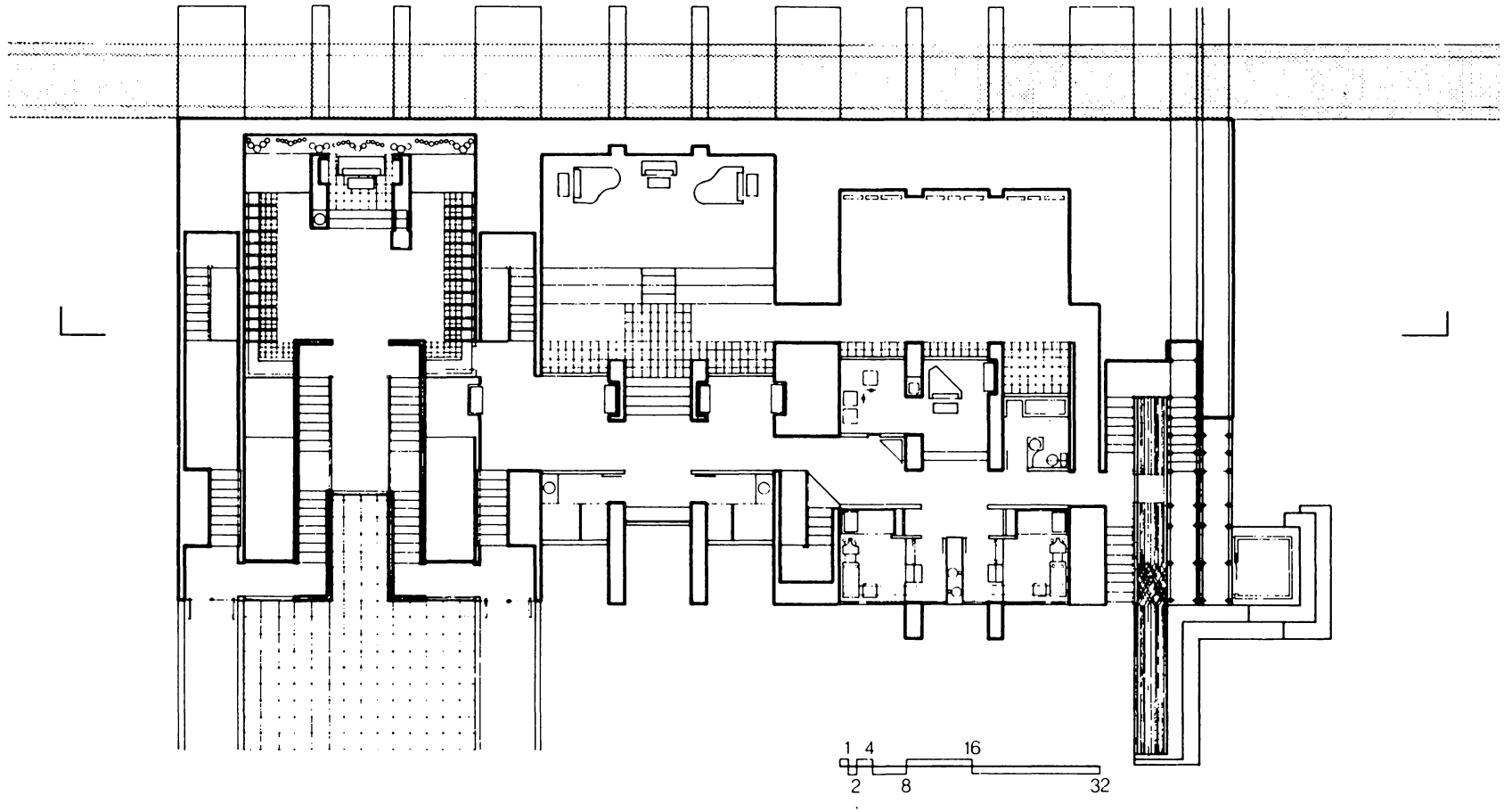
Study sketch

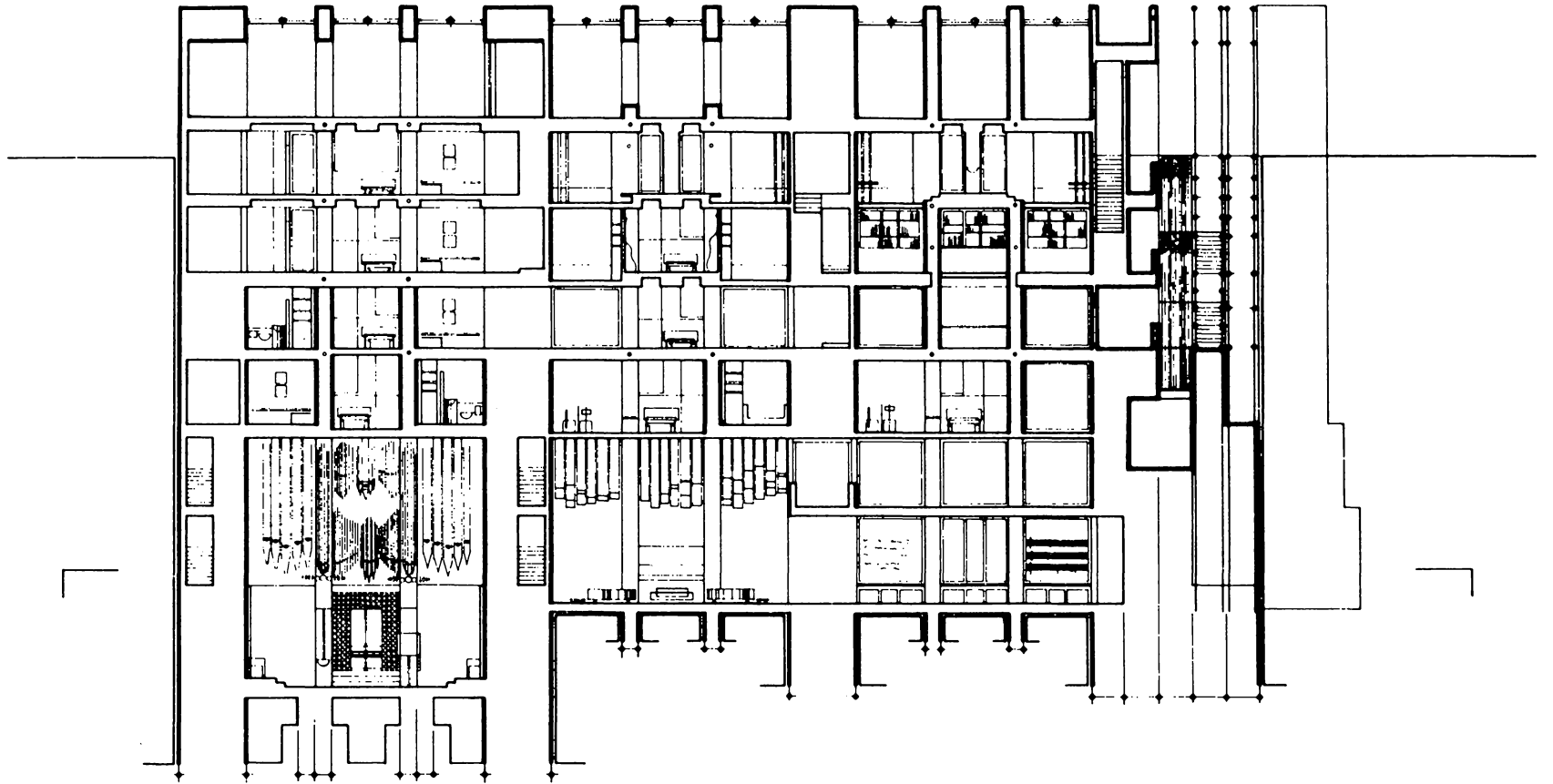
Floor plan

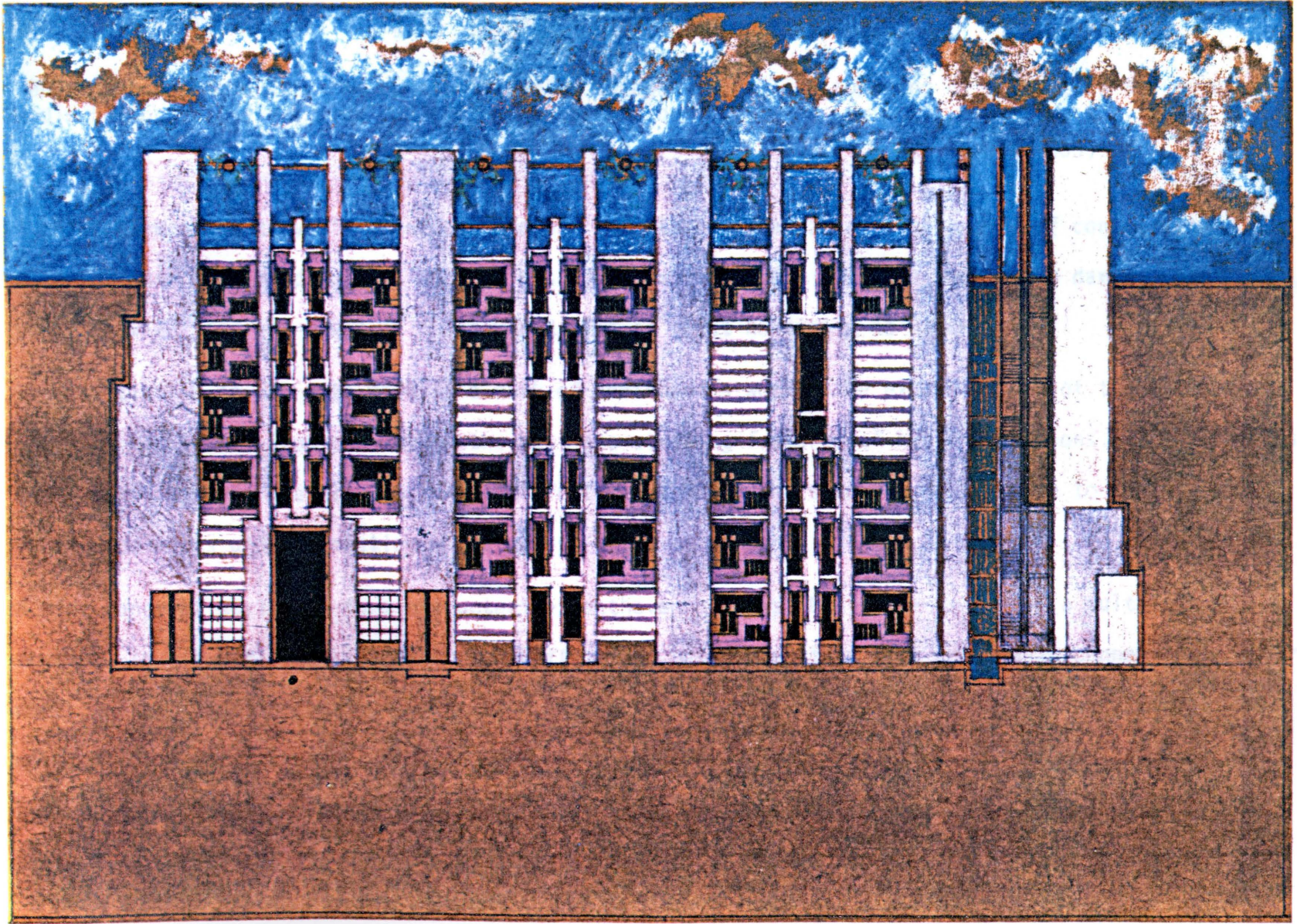
Longitudinal section

Elevation









LUDWIG van BEETHOVEN (1770-1827)

"Beethoven had exhausted the possibilities of antagonism, of the opposing of themes, so the future would belong to their fusion and their transformation."

Pierre Boulez
(Taylor, p. 265).

A chief mark of Beethoven's greatness was his ability to organize a large amount of contrasting material into a unified musical whole. His works express every possible emotion in daring juxtaposition with as great power as passion and with as great heroicism as humor.

The association of key with mood is a mark of Beethoven's work. The extensive use of the minor mode and bold modulation from one key to the next are striking features of his compositions. Tempo changes, gradual and abrupt, are also an important feature of Beethoven's works. They serve to express the variegated moods and the meeting of extremes.

A wide range of style and form characterize Beethoven's works, but there is always a multitude of themes. In his early works, eccentric shifts exist between motives with no organic connection. Later works exhibit greater continuity through the blurring of dividing lines and interpenetration of movements. Always, however, one can note expansive development of motives and the more complex principle of thematic variation. This concept involves the repetition of a theme in new ways while preserving the essential structure of the entire theme as opposed to preserving only fragments. The

form of a Beethoven composition is frequently unconventional. He scorned the symmetrical patterns of the Classical Era, replacing for example the three movement piano sonata of the Classical Period with his four movement form. This four movement sonata gave way to an even more unusual two movement sonata, Sonata, Op. 111. The Classical minuet was replaced by a scherzo, a "joke". A fifth movement was added to the Classical Symphonic form in his Sixth Symphony to depict five scenes from life in the country (Grout, pp. 537-544). Beethoven adapted forms to express his musical ideas, frequently seeming bold, but always with the purpose of achieving greater expressive power.

It is difficult to make generalizations about the interrelationships of melody, harmony, and rhythm in Beethoven's compositions. The range of their treatment is extensive, but the dramatic nature of Beethoven's work always depends largely on his use of harmony. Later works possess an increased use of contrapuntal textures, but bold vertical tone combination is always present.

Beethoven used the basic elements of music and the techniques available to a composer for the purpose of self-expression. Thus as he built upon the achievements of the Classical Period, he became the source of much that was characteristic of the Romantic Period. Beethoven himself was neither. His music is a direct outpouring of his personality. Extremes meet often - the sublime and the grotesque, the profound and the naive, the tender and the aggressive. Careful treatment of dynamic shading, articulation, and tempo aid in the expression of these emotions (Grout, p. 521).

The flow of the musical idea in a Beethoven work can vary from sweet lyricism to bombastic outcry, passing from continuous flow through sudden pause to broken movement. Drama is its essence.

Beethoven wrote on the score of Missa Solemnis:

"Vom Herzen, moege es wieder zu Herzen gehen."

("From the heart, may it also go to the heart.") (Gombrich, p. 17).

It is difficult to imagine a listener unmoved by Beethoven.

LUDWIG van BEETHOVEN

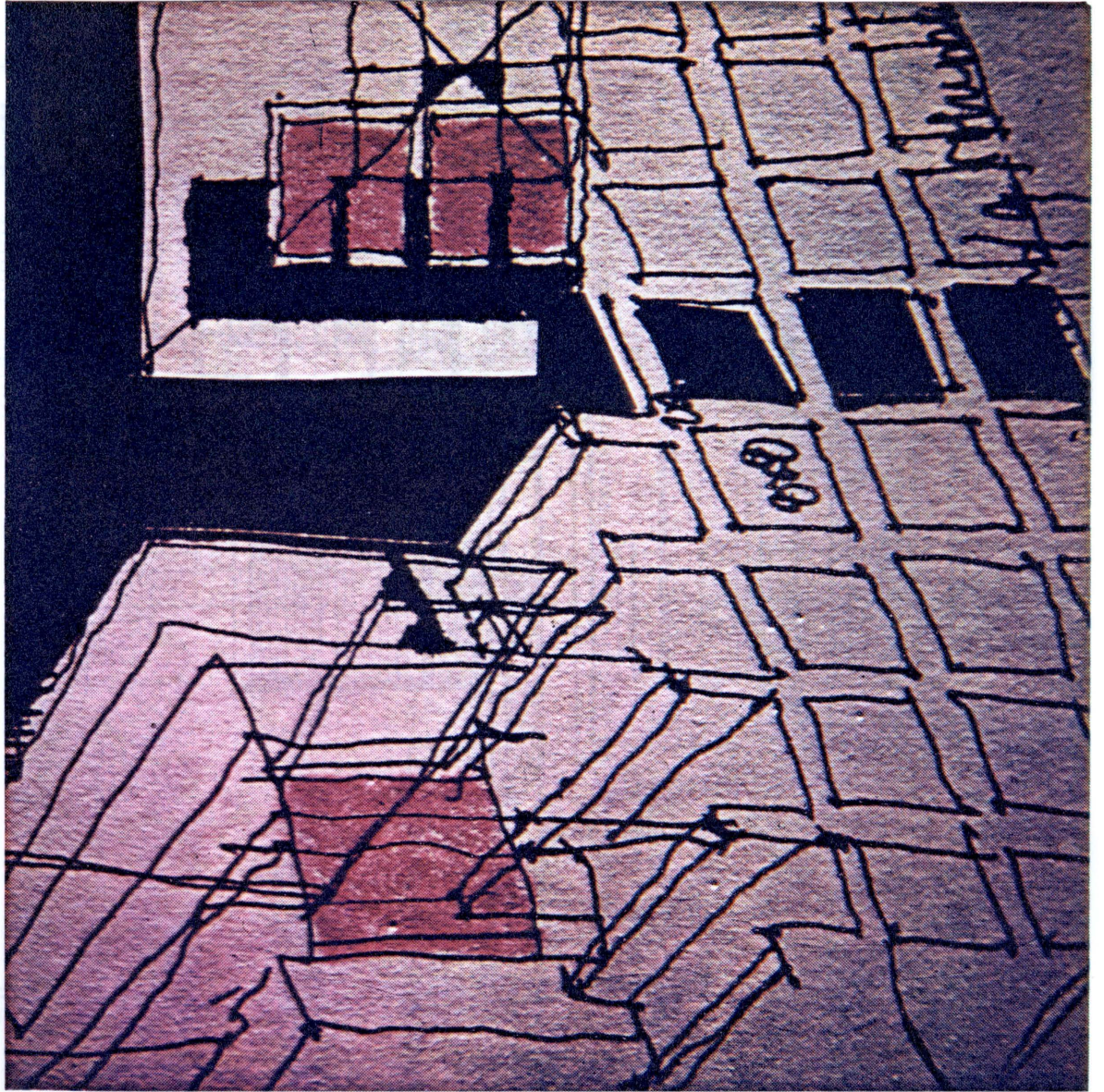
Figures

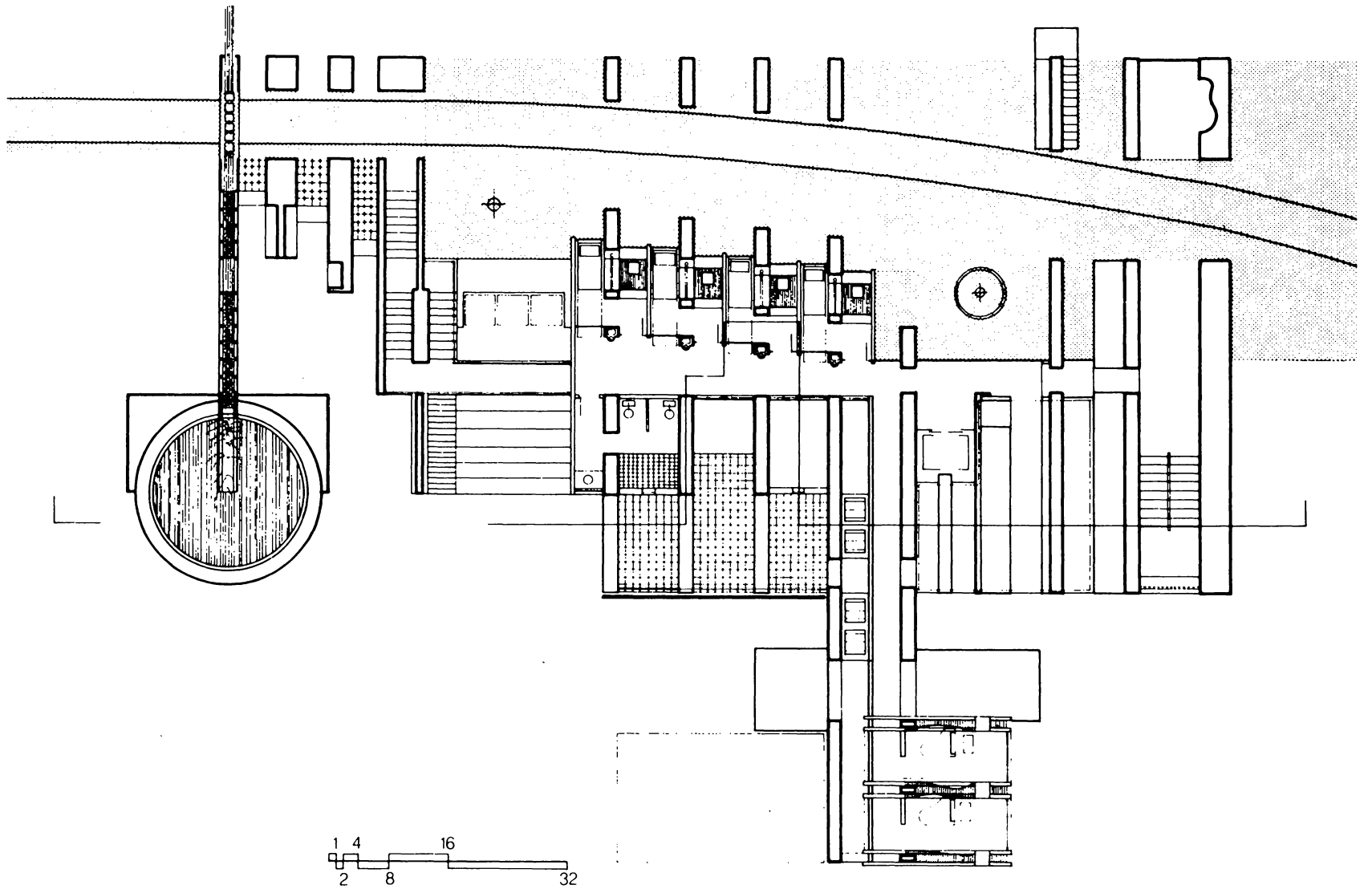
Study sketch

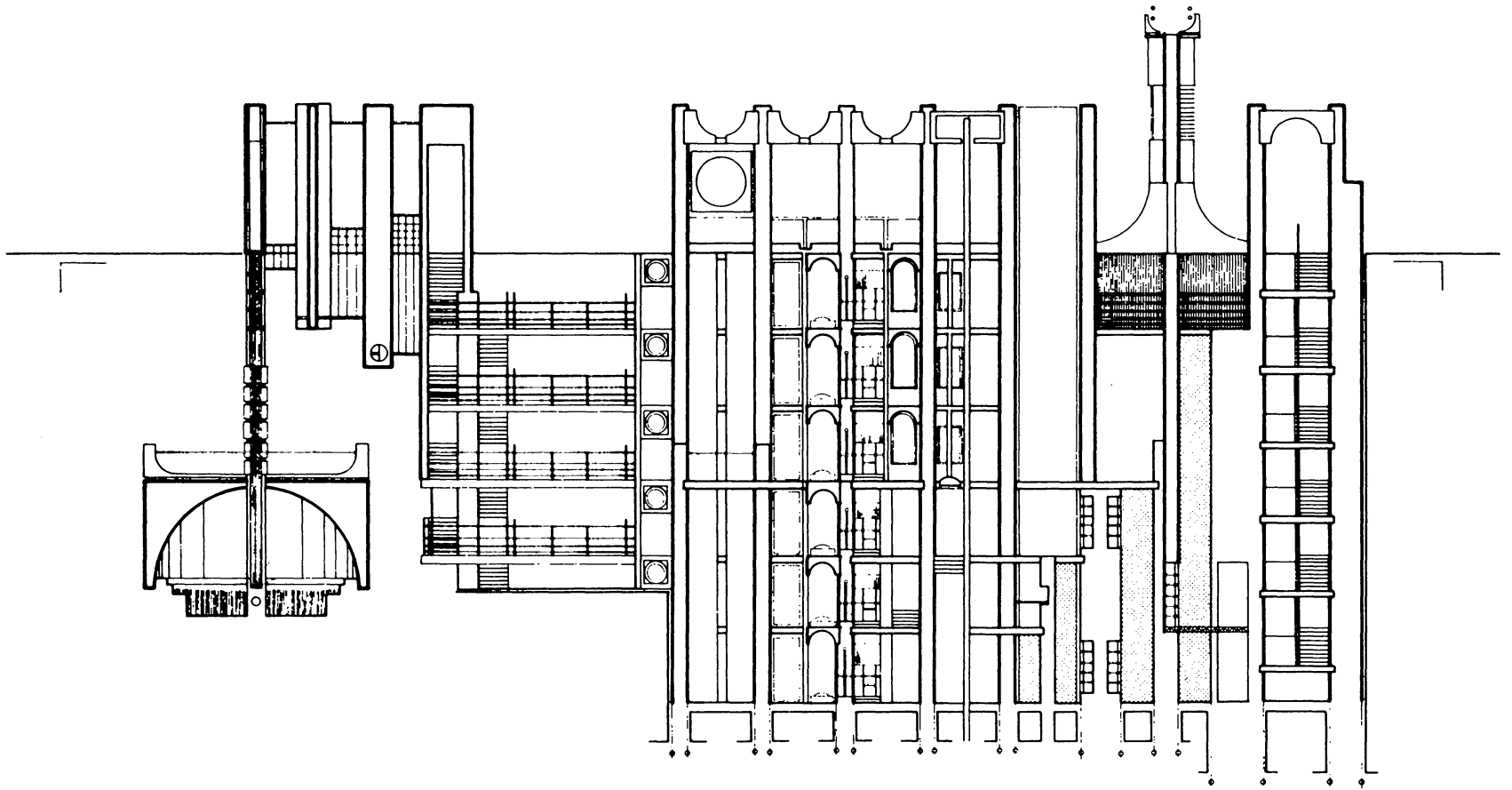
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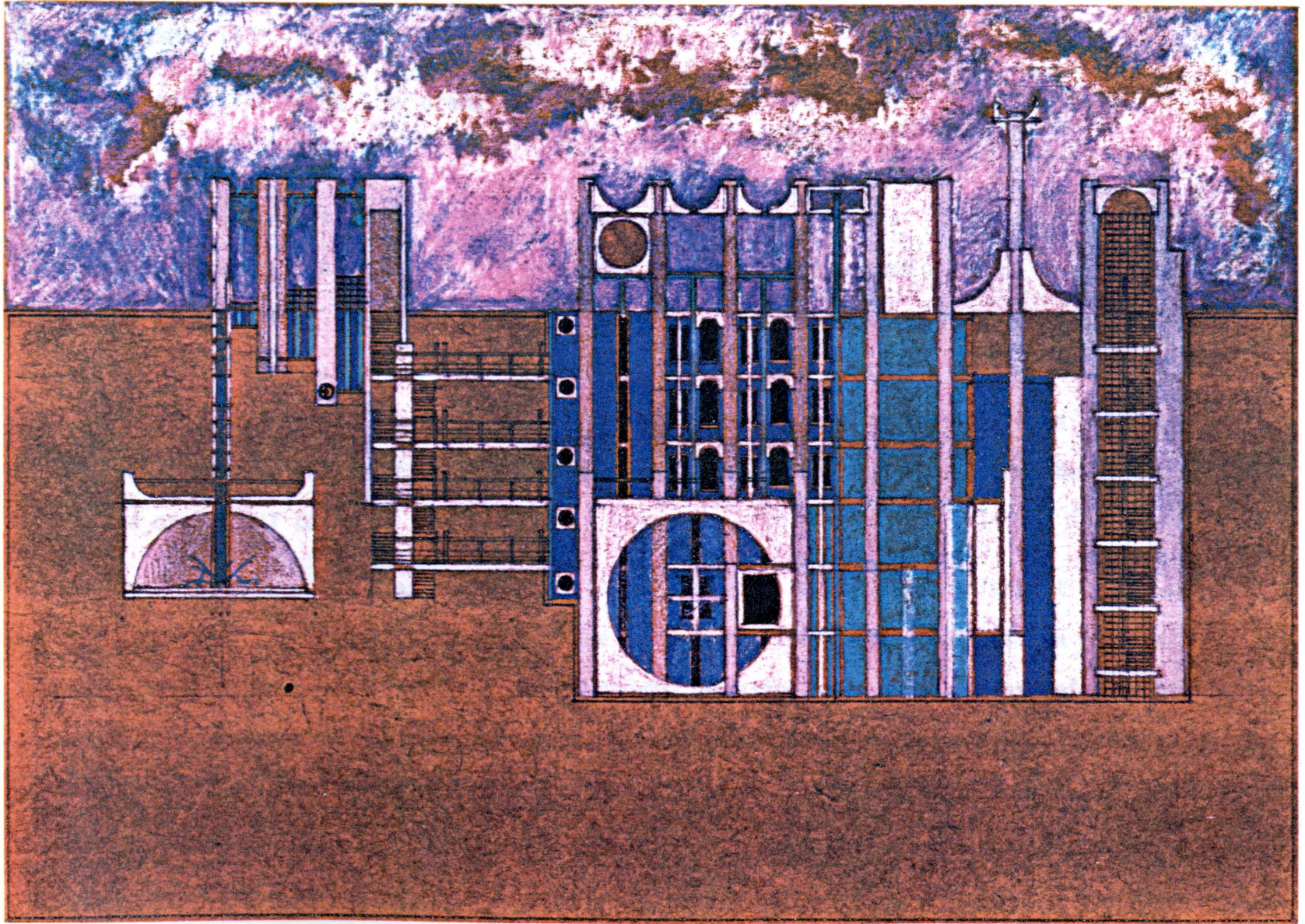
Longitudinal section

Elevation









RICHARD WAGNER (1813-1883)

"I would almost like to call my dramas acts of music become visible."

Richard Wagner
(Stein, p. 171)

From Wagner one learns balance and the intricacies of an art synthesis. The range of mood present in Wagner's operas is the result of his synthesis of music, poetry, and action. The relative importance of any one of these three elements was in a constant state of reevaluation in the mind of the composer. Always, however, was his search for the ideal synthesis of the arts - the German Romantic's Gesamtkunstwerk. The arts reinforce each other through means of balance - balance between strict rhythm and speech rhythm, between verse accent and musical accent, between mimetic action and orchestral texture.

Wagner's departure from the Classical key system of tonality led to the development of the new systems of harmony developed after 1890. These include the twelve-tone composition of Arnold Schoenberg. Through chromatic alterations of chords, constant key shifts, telescoping resolutions, and blurred progressions, Wagner produced an ambiguous tonality (Grout, p. 628). With a fusion of melody and verse in his musical dramas, Wagner established a balance between formal and speech rhythm. The duration of a pitch must therefore exist in a pure musical context, as well as in the context of a spoken dialogue.

The acts of a Wagner opera were written in "periods", which are organizational units exhibiting recognizable musical patterns. Thus the musical dramas consist of form within form. The smallest structural unit, the leitmotif or leading motive, is a special feature of Wagner's works. It is a motto theme associated with some character or element of the drama. The melodic line is altered to adjust to new word-content, but it retains something recognizable by the audience (Headington, p. 79).

As a result of Wagner's refusal to sacrifice individual expression to polyphony, each part has great expressive power. Pierre Boulez described Wagner's works thus: "everything is melody, unending melody" (Taylor, p. 265). Fluidity, emotional and dramatic beauty, intensification of mood, and pictorialization of individual words all characterize Wagner's melodic treatment. Wagner described the repetition of melodic elements as "the very unifying bond which makes it a melody in the first place" (Stein, p. 73). Harmonic support of the individual melodic line of the singer is provided by the orchestra and an occasional chorus. In his later works, the subordination of the orchestra becomes less secure as its harmonic complexity grows and it becomes the instrument for the contrapuntal interweaving of motives. Wagner prepared his own texts in order to achieve a word-tone synthesis which hinges upon rhythmic cohesiveness. As he explained to the poet Johannes Nordmann, "You craftsmen can never correctly feel the musical rhythm which we need, your verses are much too pendantic, strict, and scholastic for us...for me, tone and word must spring spontaneously

and simultaneously from heart and head and the one must join the other as in a passionate kiss" (Stein, p. 8).

The sharp division between recitative and aria which is found in Classical opera disappears in Wagner's operas. A recitative is a section in which the rhythms and rise and fall of speech are imitated, and an aria is a formal solo embodying the emotional state of the singer. As the two flow together, they come into better balance with the psychological continuity of the drama.

Wagner was much concerned with the performance aspects of his works. He wrote an account titled "On the Performance of Tannhauser" for the directors and singer-actors of that opera. "Let the singer give absolutely free rein to his natural feeling...the more creative he can become through the fullest freedom of emotion, the more he will earn my most grateful thanks" (Stein, pp. 39-40).

This concern with feeling, as well as an intuitive sense for the balance necessary in an art synthesis, make Wagner an important contributor to a study of composition.

RICHARD WAGNER

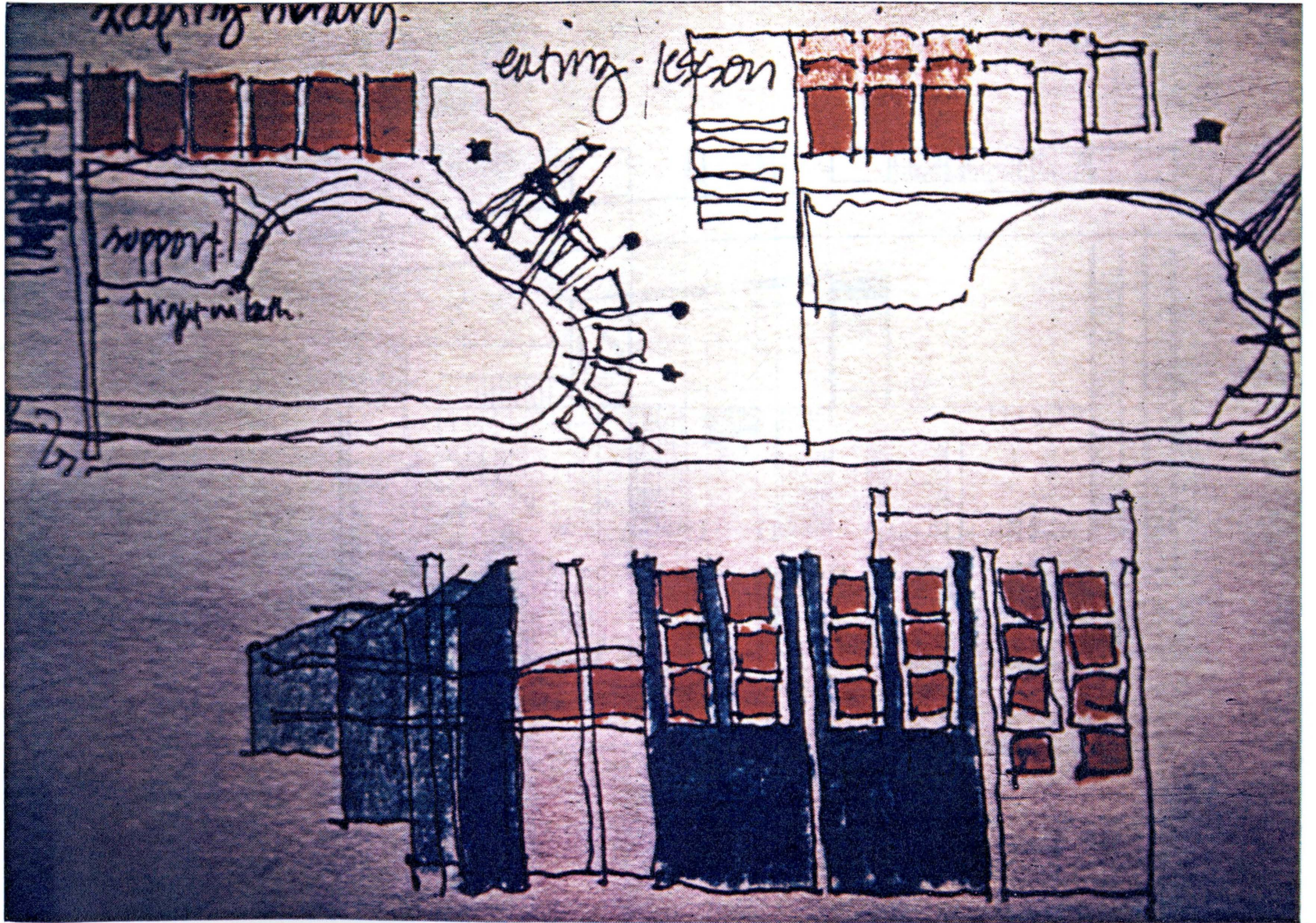
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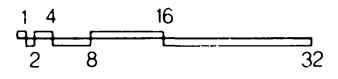
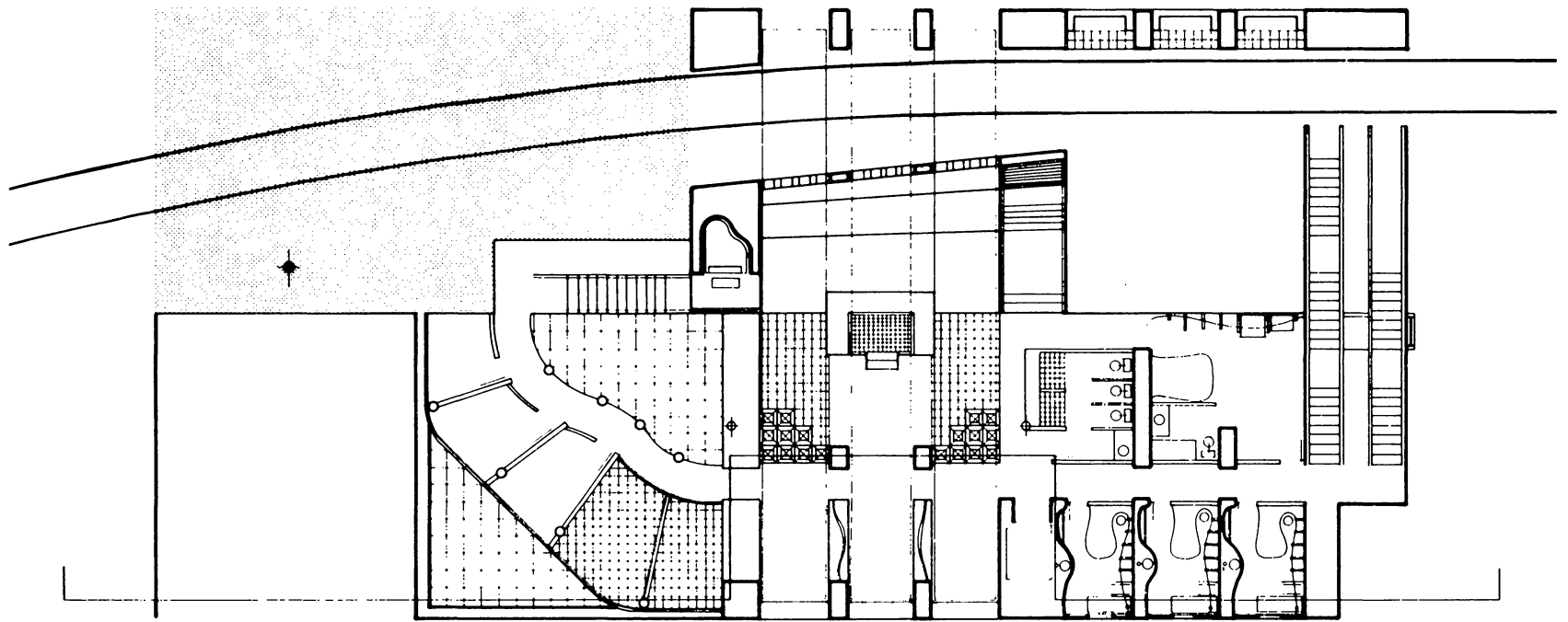
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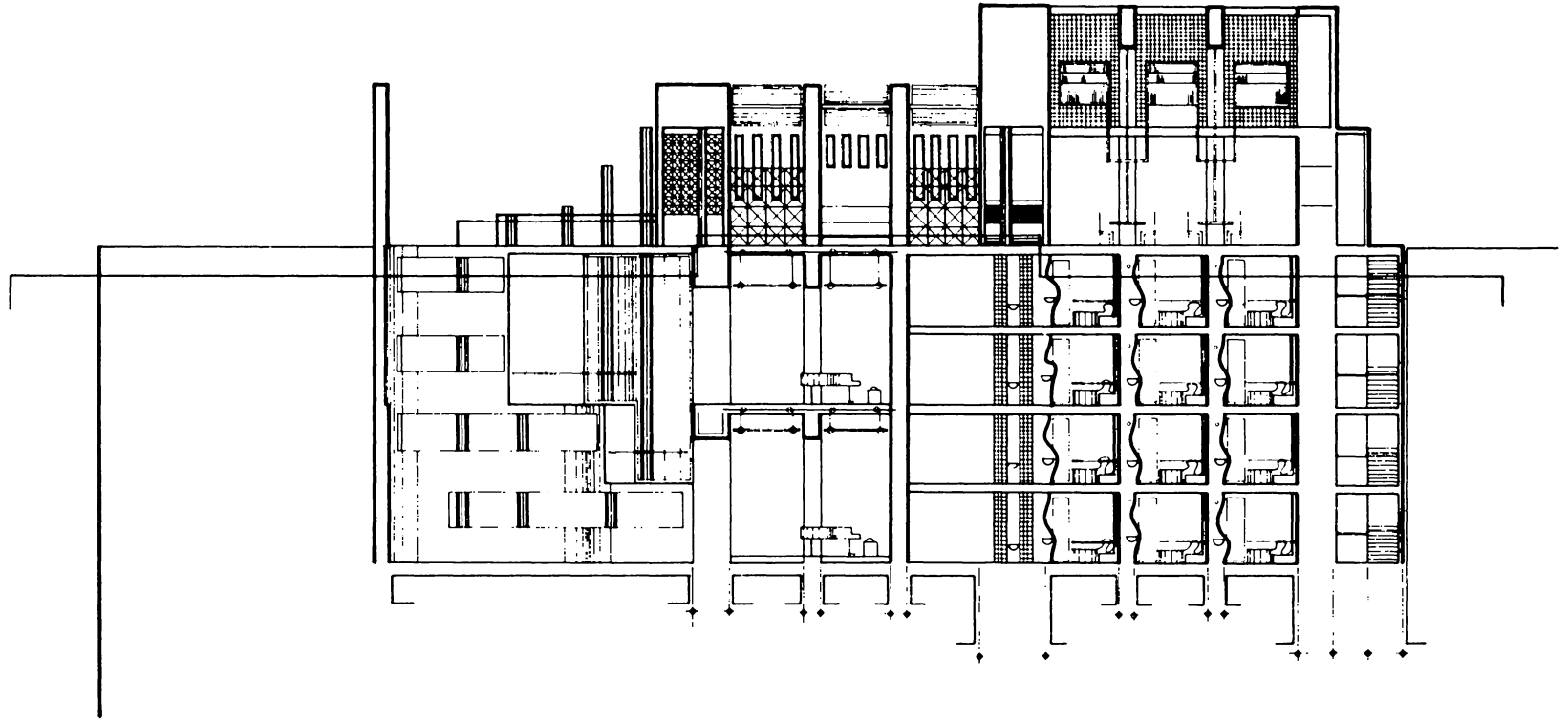
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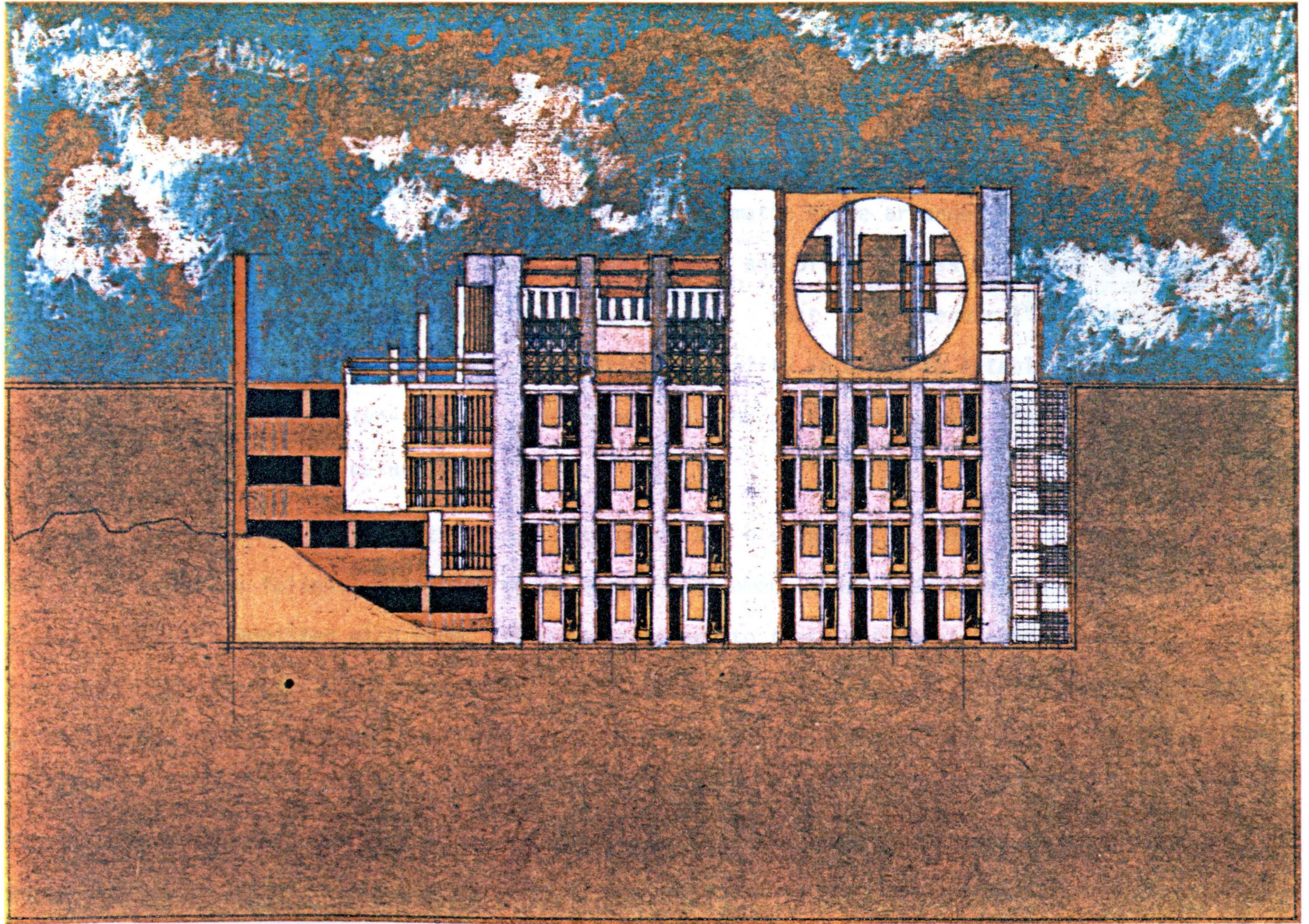
Longitudinal section

Elevation









ARNOLD SCHOENBERG (1874-1951)

"Bach is the first composer with twelve tones."

Arnold Schoenberg
(Schoenberg, p. 393)

Twelve-tone composition uses all twelve tones of the chromatic scale arranged in tone rows. This produces dissonant compositions which lack a tonal center and often impress a feeling that the music has been constructed without emotional significance - that it is "cerebral". It excludes the possibility of modulation, of leaving one established tonality in order to establish another. For Schoenberg, the task of twelve-tone composition was to find an alternate means for establishing the coherence that tonal music naturally possesses.

Schoenberg regarded his music as the "emancipation of the dissonance." When a note is sounded, a series of overtones follow. Dissonant tones appear late among these overtones and so the ear is less intimately acquainted with them. Frequent exposure to these dissonant sounds, however, increases the listener's comprehension of them (Schoenberg, pp. 216-217). The comprehensibility of dissonance is improved when the expression and timbre of an instrument are used effectively. Schoenberg explored these ideas, as well as the duration of a note, in terms of the psychology of the listener. The tempo of individual tones is related to the tempo at which the musical idea is presented. Thus the difficulty of the idea is accounted for in the speed of delivery of individual

notes.

The organizational features of a twelve-tone composition rely upon a basic set, analogous to a motive, which is an arrangement of twelve tones in series. It is the first creative thought and it must be invented anew for each composition. It can be used in either the vertical or horizontal dimension. Anything which hints toward tonality is forbidden in the use of the basic set. Therefore octave doubling and the repetition of one tone before all other eleven have been sounded are not allowed. From the basic set, three additional sets follow: the inversion, the retrograde, and the retrograde inversion. These can be envisioned graphically as the mirrored reflections about the horizontal axis, the vertical axis, and both axes simultaneously. These three derivatives, accompanied by subdivisions of the basic set and parallel transpositions, provide the sources for all thematic material (Schoenberg, pp. 218-220). The art of twelve-tone composition relies not on the possession of these sets but on their rhythmization, articulation, and phrasing. Possession of a basic set and its derivatives is analogous to possession of the "Modulor". It is as possible to use one to produce a bad composition as it is to use the other to produce a bad building. The following warning offered by Le Corbusier might have been given by Schoenberg as well. "Do you imagine that the 'Modulor' is a panacea for clumsiness or carelessness? Scrap it. If all you can do with the 'Modulor' is to produce such horrors as these, drop it. Your eyes are your judges, the only ones you should know. Judge with your eyes, gentlemen. Let us repeat together, in simple good faith,

that the 'Modulor' is a working tool, a precision instrument, a keyboard shall we say, a piano, a tuned piano. The piano has been tuned: it is up to you to play it well" (Jeanneret, pp. 130-131).

Schoenberg stated that "the form of a composition is achieved because:

- 1) a body exists, and because

- 2) the members exercise different functions and are created for these functions" (Schoenberg, p. 257).

He described the fugue as the composition with maximum self-sufficiency of content. "The more all the shapes stem from one basic idea...the more artful it is" (Schoenberg, p. 247). The use of his basic set creates this same self-sufficiency by creating a coherent body made up of members, the derivatives of the basic set.

The three dimensions of music are conceived as one in Schoenberg's works. This governing attitude is another manifestation of his search for unifying principles in composition. He wrote much on the subject:

"The two-or-more dimensional space in which musical ideas are presented is a unit" (Schoenberg, p.220).

"All that happens at any point of this musical space has more than a local effect" (Schoenberg, p.220).

"A musical idea, accordingly, though consisting of melody, rhythm, and harmony, is neither the

one nor the other alone, but all three together" (Schoenberg, p. 220).

Schoenberg viewed techniques for the connection of musical ideas as analogous to grammatical principles. He was of the opinion that fluency depends on the right connective, but often simple juxtaposition functions satisfactorily (Schoenberg, p. 287). He stated that "the way the notes are joined is less important than where the center of gravity comes or the way the center of gravity shifts (Schoenberg, p. 348).

Schoenberg's attitudes pertaining to the interpretation of music are interesting. He believed that the use of mechanical music to establish a definitive interpretation would be a loss "since the composer's interpretation can by no means remain the finally valid one" (Schoenberg, p. 328). He did however consider the use of mechanized music to make performances independent of a performer's inadequacy, as well as to give cohesiveness to a work, to be a great advantage. Schoenberg's work is an example of a rigorous search for new ways of establishing unity in composition.

ARNOLD SCHOENBERG

Figures

Study sketch

Floor plans:

 typical

 ground

 basement

Longitudinal sections

 section 1

 section 2

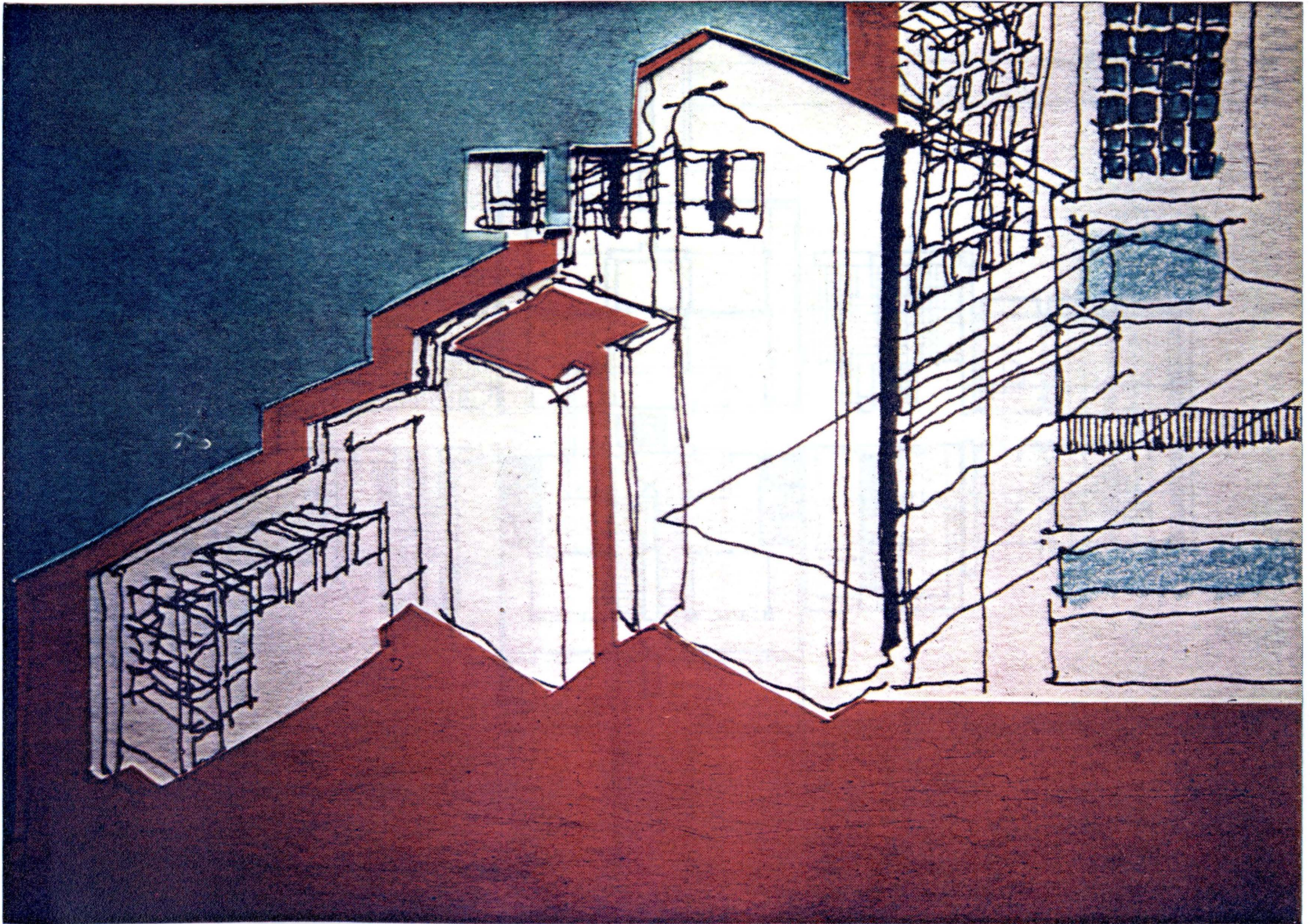
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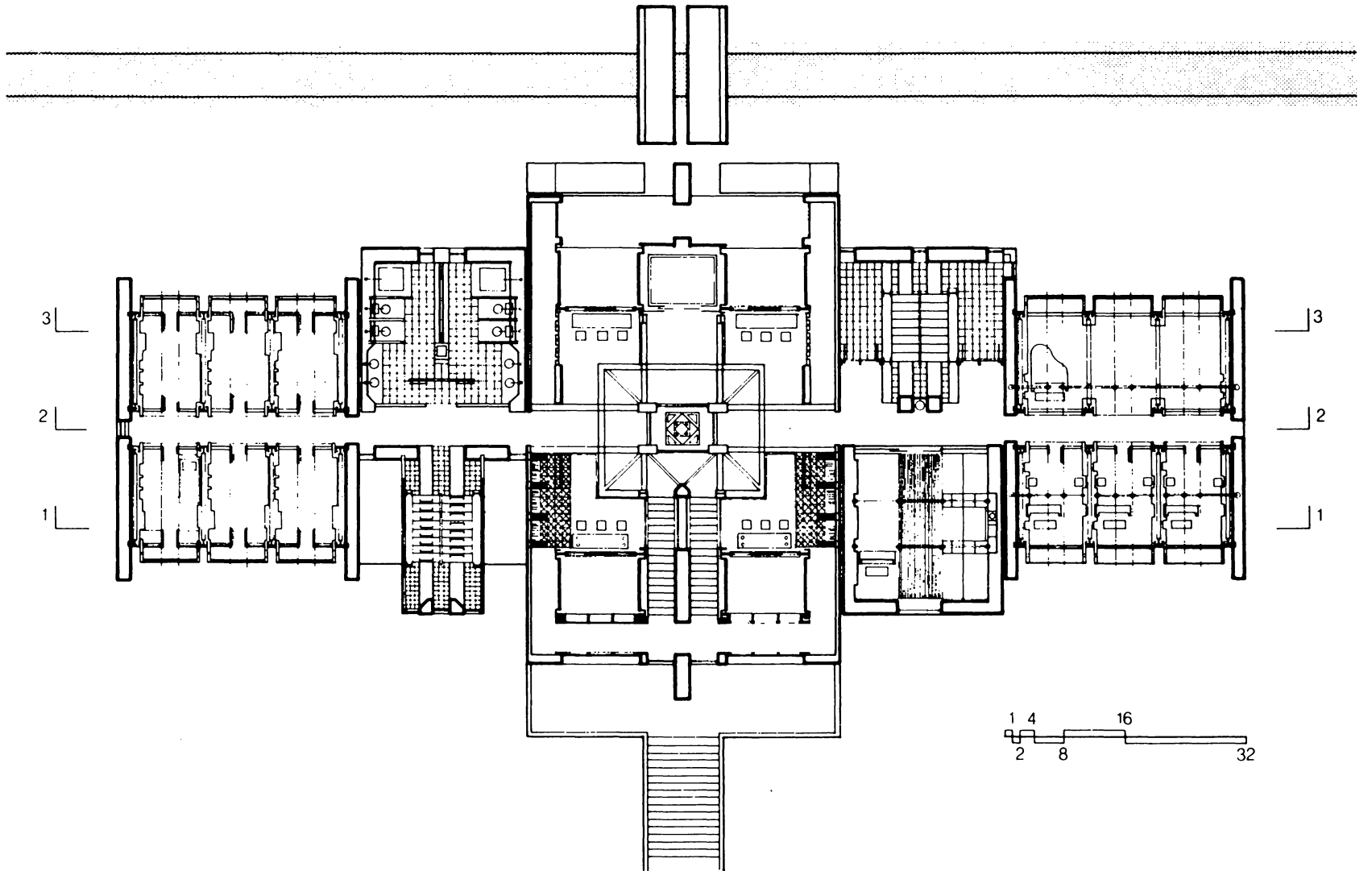
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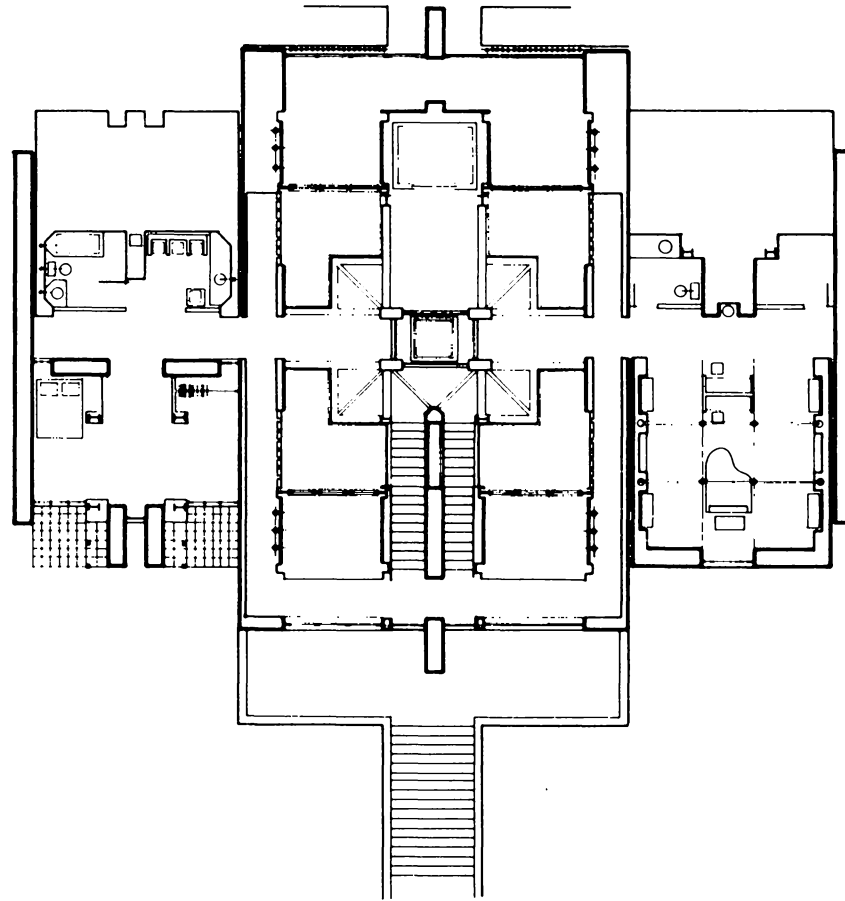
Stair detail

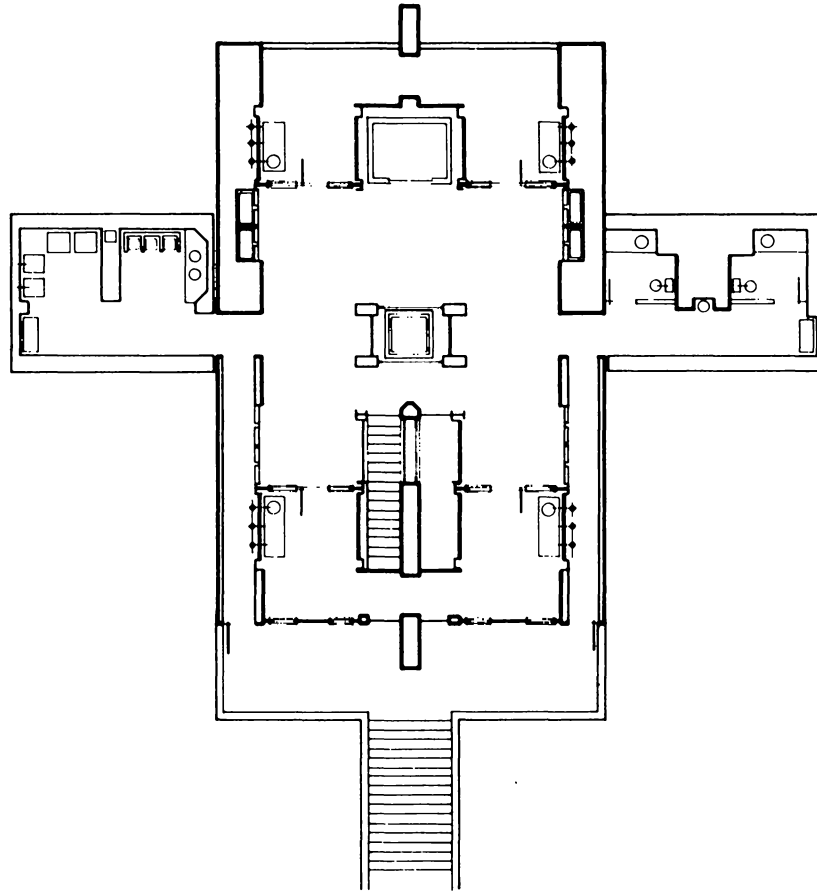
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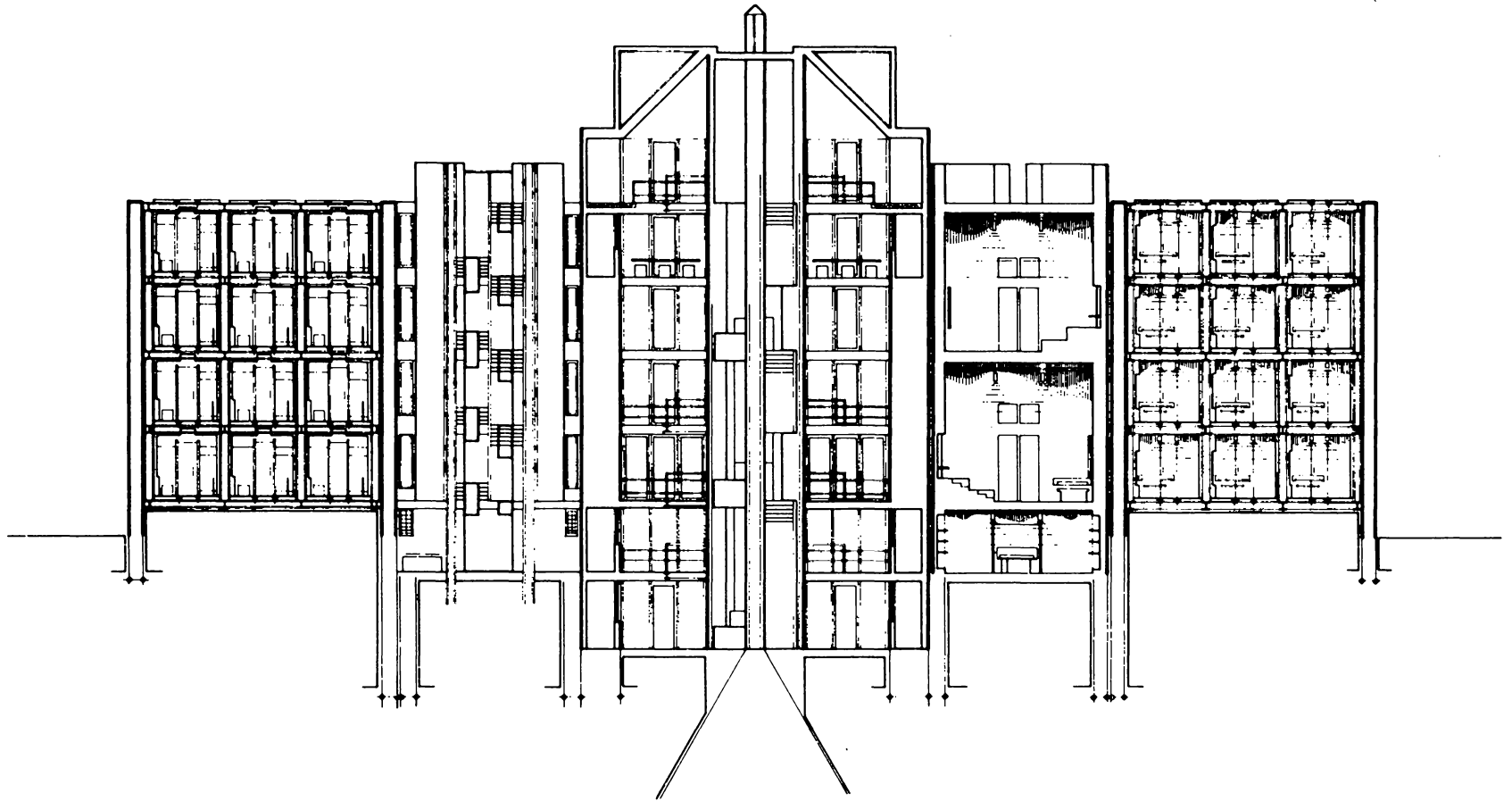
Photographs of model

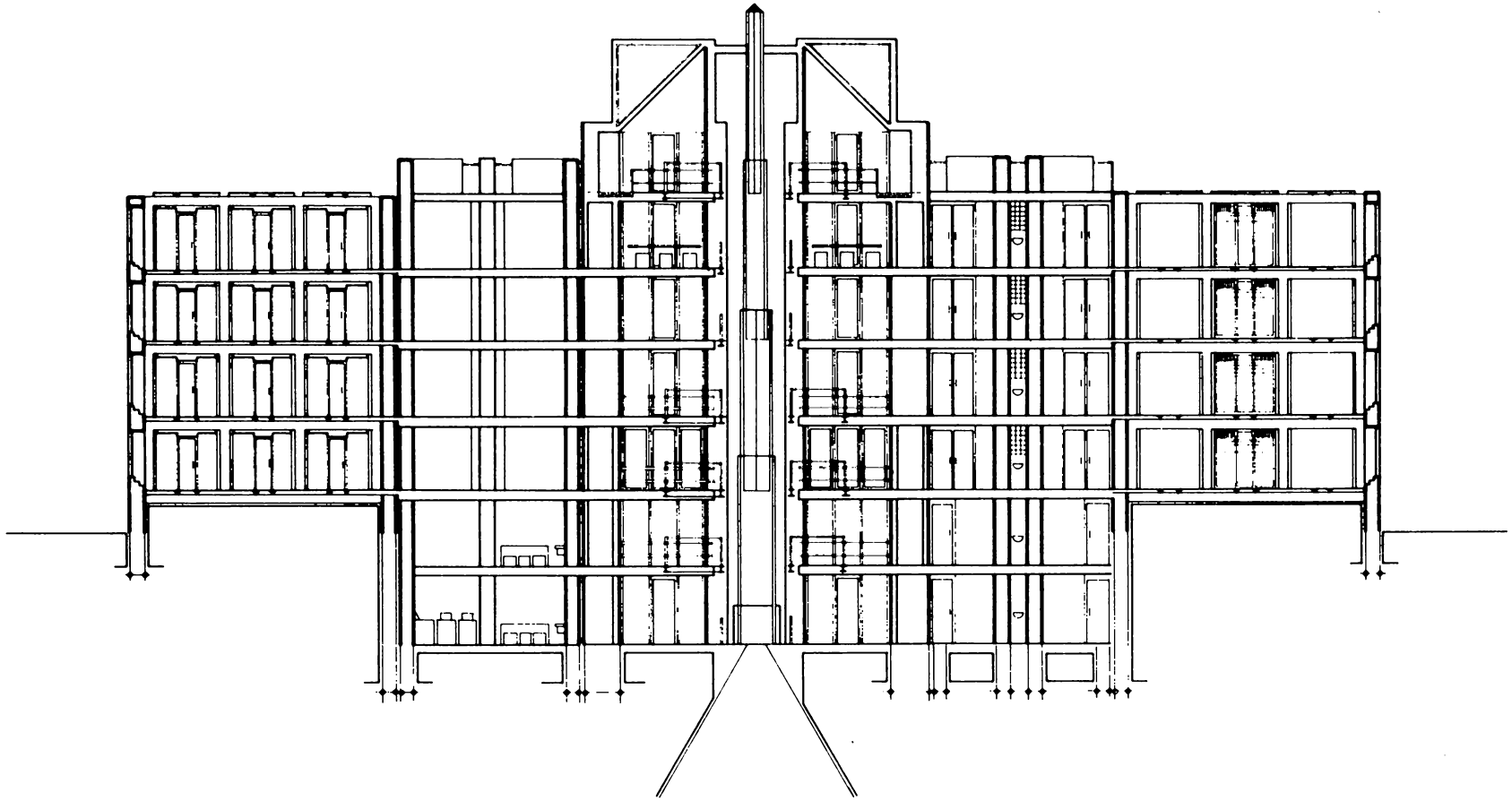


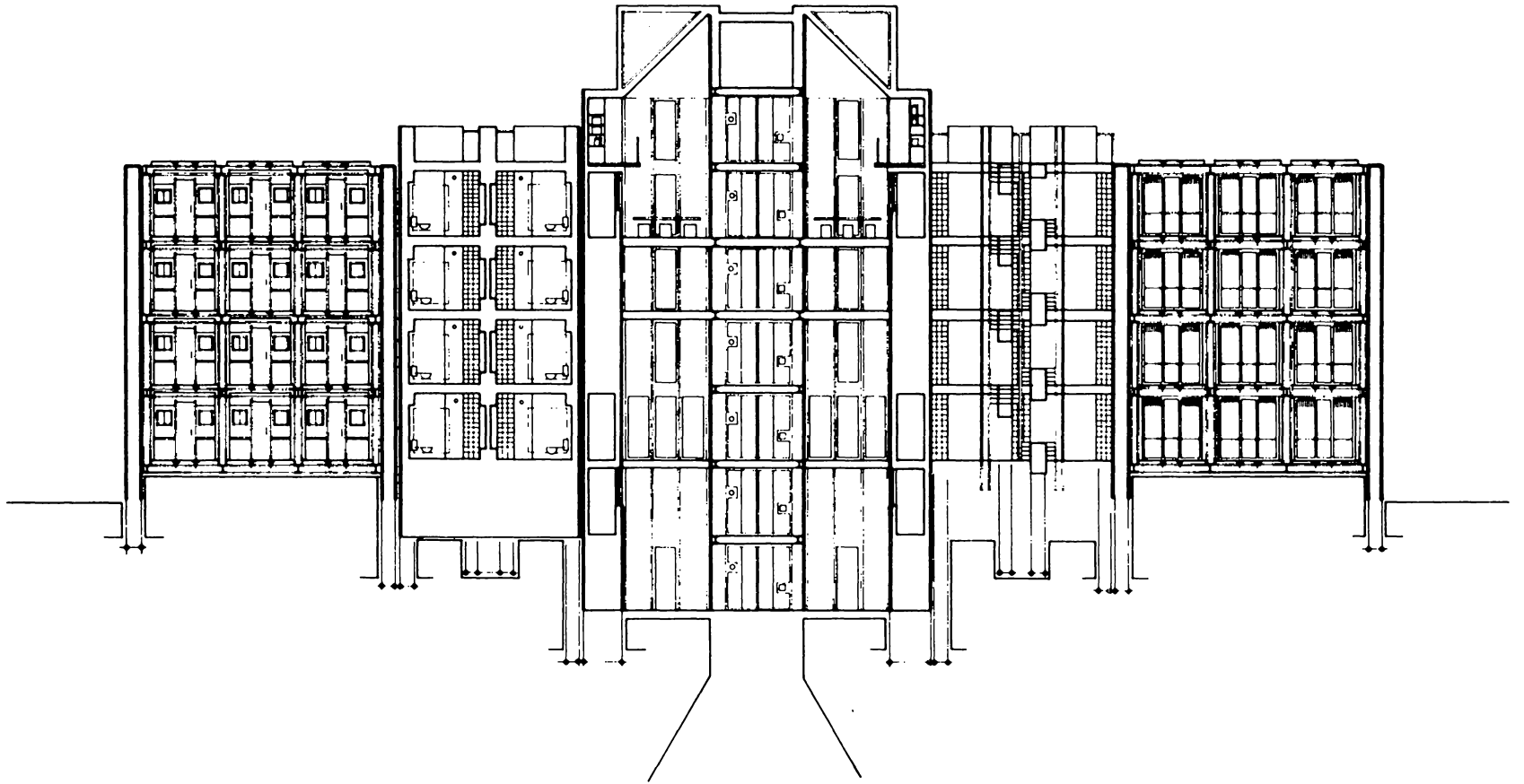


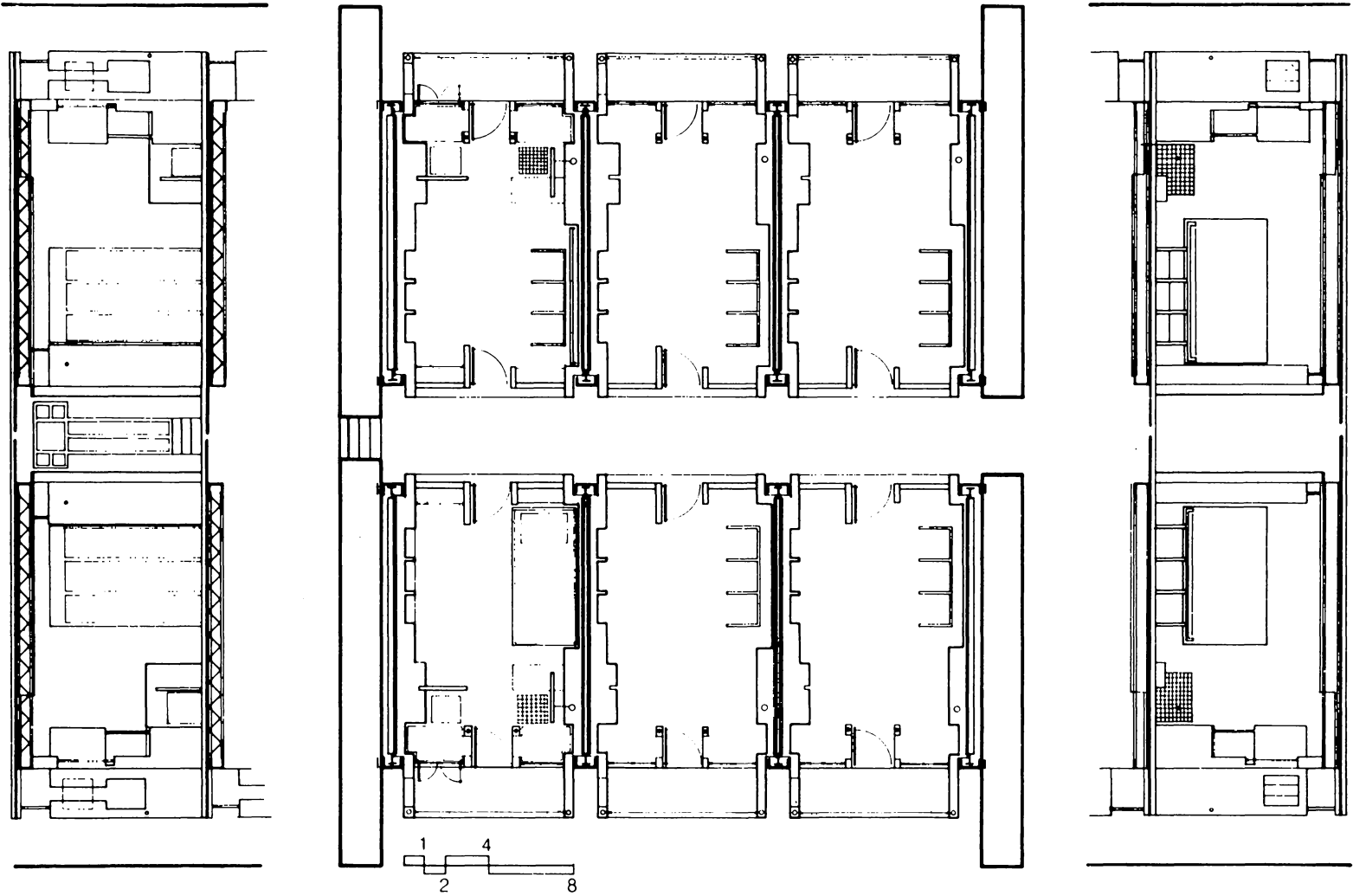


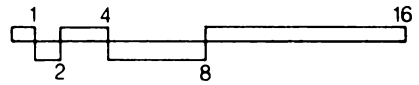
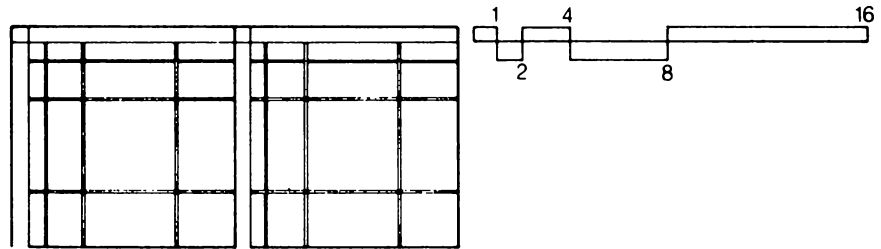
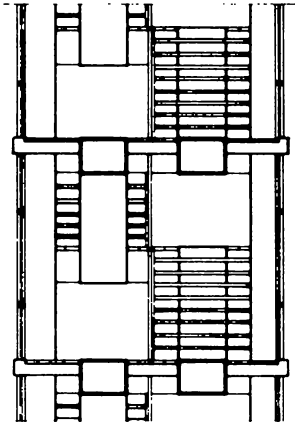
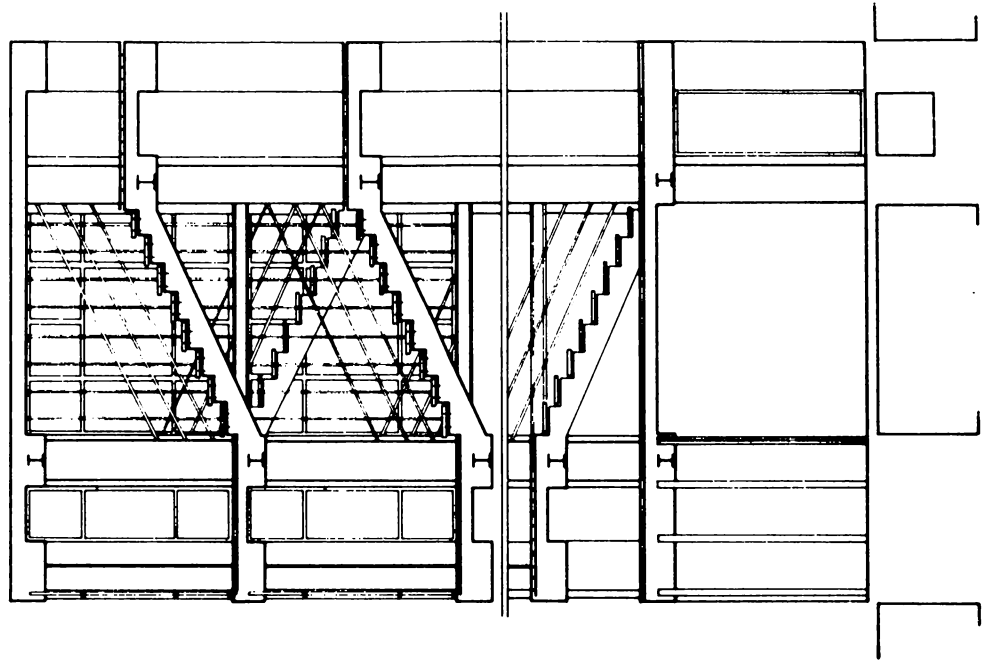
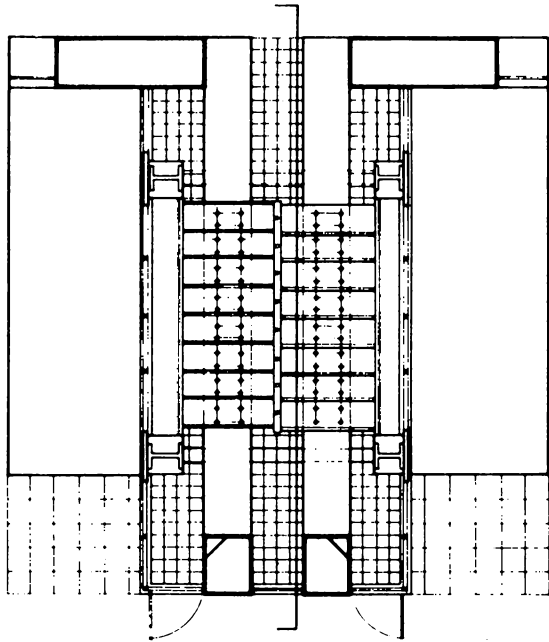


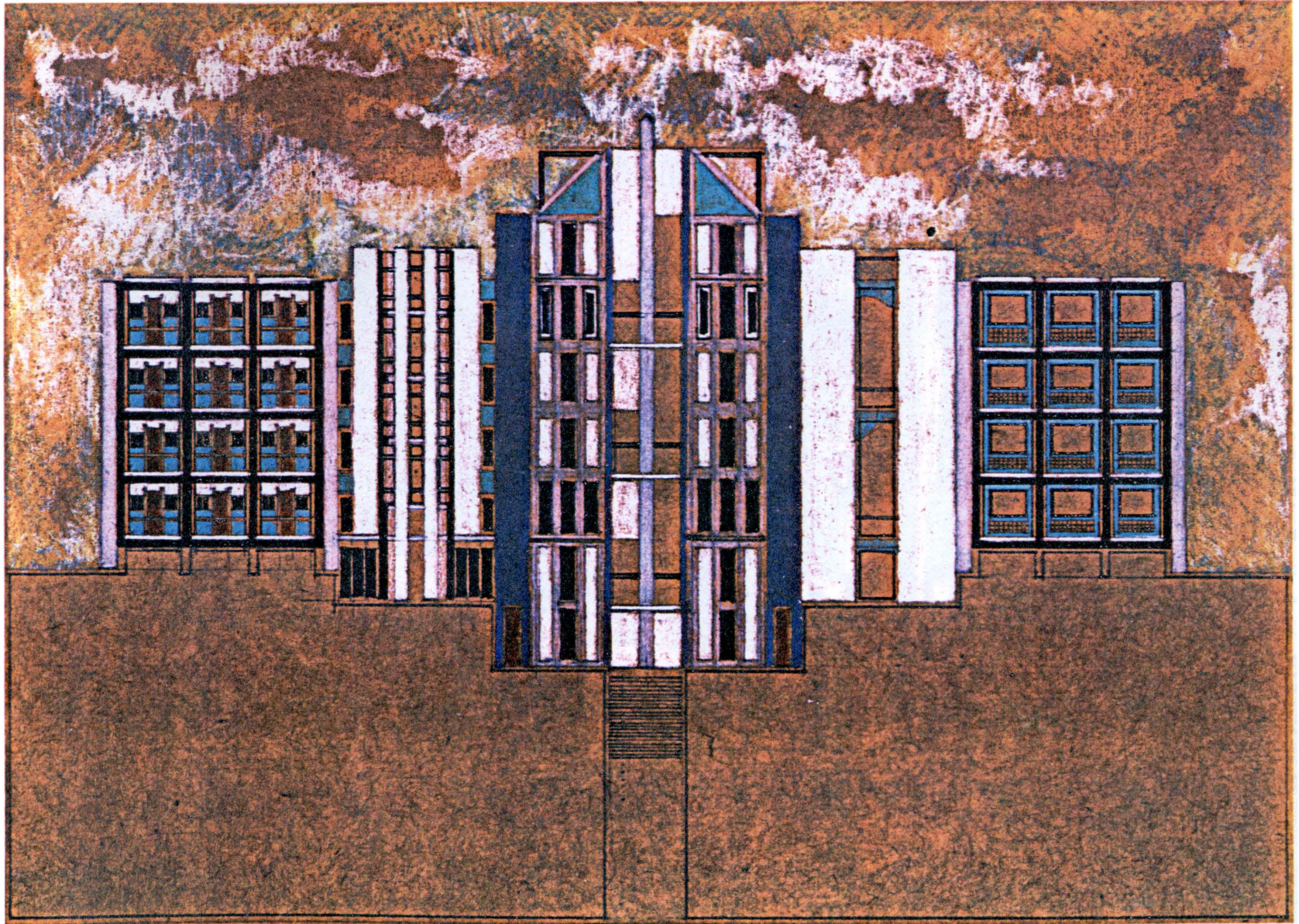


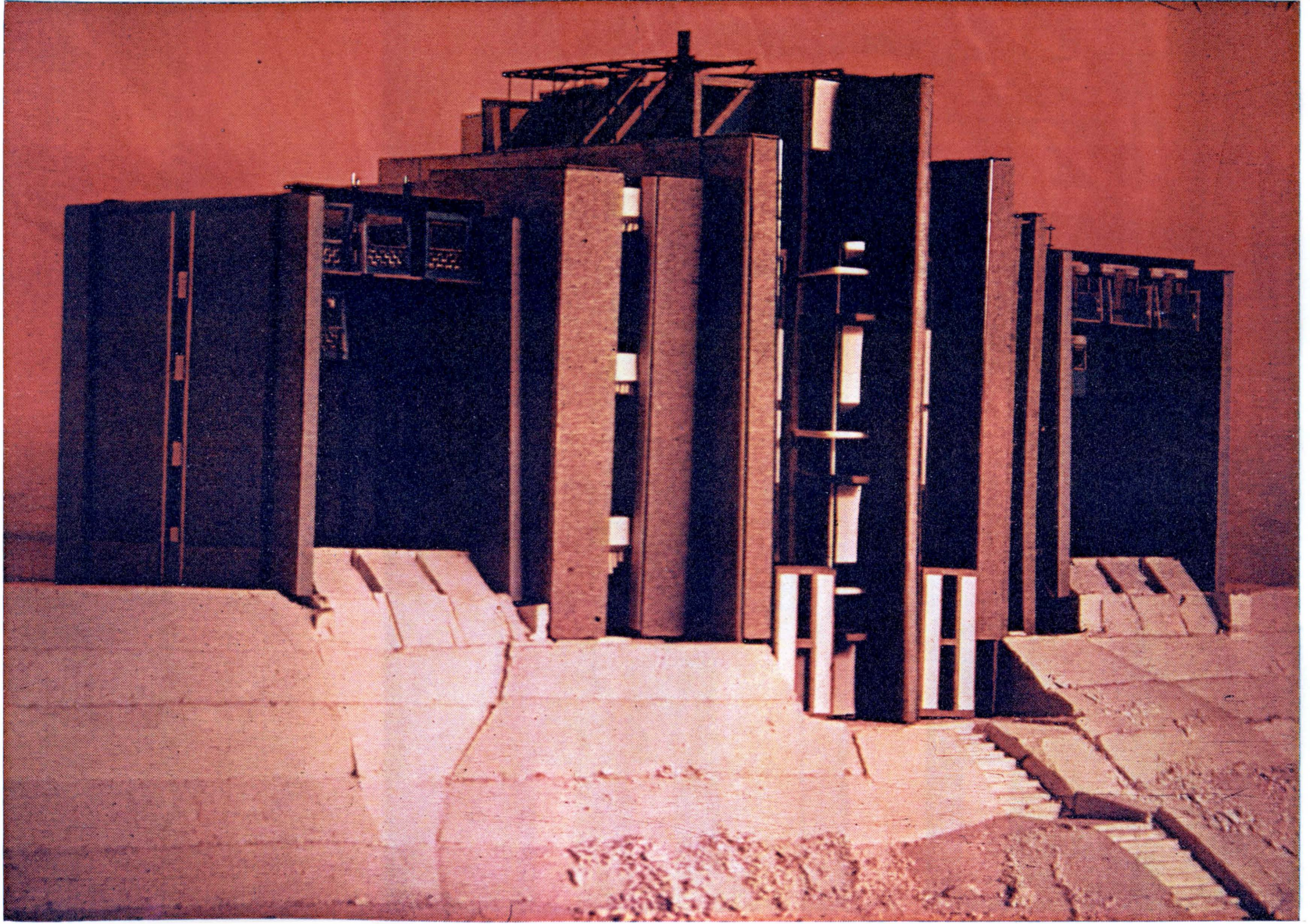


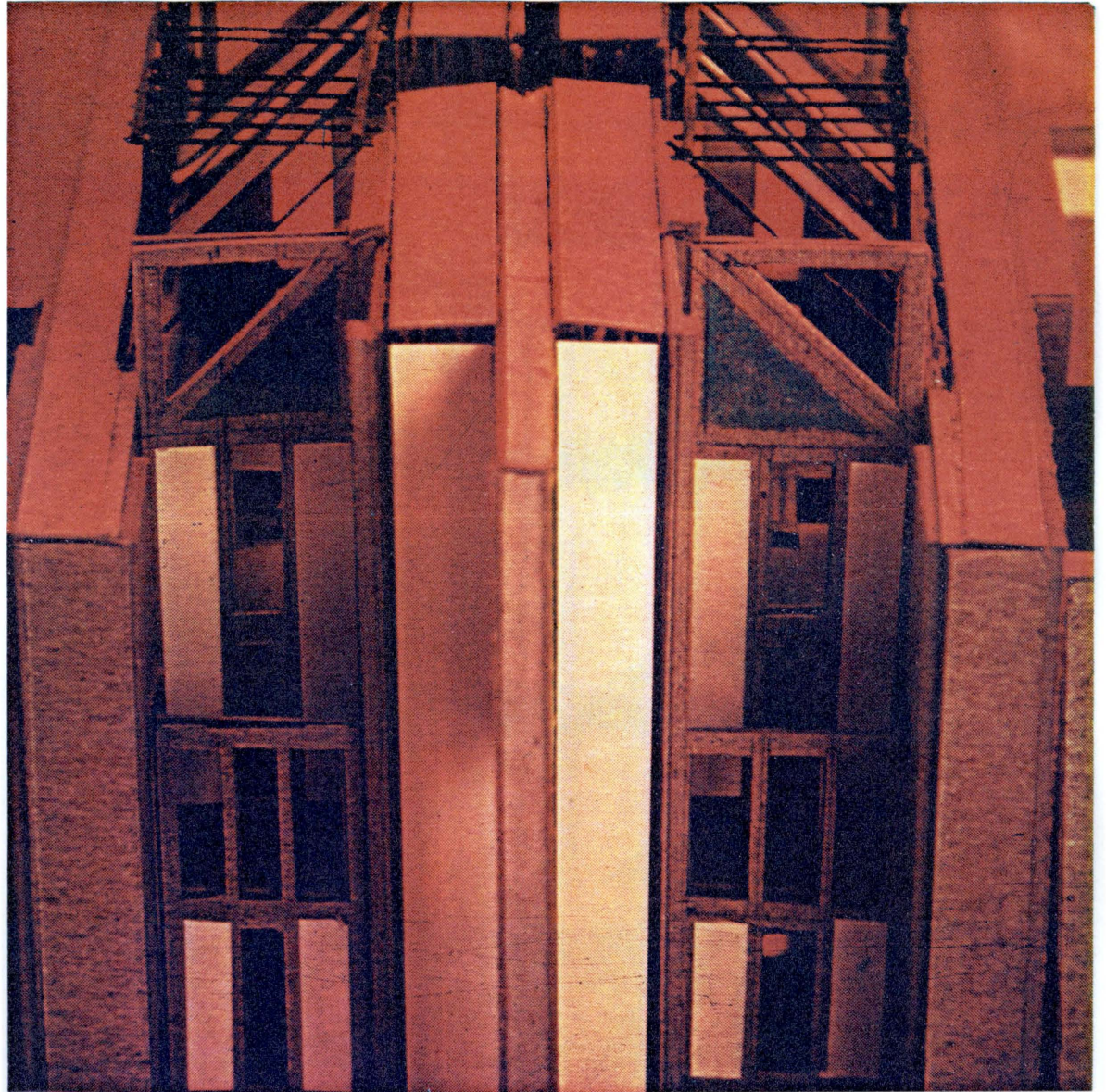


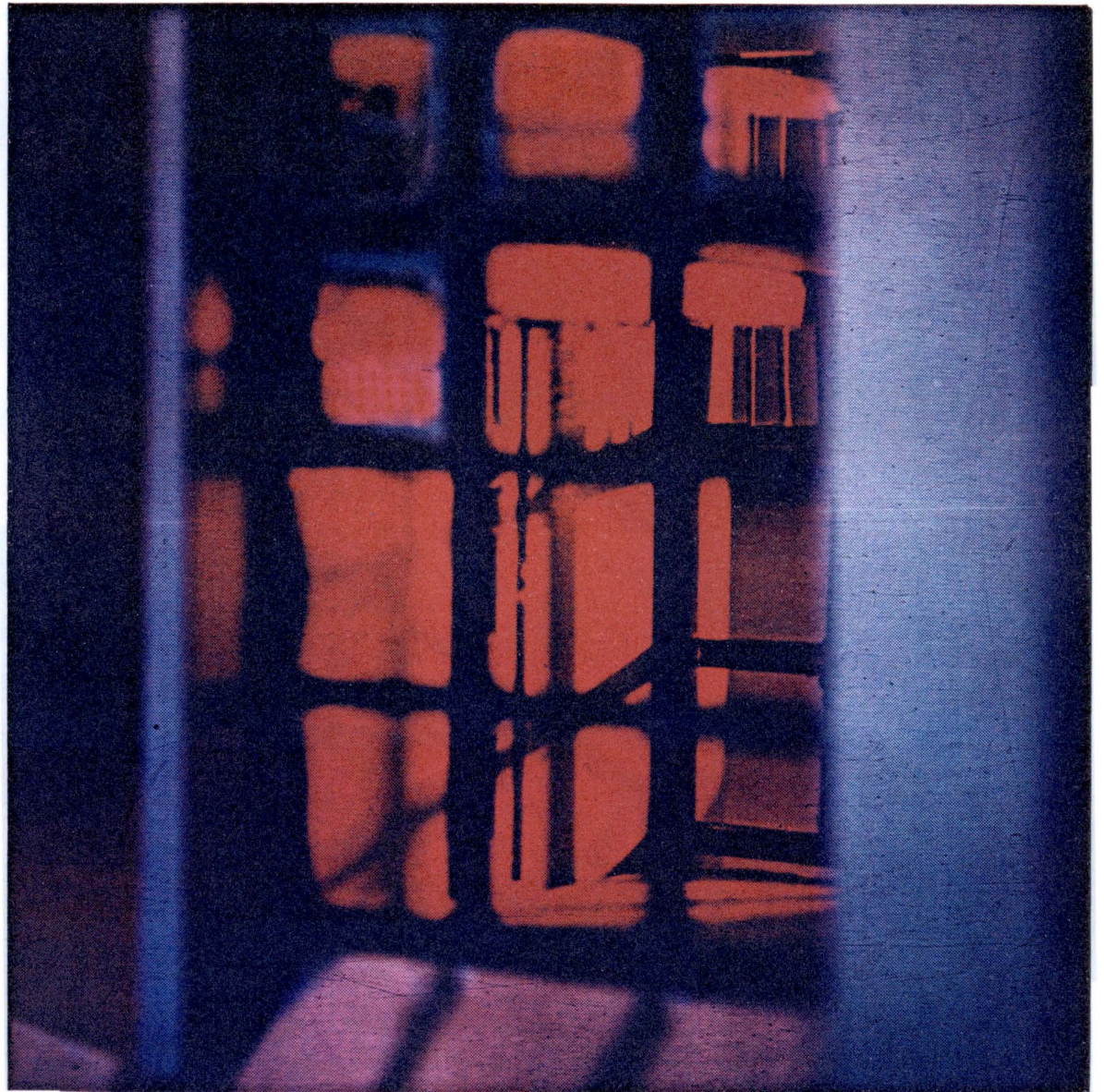


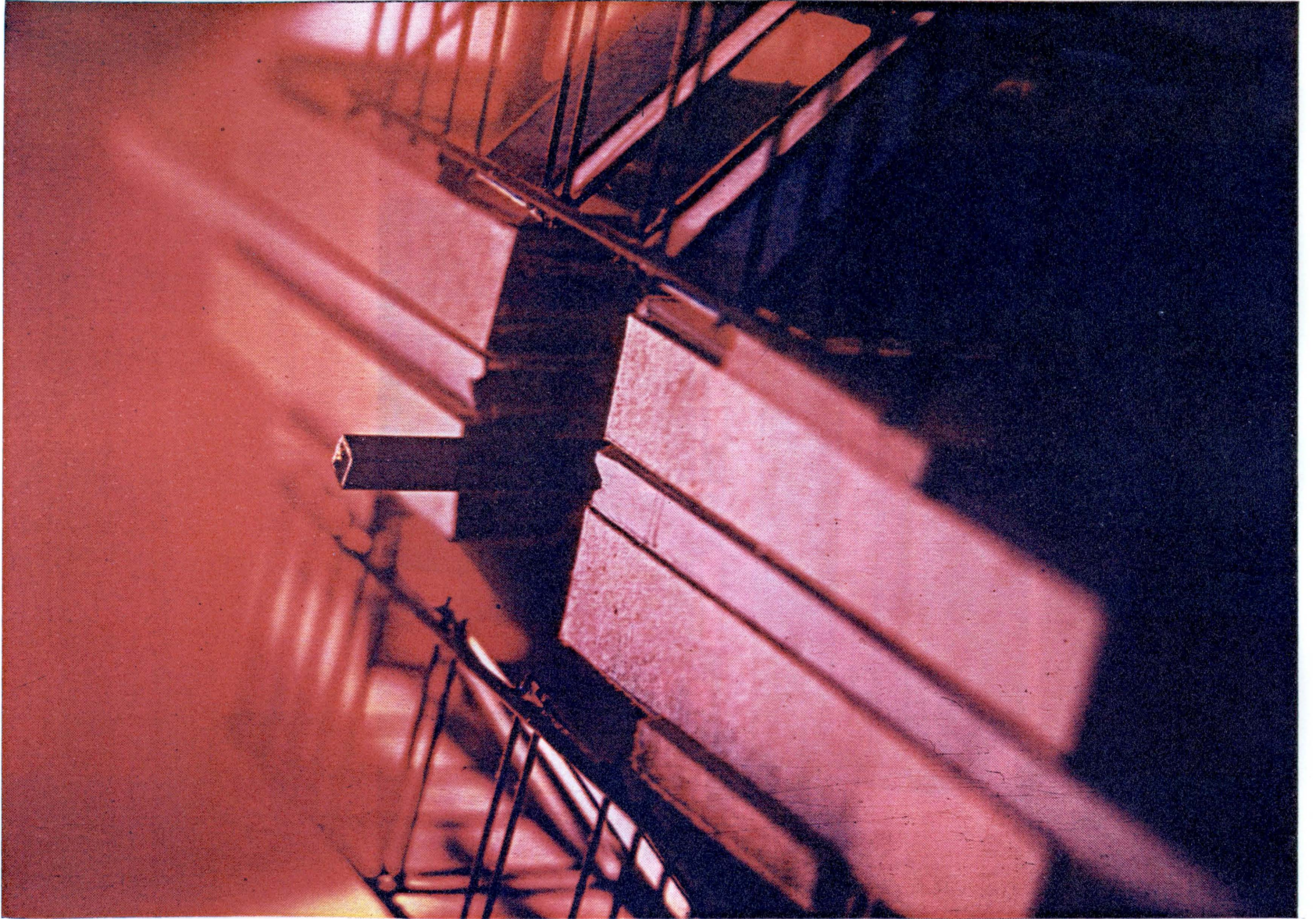


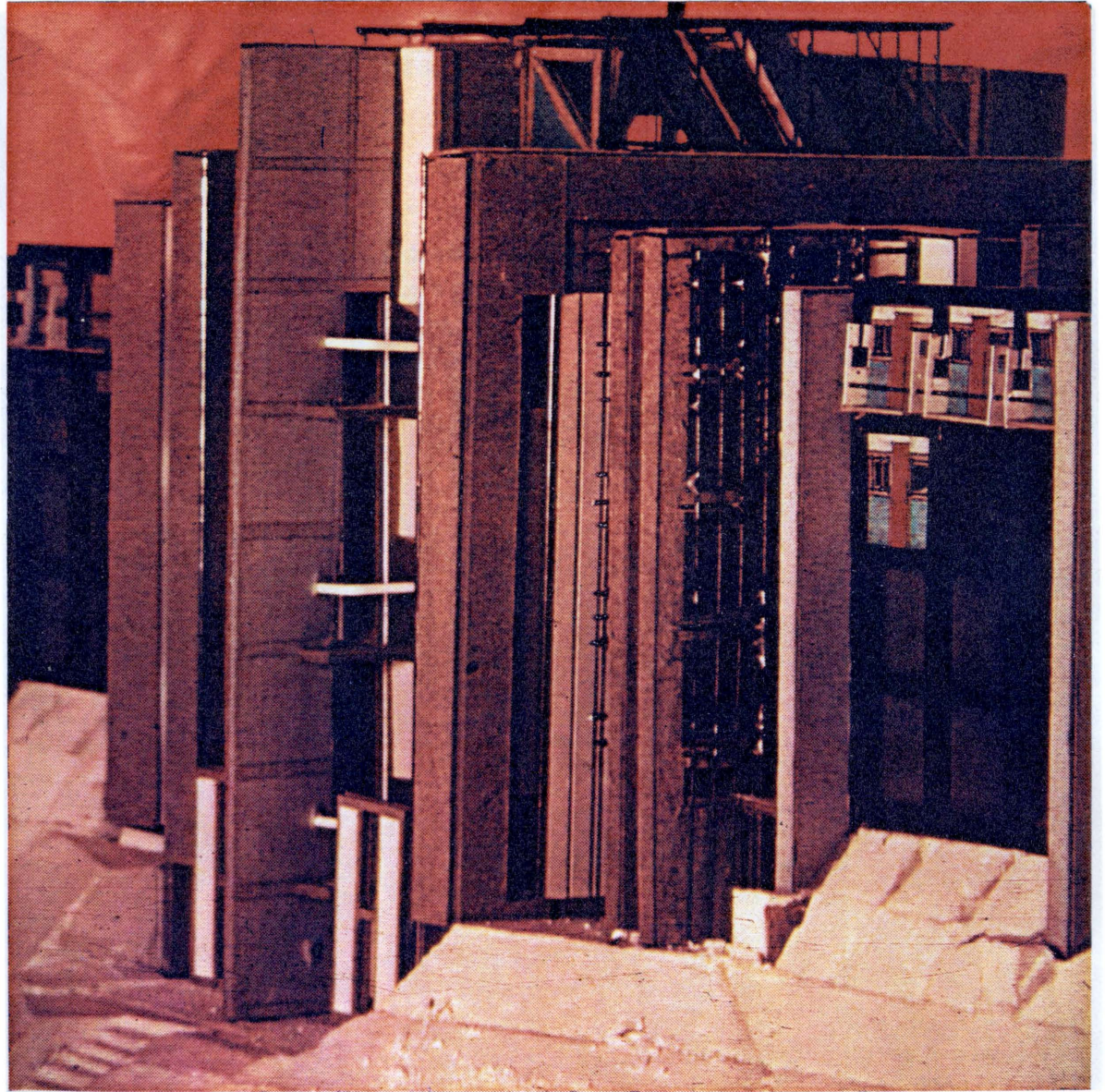














RECAPITULATION That part of a sonata-form movement, following the development section in which the material of the exposition is restated with the second subject now in the main (tonic) key (Headington, p. 118).

The second subject of this thesis, the place, must become the focus in this section for reasons other than to adhere to a definition of a recapitulation. The project has been an exploration in methodology, and specifically, in the use of analogy. However, it is the design of a physical place which culminates the study. And this place is to be enjoyed by students whose sensitivity to sound can be assumed to extend to other senses. For this reason, I have chosen to interpret the architecture in terms of musical concepts, questioning a range of experiences anticipated to occur in this composium.

Movement is essential to architecture. Movement of people, of equipment, of power, of water... vertical movement, horizontal movement, through movement, cross movement, fast movement, slow movement... Movement through a space can be continuous and regular, its makeup homogeneous. Accelerando and ritard do not exist in reference to such a flow. This type of flow is experienced in the Bach quarter. Prismatic elements of water trinkle constantly to a steady metre... People move as individuals in succession creating the regular pulse, visually and audibly, which mark the Bach quarter.

In direct contrast to such flow, movement through the Beethoven quarter ranges from andante to allegro, flowing smoothly until interrupted by dramatic pauses. This movement is conditioned by changes in scale of circulation space and adjoining space, as well as by changes in direction of flow. Flow through the Wagner quarter ranges from irregular patterns to controlled ones but with no marked transitions, while flow through the Schoenberg quarter follows rigidly the set of axes which form a void at their intersection. The architectural concerns which determine the nature of movement in this composium are scale, direction, surface texture, and light patterns. These concerns, as well as the types of movement, can be easily described in musical terms, reinforcing the two-way nature of the analogy.

Functional organization is another feature basic to architecture. A relationship of activities at one scale can be embedded in a similar relationship at another scale. This idea, if applied, must be flexible enough to accomodate violations which occur in response to scale change. However, it allows a code to form in which the experiences in one place aid in the prediction of those in another place. Each quarter has a special music space which serves this purpose. The organization of the organ shaft in the Bach quarter is transformed to become an organizational unit of living, practice and gathering. These units are then arranged in sequential fashion, offsetting their circulation paths for privacy and variety, and these groupings are repeated on other levels in offset fashion also. This almost equal distribution of activity cells throughout the building creates a

homogeneous, tight weave articulated only with the special organ shaft, teaching spaces, and library. An outdoor wilderness of trees and water exists alongside the Beethoven quarter reflecting the master's love of nature and his habit of composing while on long walks. Its organization is not highly articulated, and it allows freedom of activity throughout. However, its scale changes and public to private transitions are transformed from outside to inside. The performance and viewing functions of the Wagner roof theater are mapped onto the music and living spaces within. The operations in geometry, as well as the public/private relationships of the Schoenberg instrumental design workshop are mapped onto the larger scale of the building. The arrangement of spaces in each quarter calls forth an interpretation of each composer's organization of subjects, themes, motives, and basic sets respectively. From the staggered entries of the subject of a Bach fugue to the simple juxtaposition of sets in Schoenberg's works, the organizational concepts of the composers are inferred by those of the composium.

Light, as creator of pattern and rhythm, gives much more to architecture than mere illumination. Light and shadow possess scale, demark change, and form dancing patches to entertain the eye. Small increments of light enter through many openings in the Bach quarter. Little variation of scale exists. Light characteristics in the Beethoven quarter possess greater variety. They range in scale and in directness as filters are applied. Regular rhythms are broken, and syncopated patterns result. Regularly spaced light sources exist in the Wagner quarter but the light is cut, bent

and colored to form a variety of lighting conditions which flow fluidly, one to the next. The musical/mathematical operations of inversion, retrograde, and retrograde inversion exist on all scales in the Schoenberg quarter in terms of geometry and position of openings. Light reacts to these as it will, imposing its own properties. Visual rhythms created by light interacting with material form one more means of examining architecture in terms of music.

Other architectural concerns that can be examined in terms of music include edges and boundaries, scales, materials, color...but these will not be examined in the recapitulation. They are listed only to show that the analogy has not run dry. An architectural vocabulary serves well in the description of music. A musical vocabulary serves well in the description of architecture. One learns a language and applies it in new situations. For me, the application has proven fruitful.

CODA A closing section to a movement. In sonata-form, it follows the recapitulation (assuming that a coda is used at all). It may be brief or, as in the case of Beethoven's "Eroica" first movement, substantial (Headington, p. 35).

At what point does the use of an analog pass from generator to a device for examining parallel structure?

Does its role pass back and forth between the two?

How can one control the breakpoint where the analog passes from generator to parallel? (and the process passes from private to public?)

Can a vocabulary based upon concepts in hearing extend to define visual and experiential concepts?

Can the range of treatment of the elements which make up the form language of this composium extend further and still maintain a sense of unity?

Does the use of metaphor/analog prevent linear thinking in spite of the fact that the analog may be of sequential nature as in the case of music?

Would another analogy be more appropriate for the design of a composium?

With these questions, I close on an upbeat.

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A COMPOSIUM IN FOUR QUARTERS

by

Kristin Anne Kappmeyer

(ABSTRACT)

composium = compose + symposium

The use of a music/architecture analogy is employed in the design of a place for the study of composition. Four models for examination include Johann Sebastian Bach, Ludwig van Beethoven, Richard Wagner, and Arnold Schoenberg.