

# 4: Spatial Sequence

## What:

- **A sequence of 3 spaces linked to each other by a path. Each space will include an entry zone and a small gathering space**
- **Each space will be designed to be most effective in a different season; spring, summer, and fall.**
- **The spaces will create a unified design composition**

## Why:

This assignment builds on the previous assignment but now adds complexity through more specific program requirements as well as a materials budget. You will continue your exploration of the relationship between architecture and human use and interaction as well as the way that light and form can be used to create interesting architectural pieces.

## How:

- **3 phase process**
  - 1. Research and Concept and Parti development**
  - 2. Preliminary Design**
  - 3. Final Design**

You will use the same palette of light and form as you did in the previous assignment but in this assignment, you will be limited to materials in your "Kit of Parts". You will also be able to include the landscape and landscape materials in your design. The pieces in your kit of parts are based on the root 2 proportional system. You will see how a proportioning system can be used to create a unified composition while still allowing for variety.

As with the Community Gathering Space assignment, a successful design will begin with a strong concept. This assignment is significantly more complex and requires a concept that addresses the ideas of transformation as the elements address the distinct requirements of each season while maintaining a unified expression and coherent composition. Successful designs will combine a clear compositional organization and an effective architectural vocabulary. Review your materials to identify possible ideas based on their forms and relationships.

In this assignment we will emphasize the process of design. Record your research and ideas in your sketchbook. You will need to include notes and sketches that reveal your process in your final presentation.

## Objectives:

- To be able to precisely construct a set of elements from specified materials.
- To be able to develop a concept capable of responding to a range of requirements effectively
- To be able to employ a proportioning system in the development of a design.
- To be able to abstractly diagram the concept for a design.
- To be able to develop an effective parti diagram as a tool in design development
- To be able to define a series of spaces that creates an integrated experience
- To be able to develop two-dimensional documentation of a three-dimensional model.
- To be able to accurately and consistently represent a three-dimensional model using orthographic and axonometric drawings.

## Making Parts

Design often involves the ordering of predefined elements. At the smallest scale this involves material elements such as 2x4 studs, 4x8 sheet of plywood, concrete blocks etc. At an intermediate scale it may include prefabricated trusses, windows and doors. At the largest scale it might include spatial units. The creativity comes not in designing the elements but in their use.

The first phase of this project involves creating a kit of parts that will be used to explore and develop your design.

As you move through the four phases of this assignment you will define and analyze the problem graphically and physically, individually and as a member of a group. You will keep a record in your sketchbook, which will serve as your journal of this process. Photocopies of sketchbook pages will be incorporated into your final presentation.

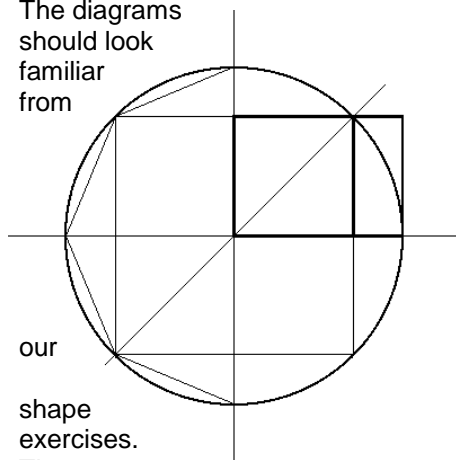
## Proportioning Systems

There are a set of classic proportioning systems that have been used to aid in the definition and composition of a design's elements. These include the golden section, root rectangles and the Fibonacci sequence. These systems are based on observing patterns in nature including the proportions of the human body.

Architectural, graphic and product designers have used these systems as an aid in making compositional decisions. Using a proportional system gives a composition a set of related, repeated dimensions that create one level of relationship between a composition's elements. In addition, research has shown that we perceive some proportions as more pleasing than others. For example, a rectangle whose proportions match that of the golden section (5:8) has been chosen as the most pleasing.

In this exercise we will use the root 2 rectangle. The root 2 rectangle was seen by Renaissance artists as containing the link between the two fundamental geometric forms, the circle and the square which between them symbolized the totality of the universe. The circle represented the heavens and nature while the square represented earth and man.

The diagrams should look familiar from

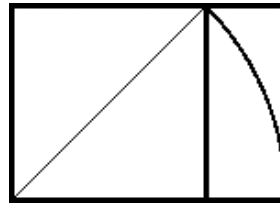


our

shape exercises.

The

geometric source for those exercises is part of what contributed to their aesthetic success.



## Kit of Parts

The kit of parts will be based on a Root 2 rectangle and its subdivision that always creates smaller root 2 rectangle half the size of the previous. The proportions of the root 2 rectangle (1:1.41) are close to the proportions of the golden section (1:1.618).

The kit of parts is to be constructed with care and should represent your best effort. The scale of the parts is  $\frac{1}{4}'' = 1'-0''$ . All planar elements should be cut from white foamcore, linear elements should be cut from  $\frac{1}{4}''$  square pieces of bass wood or balsa wood, landscape elements should be cut from white Styrofoam ball or sheets.

Construction will be judged on the preciseness of the pieces' dimensions and the quality of the cuts. Cuts should be straight and square without any ragged edges.

### **Planar Elements: Cut from White Foamcore**

6 @ 12'x17'(full rectangle)  
6 @ 12' x 8'-6"  
6 @ 6' x 8'-6"  
24 @ 3' x 4'-3"

### **Linear Elements: Cut from ¼" sq. Balsa or Bass wood**

Balsa wood is less expensive but more difficult to cut crisply. Bass wood is more expensive and harder, it is best cut using a model saw but can generate crisp, precise cuts. Make sure with all cuts that you allow for the thickness of the cut itself. Do not measure a long member into multiple sections, measure each section only after the previous cut has been made.

8 @ 17'                      8 @ 4'-3"  
8 @ 12'                      8 @ 3'  
8 @ 8'-6"                    8 @ 1'  
8 @ 6'

### **Base**

One base from white Foamcore  
Site/Base 60'x85'

Draft the following details on the base:

- Buildable Area 48'x72' centered within site
- 6' grid using fine ink lines

### **Plant Materials**

The plant materials include trees and hedges. Use white styrofoam for hedges and tree crowns

Hedges are 3 feet wide and can be any length or height in 1-foot increments. ¾" Styrofoam is the most convenient material for hedges but they can be cut from any size block.

Build one that is 3'x4'x8'.

Trees have 12" diameter trunks and a 16' diameter canopy and are 22' tall from ground to the top of the canopy. Use 4" diameter Styrofoam balls with ¼" diameter wood dowels.

Prepare trunks and canopies for 6 trees but do not assemble. Trunks and canopies must be cut.

Slice off the ball to define the bottom of the canopy. Cut canopy 1" from the bottom of the ball, use the larger section for the canopy. Sharpen the dowel before pushing it into the ball)

### **Scale Figure**

Create a ¼: scale figure on a small, thin base that can be placed and moved within the final model. It may be drawn or scanned.



## Problem:

The problem is to design a sequence of three gathering spaces within a park environment.

We have explored the creation of transitional and arrival spaces. We will employ the understanding that was acquired in that earlier exercise and extend it to a more complex spatial sequence. The larger issue that architecture is experienced as a sequence of spaces will be explored to investigate spatial definition, openness and complexity and the relationships between spaces

The design must respond to the following design goals and constraints.

## Design Goals:

- The sequential experience must include 3 major spaces that are clearly the dominant spaces. **If they are ambiguous or require explanation they are not successful as the dominant spaces.**
- The 3 spaces must be approximately equal in area
- The major spaces may not be physically subdivided
- The major spaces will each create a space specifically suited to use in one of the seasons, spring, summer or fall.
- The major spaces will respond to the solar angles and climatic considerations to meet these requirements
- The major spaces will be linked by a **single**, defined circulation path that creates a simple, sequential route from one end of the site to the other.
- The circulation should serve and not dominate the major spaces. It should be carefully studied to insure that circulation does not compromise the quality of the spaces.
- The sequential continuum should afford a smooth and logical changing set of experiences moving through the three spaces. You will determine which sequence of seasons is most effective for your design
- Each major space will be preceded by an entry/transitional space.
- The entry/transitional spaces should be developed to enhance the overall spatial experience.
- Both the architectural elements (positive) and the spaces around them (negative) should be active parts of the design and connect the design spatially with the larger site.
- The design will appear as a unified form on the landscape rather than 3 separate elements and will use a common architectural vocabulary

The following comments are to help you understand concepts fundamental to this design problem. Consider the questions posed as you develop your design. Expect to be able to respond to these questions during your reviews.

## Spaces & Circulation:

When a circulation path passes through a space it affords multiple readings of the space. You can simultaneously perceive the space as a whole, the space defined by the implied or explicit circulation route and the spaces defined by subtracting the circulation space from the overall space.

- Does the circulation path dominate or serve the space?
- Can you be in a space or are you always in the circulation?
- Do the spaces defined by the path provide sufficient space for people to occupy comfortably?
- Can you step out of the circulation path into a major space to pause and enjoy the space?

## Spatial Transitions:

Spaces do not exist in isolation; they must be entered and exited. The experience of moving from outside to inside or from one space to another can greatly enhance the experience of the spaces themselves and the overall sequence. Consider the anticipation and recollection of a space.

- When and how is it first seen and recognized?
- What is the last impression?
- What is seen if we turn to look back?

## Openness & Enclosure

The elements of spatial definition, solids and voids, implied and explicit edges create a distinction between interior and exterior. The distinction is not a duality but a continuum from open to enclosed. Each space must find an appropriate expression between the two ends of the continuum.

## Positive/Negative

The design should not only be about things but also about what is created by the things—it should be about space and relationships between elements. Every time we locate something it has the potential to relate to other elements and define new spaces and patterns. Do not just consider the major spaces you are creating but also those that are being created between the spaces and the spaces and the larger site.

## Constraints:

### Parts:

- You may use any combination of the elements defined in the Kit of Parts in any orientation. The part may only be modified as described below:
  - Rectangles may be cut along their diagonals corner to corner.
  - Rectangles may be cut along perpendicular to the long axis so that the new pieces maintain the same proportional system.
  - Planar elements may be curved along any single axis.
  - Linear elements can be shortened by 1-foot increments and ends may be cut to fit with other elements.
- Architectural elements may not extend higher than 24' above finished grade
- All elements should be connected and supported in a structurally reasonable fashion. (Single point or edge connections are not considered structurally reasonable).
  - Linear elements may be columns or beams.
  - Planar elements may be walls or roofs
  - Horizontal elements must be logically supported. Rectangular planes must be supported at at least three points.
- The model must be structurally stable.

### Site:

- Assume the site exists in a climate similar to Illinois.
- The site and its immediate surroundings are flat.
- The park is landscaped with grass and trees.
- Architectural elements may not extend outside the buildable area.
- At least 4 trees' trunks must be located within the buildable area but their canopies may extend outside the buildable area but must stay within the site limits.
- You may pave under trees but you may not locate any architectural elements under trees.
- Hedges and additional trees may be located anywhere on the site
- You may change the site's contours a maximum of 4' above or below grade in one-foot increments.
  - This is the only way you can generate changes in elevation
- Site contours may not come closer than 4' to the site's boundary.
- The maximum slope created by site contouring is one foot of rise for two feet of run.

### Paving:

- The walk and floor area of the three major spaces and the path must be paved. All other areas within the site and adjacent park are grass or planting.
- The alignment and width of the walk may be modified only within the buildable area of the site.
- The minimum width of the walk is 6'
- Paving can go up and down hills but must be on grade. No stairs are permitted

# Research, Concept Development and Parti Diagrams

Begin by researching solar angles and weather conditions for the 3 seasons that your spaces will be occupied. Use this information to develop a basic concept or concepts for your design. You may find that you have several different ideas at this time. Do not eliminate one without first exploring its viability. You may find that multiple concepts will coalesce into a single concept or that an idea will become a secondary component to your design. The combination of your concept with your research will lead to your parti diagrams. Explore at least 3 different partis for effectiveness. Analyze each in terms of circulation, lines of sight, solar patterns, and conformance with your concept.

## Requirements:

### Research

- Prepare a panel that communicates the results of your research. It should include at least the following for each of the 3 seasons:
  - Solar height angles, maximum and minimum
  - Sunrise and sunset locations
  - Temperature range
  - Average and maximum winds and wind directions
  - Average and maximum precipitation
- Diagrams will use a variety of views including plan, section and elevation but other types of drawings may be used as well
- Work in any non-electronic media or combination of media that you choose including collage.
- All text should be incorporated into the design
- Color, if used, should contribute to the communication of the diagrams.
- Limit your information to a single panel, 24"x36"x1/2" maximum

### Concept Statement and Parti Diagrams

- Lettered concept statement, 3 sentences maximum
- 3 parti diagrams-each diagram should include the following elements:
  - location of site entrance and exit
  - 3 gathering/major spaces identified by season
  - entry/transition spaces
  - circulation pattern

The parti diagrams should be done in a plan view and proportionally accurate but do not need to be drawn at a specific scale. Typically, a small drawing is more effective and encourages an appropriate degree of simplification. Do not start designing the specific spaces, keep them diagrammatic.

The parti diagrams may also include the following elements if they are important to your concept:

- Lines of sight
- Compass orientation
- Landscape features
- Regulating lines

	<b>4: Spatial Sequence Research, Concept and Parti Diagrams</b>	<b>Excellent 10</b>	<b>Very Good 9</b>	<b>Good 8</b>	<b>Average 7</b>	<b>Fair 6</b>	<b>Poor 5</b>	<b>Incomplete 2.5</b>
<b>Craft 30</b>	Quality of Assembly: drawing, lettering, print, cutting, gluing							
	Quality of the drawings							
	Clarity, graphic quality and cohesiveness of text							
<b>Diagrams 170</b>	Solar Height Angles-correct & complete							
	Clarity and creativity of graphics							
	Sunrise and Sunset Locations-correct & complete							
	Clarity and creativity of graphics							
	Temperature Ranges-correct & complete							
	Clarity and creativity of graphics							
	Wind patterns correct & complete							
	Clarity and creativity of graphics							
	Precipitation Patterns-correct & complete							
	Clarity and creativity of graphics							
	Parti Diagram #1-complete							
	Clarity and effectiveness of design							
	Parti Diagram #2-complete							
	Clarity and effectiveness of design							
	Parti Diagram #3-complete							
Clarity and effectiveness of design								
Concept Statement								
<b>Presentation 30</b>	Layout meets assignment requirements and exhibits a clear design concept and is unified							
	Text is complete and well drawn							
	Text is integral part of presentation design							
	<b>TOTAL</b>							

## *General Comments:*

*This is a one story design; you may make hills and valleys but not staircases.*

*Do not think of these as three separate objects it should appear as a single form on the landscape.*

*Budget your materials carefully, you have a set number of architectural elements but unlimited paving, bushes and hills and valleys, use them effectively.*

## **Design Development Model**

### **Process**

The final component of the preliminary design process involves testing and implementing the parti diagrams, concept and research in physical form.

**each student will** use their kit of parts to design a spatial experience that conforms to the **Design Goals**. In addition to being a careful exploration of the design goals based on your design concept your design development model must meet the following requirements.

The viewer should be able to identify the entry/transition spaces and gathering/major spaces by observation without any explanation by the designer. Uncertainty or ambiguity in this area indicates a weak design.

- Begin by exploring each of your parti diagrams
- Determine which, or which combination, will be most effect
- Complete a preliminary composition that includes all of the required spaces and elements

## Model Requirements:

- The model must be sturdy to withstand use
- The model should be constructed in a monochromatic palette based on the white foamcore and beige wood
- All elements within the model must be from the kit of parts or landscape material created according to the assignment requirements
- Do not model furniture; this includes benches, think of elements in a more abstract manner. Objects at an appropriate height and location may be used for seating while they simultaneously define a space or serve some other function.
- Do not model railings
- Define path neatly with a neutral, contrasting material. Grey construction paper, sandpaper or similar materials work well
- At least one scale figure must be visible within one of the major spaces.
- Temporary connections, such as pins and tape, may be used to allow later revision but the model must be stable and connections cannot be visually distracting.

<b>4: Spatial Sequence Preliminary Design Model</b>		<b>Excellent 10</b>	<b>Very Good 9</b>	<b>Good 8</b>	<b>Average 7</b>	<b>Fair 6</b>	<b>Poor 5</b>	<b>Incomplete 2.5</b>
<b>Craft 40</b>	Quality of model assembly, cuts and joints							
	Model is clean and structurally stable							
	Base is accurate with buildable area, grid and path carefully drafted							
	Path is clearly and neatly defined							
<b>Design 150</b>	Design includes three clearly defined, well designed gathering/major spaces							
	Spaces respond to seasonal requirements							
	Spring space is well developed in terms of use and form							
	Summer space is well developed in terms of use and form							
	Fall space is well developed in terms of use and form							
	Entry/transitional Spaces are clear and developed							
	Negative areas are developed and contribute to design							
	Landscape elements are incorporated effectively into design							
	Circulation path contributes to experience of spatial sequence							
	Design conforms to problem constraints							
	Creativity of the exploration and design							
	Design is a unified and cohesive composition							
	Quality of the spatial sequence							
	Design expresses a clear concept							
Aesthetic quality of design								
<b>TOTAL</b>								

# Final Design Refinement & Documentation

The final phase of the project will include the refinement and documentation of the design represented in the model. Each student will develop a set of drawings and a final model.

Modifications of the design should maintain the overall spirit and concept of the original design and must continue to conform to the Design Goals and Constraints.

- Element relationships must be refined and dimensions made systematic. Regulating lines and key reference points must be defined.
- Elements may be added or removed.
- Location of components may be adjusted.
- Round columns may be substituted for square columns.
- The length of linear elements may be adjusted in 3" increments.
- Elements of like material may be joined to form a single larger element.
- The walk/paving must contain a uniform, rectangular, grid. Size of grid will be determined by each student. Circulation path and major spaces must be paved with grid shown.

## Drawings

### Sketchbook

- Xerox of original pages

As you work through the project you will need to make drawings and notes to generate and communicate your ideas and to record decisions. Use a sketchbook as a chronological record of your process. Include photocopies of your sketchbook pages in your process drawings.

### Parti Diagram(s)

- Any media or material

Include drawings that express your conceptual framework. Concepts that may be shown in your diagrams are: (See the diagrams in Precedents in Architecture available in classroom and library)

- Location of site entrance and exit
- 3 gathering/major spaces identified by season
- Entry/transition spaces
- circulation pattern
- Lines of sight
- Regulating lines and geometries
- Organizational systems

**Concept Statement:** a **brief** statement of your idea, do not restate the problem but describe the guiding theme or spirit of your design. You may use full sentences or bullet points but make sure you proofread for spelling and syntax.

## **Orthographic Drawings**

Orthographic drawings use the standard conventions for cut elements, hidden elements and viewed elements. They must also include **graphic scale, north arrows and section cutters**. Plan should show all paved areas with grid. Grid should be sized and positioned to be responsive to design's requirements.

### **Floor Plan and Section**

- Tool drafted in ink on vellum or drawing paper
- 1/8"=1'-0"
- Floor Plan cut between 3' and 5' above entry grade
  - Label each space by its season
- Section cut thorough length of site. Locate to show important information of roofs etc.

## **Layout**

Compose the drawings into a final presentation.

The mood and character of the composition should reinforce the character of your space

Use any text or descriptions that you choose to enhance your composition.

Use any additional drawing or diagrams that will contribute to our understanding of your design concept and process

All panels will be 24"x36"x1/2" or smaller

<b>4: Spatial Sequence Final Presentation</b>		<b>Excellent 10</b>	<b>Very Good 9</b>	<b>Good 8</b>	<b>Average 7</b>	<b>Fair 6</b>	<b>Poor 5</b>	<b>Incomplete 2.5</b>
<b>Craft 70</b>	Quality of Assembly: cutting,							
	Quality of Assembly: gluing and placement							
	Quality of Assembly: path and paving with grid							
	Quality, consistency and accuracy of drafted lines							
	Plan is drawn with correct conventions							
	Section is drawn with correct conventions							
<b>Design 120</b>	Drawings have graphic scale, north arrow, section cutter and figure as appropriate							
	Meets and reflects design goals							
	Meets and reflects constraints							
	Design contains all required spaces							
	Size and shape of grid is appropriate for forms							
	Form develops through the phases of the project							
	Required elements are used to create a cohesive and comprehensible space							
	Design reveals an understanding of the relationship between part and whole							
	Sketchbook/Process drawings describe project's development							
	Parti is recognizable in final form							
	Gathering/Major spaces are architecturally effective and useable							
	Creativity of Design							
<b>Presentation 60</b>	Aesthetic quality of design							
	Layout meets assignment requirements and exhibits a clear design concept							
	Drawings are logically organized and easily associated							
	Text is complete and well drawn							
	Text is integral part of presentation design							
	Composition: enhances and reinforces design							
Composition is creative and aesthetically pleasing								
<b>TOTAL</b>								