SUBMISSIONS

BEST BEGINNING DESIGN PROJECTS

VOL. 1, NO. 1

The School of Architecture & Urban Planning The University of Wisconsin-Milwaukee

P.O. Box 413 Milwaukee, Wisconsin 53201

THE UNIVERSITY OF WISCONSIN-MILWAUKEE
SCHOOL OF ARCHITECTURE AND URBAN PLANNING
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414·963·4014

October 1, 1979

Colleagues:

Thank you for your submissions to the "Best Beginning Design Projects Collection". As I said I would do I've collected and reprinted them for your use. Some are longer and some are shorter, some had no explanation and some had a lot. Everything submitted is printed with virtually no editing and there is no order to the listing.

If you use any of the projects, remember that they are the creative fruits of your peers and they deserve credit. If you reprint or republish them, you should ask their permission.

I look forward to meeting you and, in the case of my friends and former students, see you soon.

Thanks again,

Tim

Tim McGinty

Encl.

P.S. Sorry about taking so long to send these out.

CENTER FOR ARCHITECTURE AND URBAN PLANNING RESEARCH

Participants "Best Beginning Design Problems Collection"

Tony Dubovsky	1	Synthesis Project	Architecture Univ. of Calif.-Berkele Berkeley, CA 94720
Mike Jordan	8 10	Connections: Line, Point Plane, Mass	Architecture Auburn University Auburn, AL 36830
Jack Marshall	14	Conceptual Sketches	Architecture Louisiana State Univ. Baton Rouge, LA 70803
Jim Ambrose	15	4 Structures Problems	Architecture Univ. of So. Calif. Los Angeles, CA 90024
Alan Cook	18 22	#2 Conceptual One-Way Movement #5 Asurprize	Architecture North Dakota State Univ Fargo, N.D. 58102
Bob Findlay	23	Body Support Structure	Architecture Iowa State Univ. Ames, IO 50001
R.T. Meeker	24	Grid Dynamics	Architecture Univ. of Illinois- Champaign-Urbana Urbana, IL 61801
W.H. Huff	30 34	The Parquet Deformation The Mirror-Rotation Symmetry	Architecture-Hayes Hall State Univ. of New York at Buffalo Buffalo, NY 14214
Marc Treib	35	ED3 Problems; including, The Perceptual Model and the Cardboard City	Architecture Univ. of Calif.-Berkeley Berkeley, CA 94720
Nan S. Blake	49	Space Construct Final Problem	Architecture Univ. of Texas-Austin Austin, TX 78712

Janet Needham	52 Form a Society	Architecture Univ. of Texas-Austin Austin, TX 78712
Stuart Haden	55 IDENTIKIT 56 Habits & Habitat	Architecture Univ. of Texas-Austin Austin, TX 78712
Larry Speck	57 #6 CLIMATE·WEATHER·DRAWING 58 #7 Structure·Materials·Models	Architecture Univ. of Texas-Austin Austin, TX 78712
Ed B. Wallace	59 Working paper	Architecture Univ. of Texas-Austin Austin, TX 78712
Owen Cappleman	60 Studio Problem #5: Final Problem	Architecture Univ. of Texas-Austin Austin, TX 78712
Tim McGinty	61 Nine Rooms: A Daylighting Experiment 63 #12 Looking for Daylighting 64 #3 Life of a Building	Architecture P.O. Box 413 Univ. of Wisc. Milw. Milwaukee, WI 53201
Thomas Vonier	65 Best Design Buy	Thomas Vonier Associates 2222 Q Street N.W. Washington, D.C. 20008
David Kal	66 Two Problem Series	Architecture Univ. of New Mexico 2414 Central SE Albuquerque, NM 87131
Gerald I. Anderson	69 Sketch Problem: A Building for Architecture's Sake	Architecture Univ. of Tennessee Knoxville, TN 37916
Jim Kudrna	70 Back to the Basics	Architecture University of Nebraska- Lincoln Lincoln, NB 68588
Rochelle Martin	72 Perceptual/Psychological Space	Architectural Research Laboratory Univ. of Michigan Ann Arbor, MI 48109

Robert Craycroft	73 First Year Final 74 Design Project	Architecture Mississippi State Univ. Mississippi State, MS 93762
Raj Barr-Kumar	78 Composition 84 Multi-Sensory Cube 86 Human Comfort and 90 Building Response to Climate 102 Bus Stop 103 Living Unit	Architecture University of Kansas Lawrence, KS 66044
William R. Benedict	104 Pattern 111 3D-GRID 106 Poster	Architecture University of Tennessee Knoxville, TN 37916

6/7/79
TMc/em

ENVIRONMENTAL DESIGN 6B
WINTER QUARTER 1978-79
WEEKS 7-10
SYNTHESIS PROJECT:
FOOD FOR THOUGHT

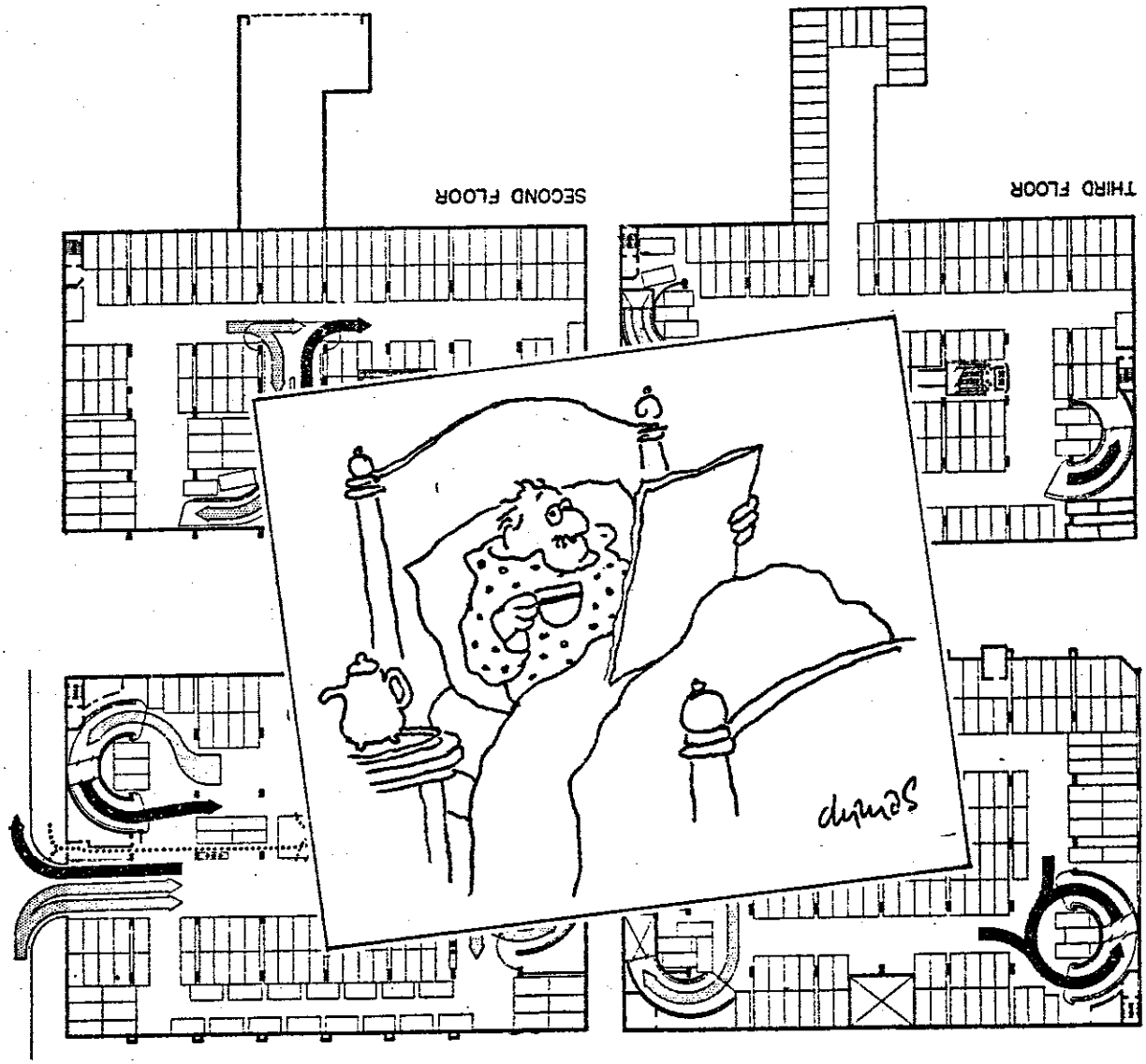
Synthesis Project

Architecture
Univ. of Calif.-Berkeley
Berkeley, CA 94720

WONG

Tony Dubovsky

LOCAL EATS



ED 6B
WINTER QUARTER 1978-79
SYNTHESIS PROJECT: LOCAL EATS

A STORY: PLACE / CHARACTER / MEAL

Choose one of the three eating spots on the following sheets as your focus for an investigation of place. Spend some time on the site; how does it change during the day? Develope a story based on the particular nature of the place as you perceive it. Your story may be based on someone actually connected with the place; or it may be total fiction.

The story should involve the physical nature of the setting as a key element. ("They met at such and such table; it was a rainy afternoon; she had just stopped in for a cup of tea....") If possible, include elements which involve the actual history of the place. ("Years ago, when the Terminal Inn was no more than a....") Robin's Sandwiches, for example, has had a very lively past.

PRESENTATION

The main objective of the Synthesis Projectis to present a particular place graphically in as full a sense as possible. To do this requires both close observation and imagination. For example, how do you convey place as you experience it? Which details are important? Can this be done in an elevation view? Is the quality of light important? The time of day (or night)? What about non-visual aspects: the temperament of the owner, the waitress, the clientele? Etc. etc. Your presentation should address such issues, as well as others which you consider importaant, vis a vis a story.

See the Winter '78 Projedt Description for a full discussion of the relationship between an experiential approach to place and the more conventional design drawing presentation. What does each approach contribute to our understanding? What does each leave out?

Your presentation should convey, first, a story about the place, including its history related to the lives of your characters. It should also convey the physical setting, using each of the design drawing systems we have treated in the ED 6 course. These should be employed where appropriate. For example, what kind of information is best conveyed in elevation? in plan? in an interior perspective? The physical setting should play an active role in the story you tell.

These two elements, the story and the physical setting should work together to give a clear picture of place as you experience it.
Have fun! Be observant! Be inventive!

PROJECT GUIDELINES

1. Notebook. $8\frac{1}{2}$ x 11". Record your observations; develop your characters and story. Notebook to be turned in as a supplement to the drawings, and as a record of your work. Each page should be dated.

2. Drawings. 22" x 30" format; sheets must be used horizontally, linking end to end. No exceptions! Your presentation should consist of a minimum of 3 sheets, printed by diazo. Each sheet should be clearly numbered to show sequence.

SCHEDULE

Week 7. Project assigned. Spend time observing the place; develope notebook and story.

Week 8. Measured drawings: orthographics; paraline; perspectives. Develope your own schedule in consultation with your TA. This is very important!

Week 9 Putting all the parts together.

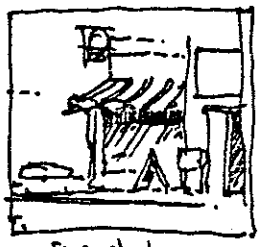
Week 10. Drawing it up. Allow entire week for the final drawings at 22 x 30".

Project due on FRIDAY, MARCH 16, at 12:00 NOON. Turn in diazo prints at Room 103 Wurster (Tom Stone's Office). No late work accepted.

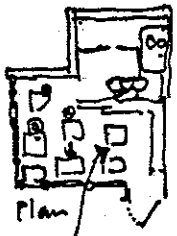
Review will be held on Friday, March 16, 2:00 to 5:00, in the main exhibition space on the first floor.

① The PLACE : ② The CHARACTER : ③ The Meal

Terminal Inn : Harvey Ishmael : Breakfast Special.

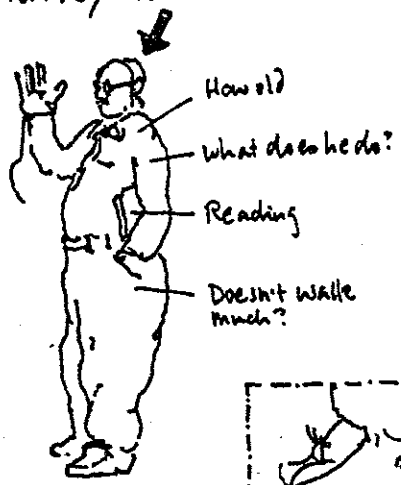


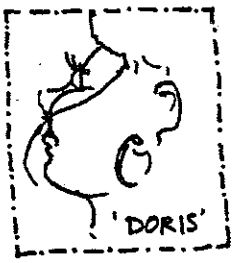
Snapshot



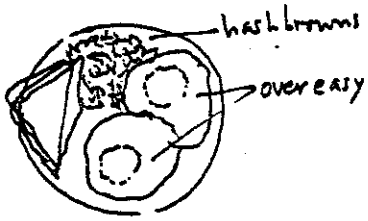
Plan

They met HERE (Table # 5)



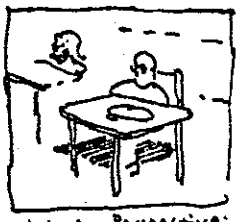


The breakfast THEY SHARED.

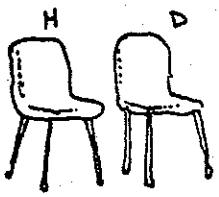


TOP VIEW.

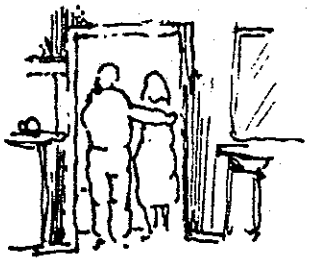
- Harvey likes sunny side up
- Doris likes over easy



Interior Perspective: Harvey at Breakfast before Doris.



After Doris: Their CHAIRS.



Harvey and Doris leaving the Terminal Inn.

Subplot:

A

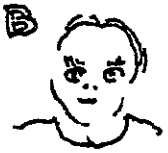
HARVEY ISHMAEL (Life Story)

Born: Chicago Ill. 1933
U.S. Army in Korea
Returned to Chicago.

etc.

Presently works as furniture refinisher in North Oakland.
Often eats breakfast at the Terminal Inn. (late AM).

B



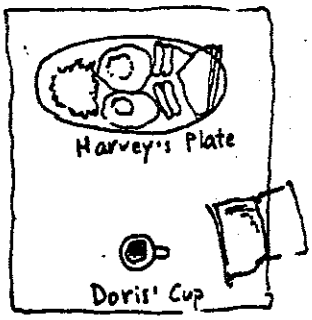
DORIS DELATORRE (Life Story)

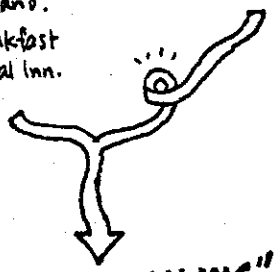
Born: Indianapolis 1941
Moved to Detroit in late '40's.

Teller at Security Pacific.
Coffee breaks at T. Inn.

Discussions over coffee

- Doris reads James
- Harvey likes the movies





"CLEAR SAILING"

Together at last.

(A SAMPLE STORY)

Terminal Inn / 100 Berkeley Square / Berkeley, CA

Dubovsky 5

Robin's Sandwiches / 2080 Grove Street / Berkeley, CA

Dubowsky ⑥

Fu Lu Shou Restaurant / Kittredge Sandwiches and Tempora
2115-9 Kittredge Street / Berkeley

Dubrovsky 7

Mike Jordan

Connections: Line, Point
Plane, Mass

Architecture
Auburn University
Auburn, AL 36830

Entries in the problem sweepstakes

1. "Connections" has been used in first through fourth year studios with excellent results at each level. It is accompanied by lecture/slides on public spaces, spaces with a focus, and the nature of grids as generative devices.

2. Point / Line / Plane / mass is used as an exercise in formal vocabulary. It is accompanied by a lecture illustrating the usage in painting, sculpture and architecture.

   Line = column
   Point = column in plan
   Plane = wall
   mass = form.

Mike

Auburn University

Mike Jordan

Assigned October 31, 1977
Due - 5:00 P.M.
November 4, 1977

CONNECTIONS

Problem Emphasis

Further explorations in space, form, color, human scale, etc. introduction to symbols in architecture, grids as generative elements, etc.

PROBLEM

1. "SITE" - 12" x 12" white illustration board
2. Design a GRID base on one of the following elements:

   SQUARE
   TRAINGLE
   CIRCLE
   You may also use combinations of these forms.
3. Draw your grid on the "site" with black ink.
4. Using the grid patterns as a generative device, design and build the following elements at a scale of 1/4" = 1'-0":

   ONE MAJOR SPACE of at least 300 s.f. containing a focus or point of interest

   ONE MINOR SPACE of at least 100 s.f. containing the functions of entrance

   ONE CONNECTION between the two spaces listed above. It must be at least 40' in length
   VERTICAL dimensions of any space may not be less than 7'-0".
5. Spaces and connection may be below, on or above the surface of the "site."

6. Geometric forms derived from the grid you have designed must be used to express the three-dimensional qualities of your design (triangular grid = triangular building elements.)

7. The forms you design may be covered, partially covered, open or any combination of these.

8. Color may be used to reinforce the spaces.

9. Include at least one scale figure in your presentation.

ISSUES TO CONSIDER

symbolic form
scale
sequence of spaces
color
etc.

PRESENTATION

A presentation model at the indicated scale. You have a free choice of materials.

Jordan 9

auburn University
AR 110
Design Fundamentals
Fall Quarter, 1978

POINT/LINE

PROBLEM EMPHASIS

To explore, in two dimensions, the principles and elements of design.

FORMAT

White illustration board cut into a Golden Mean Rectangle whose minimum dimension is 8 1/2" (refer to Design Handbook).

PROBLEM

PART 1

Using the "Design Handbook" as a source, identify 1-3 design principles which you would like to explore. Make certain that they are not mutually exclusive, as a symmetry/asymmetry.

Using these principles as a source, develop a composition consisting of ONE POINT and ONE LINE. The composition is to illustrate the design principles you have selected. The point and line are to be cut from black paper and glued to the surface of the format. You should, however, try several solutions in sketch form before final assembly of your solution.

The design principles which you used in the composition are to be lettered on the front of the format.

PART 2

On a standard sheet of tracing paper with border lines and title block, draw your composition, and the format on which it occurs, at full scale. (Think of it as a plan drawing) Use graphite only.

QUESTIONS TO ASK YOURSELF

1. How large can a point be before it becomes a plane? Does a point have to be round?
2. How wide can a line be before it becomes a plane?
3. What is the relationship between the point and the line?
4. Etc.

Jordan 10

AR 110
Design Fundamentals
Fall Quarter, 1978

LINE/PLANE

PROBLEM EMPHASIS

Continued exploration of the basic issues of design.

FORMAT

Exactly the same as that used in POINT/LINE.

PROBLEM

PART 1

Using only the solution you developed in POINT/LINE, extend the point into a LINE in the third dimension and the line into a PLANE in the third dimension. These extensions should be designed so as to reinforce your original design principles. The extensions do not have to be perpendicular to the format surface. The top surfaces of the plane and line do not have to be paralleled to the format surface.

Use either chip board or illustration board for the third dimension extensions of your original concept.

PART 2

On one or more standard sheets of tracing paper with border lines and title block, draw four elevations at one-half full scale. Use graphite only.

Jordan 11

AR 110
Design Fundamentals
Fall Quarter, 1978

PLANE/MASS

PROBLEM EMPHASIS

Continued exploration of the basic issues of design.

FORMAT

Exactly the same as that used in POINT/LINE.

PROBLEM

PART 1

Keeping your original design principles in mind, extend the line in LINE/PLANE in any direction to form a PLANE. Likewise, extend the PLANE to form a MASS.

PART 2

On a standard sheet of tracing paper with border lines and title block, draw a PLAN OBLIQUE of your PLANE/MASS solution. If necessary, change the scale of your drawing to make it fit the sheet. Plan Oblique is explained in Architectural Graphics and will be reviewed in class.

AR 110
Design Fundamentals
Fall Quarter, 1978

ADDITIVE/SUBTRACTIVE

PROBLEM EMPHASIS

To explore the possibilities of additive and subtractive design in the context of the design principles.

FORMAT

Exactly the same as that used in POINT/LINE.

PROBLEM

PART 1

Assuming the design decisions you made in PLANE/MASS are fixed, either SUBTRACT or ADD to the PLANE/MASS composition one 2" diameter x 8" long cylinder. This should be done in such a manner that it penetrates both the PLANE and the MASS.

PART 2

Use your PLANE/MASS plab oblique as a source, develop one drawing, either freehand or mechanical, which renders the volumes in your ADDITIVE/SUBTRACTIVE composition as three-dimensional forms. Refer to the drawings on p.p. 75-76 in Architectural Graphics for inspiration. The drawing is to be on one standard sheet of tracing paper.

Jack Marshall

Louisiana State University

BEST BEGINNING DESIGN PROBLEM

Submitted as part of Papers on Beginning Design Education to 1979 National ACSA Conference in Savannah, Georgia.

Conceptual Sketches

For the first twenty minutes of each class each student will do a conceptual sketch. A simple description of an object or an environment and then the student will do a perspective drawing of that object or environment. The sketches will be done on sheets of 8½" x 11" drawing paper in pencil.

Examples

Beginning of Course - Draw a perspective of a 4" cube and a 4" pyramid sitting on your drawing table. Add shade and shadow.
End of Course - Draw a bird's eye perspective of a small church in a suburban environment. Add shade and shadows and scale figures.

Educational Goals

To have each student develop the graphic skills that will enable them to use sketches as a design tool.

Context

This problem is run in the First Year Graphics courses and the Second Year Architectural Design courses. In the Second Year the sketches become more complex and are sometimes related to the major design problems.

Statement about Selection

As a design instructor I am continually trying to get my students to study and develop their designs in three dimensions. Constructed perspectives take too long to be used, study models do not provide the opportunity for detail, but when the students develop the ability to do sketch perspectives they can use it as an effective tool in studying and developing the solutions to their design problem. I feel this problem is one way to help the students develop their sketching skills.

Jack Marshall, AIA
First Year Coordinator

Jim Ambrose

4 Structures Problems

Architecture
Univ. of So. Calif.
Los Angeles, CA 90024

...quirement for this assignemt by completing one ...e following two projects.

Project One.

Build a testable structural model to perform one of the following tasks:

Span Y distance as a clear horizontal span, carrying a minimum of X lbs at the center of the span.

Carry X lbs as a vertical load at a distance of Y above a horzontal surface.

Carry X lbs at a distance of Y as a cantilever load. X is vertical and Y is the horizontal distance from the load to the face of the support. ?

Materials for the basic structural elements are limited to wood and paper in any combination. Plastic, metal, string, etc., may be used only for connecting elements of the structure.

Within the constraints of some minimum and maximum limits, the models will be rated on the basis of their cost/benfit performance. Models will be tested to destruction and the ultimate load versus the total model weight will determine the score (and grade for the assignment.) The basic objective is to carry the specified load with the least weight of material.

Details of the model requirements and the testing and scoring procedures will be posted.

Project Two *

Explain the shell construction and the structure of a building. This must be an actual building whose construction was completed at least five years ago. Each student doing this project must do a different building. Buildings should preferably be in the Los Angeles area. Building selection must be submitted for approval by the instructor.

Explanation should be in graphic form with a minimum of text and notation. Use framing plans, building sections, isometrics, cut-away or exploded views as appropriate and effective for the explanation.

The documentation should explain the basic form and arrangement of the systems, the relations between camponents of the systems, the form and detail of the components, the basic techniques of assemblage, etc.

Specific format requirements for the presentation will be posted.

* Oldie but Goodie. Needs lots of explanation for beginning students.

Architecture 205

Assignment 7

A large park wants a prototype canopy structure to use as a sun/rain shelter adjacent to its scattered outdoor food concessions.

Requirements:

600 sq ft of solid roof - no skylights, no grills.
9 ft minimum clearance to the bottom of the roof structure.
Minimum of vertical post supports.
Prefer non-flat, draining roof to avoid leaf accumulation.
Construction should be simple, economical, weather resistant and kid-proof.
The structure should be casual but attractive. Not too cute, but interesting and park-like in character.

Materials: Wood posts and wood roof structure - timber, pole, glulam, plywood panel, etc.
Foundations - wood posts set in concrete.

Schedule and Presentation Requirements:

By Dec. 13	Sketch presentation of complete construction.
Jan 5	Finished drawings of structure with sufficient information to judge appearance and build it.
Jan 17	Redo of Jan 5 presentation if required. Model at 1/2" = 1'-0".

Drawing media and format and model materials - free choice.
?

An almost "all structure" type problem.
Simple planning problem - emphasis is construction.
Similar: bus stop, band shelter, gazebo, etc.

Ambrose (16)

Architecture 103

Fall 1978

the old (1930?) Architecture building

ASSIGNMENT ONE

Draw a full scale section of some part of Harris Hall. The drawing should be complete in all parts and detail and use standard symbols to indicate materials in the cross-section. (See Architectural Graphic Standards, page 652.)

The section may be a vertical one or a horizontal one and must show an intersection (floor-to-wall, roof-to-wall, etc.) or the joint between a wall and an opening (window or doorway) or some other feature. Ask the instructor if you have some question about the appropriateness of your selection.

Drawings must be in black ink on white board. The only written material on the drawing should be your name, the course, the date, the assignment number and some description of the location of the detail.

Drawings must be finished and presented for grading by Nov. 2. They should be presented by attaching to the wall somewhere near the location of the detail. (Not on the roof, please.) As soon as you have your drawing finished and ready for grading, tell the instructor

not so good

Each drawing must be unique - if someone else has already drawn it, you must find another location. Consequently, the sooner you finish and present the drawing, the better. As soon as you have your drawing ready for grading, find the instructor, mount it on the wall, and get it graded.

If you prefer, you may team with other students to produce a series of drawings that constitute a complete wall section. However, each drawing should be separate and identified as to author.

← good, encourage

All drawings should remain on display until the end of the last day for the assignment (Nov. 2.)

ambrose (17)

Alan Cook

Architecture
North Dakota State Univ.
Fargo, N.D. 58102

#2 Conceptual One-Way Movement

#5 Asurprize

I hope this information (included) might be of use in the "Best Beginning Design Problems Collection". Both the problems have met with moderately good response in freshman studio. "Problem #2" has also been favorably received in upper level studio as a weekend sketch-problem.

LAB PROBLEM #2: Conceptual One-way Movement ⟶ or Physiognomic Circulation

This problem emphasizes cognition of behavioral implications, through the use of abstract basic design elements (shape, line, direction, valve, color, texture, etc.). Stress is indicated in relating physical setting to behavioral intent.

LAB PROBLEM #5: A Surprise!: an introduction to serial vision. This problem is done in context of: the two serial vision handouts, readings from "The Concise Townscape" by Gordon Cullen, and lecture material with slide examples of serial vision in architecture... Good for developing convergent production, divergent production, and evaluation of semantic; relations, systems, implications and transformations. This problem is usually more architectonic (and less "pop") if the students are limited to non-representational subject matter.

ARCH. 173
SPRING'78
NDSU COOK

LAB PROBLEM #2
CONCEPTUAL ONE-WAY MOVEMENT

OBJECTIVES:

1. to conceptualize the essence of "ENTRY" & "EXIT".
2. to design an entry + exit system which readily and freely evokes a one-way movement pattern from the users.

PROBLEM STATEMENT:

You are to design an entrance and exiting system for the (fictitious) "Store Front Gallery". The gallery has a one-way display approach with the works of art it exhibits and it needs an unmanned entry. The exit shall be from a room other than the entry space. The only allowable signage on the project shall be a building identification sign which says "The Store Front Gallery". No arrows or other pictographic signage is desired. The gallery is to be a two story building with a full-width studio across the north side of the second floor, over the entry. This space needs to be designed to recieve north light. You may consider any fenestration affecting the appearance of the north face of the building as being within your design control. The exhibit part of the gallery is all on the main level. The building front may be set back from the property line. The entry and exit rooms at the north end of the gallery need not be the same width or shape. Seating and planting may extend onto the sidewalk but a major path must be maintained in the east-west direction.

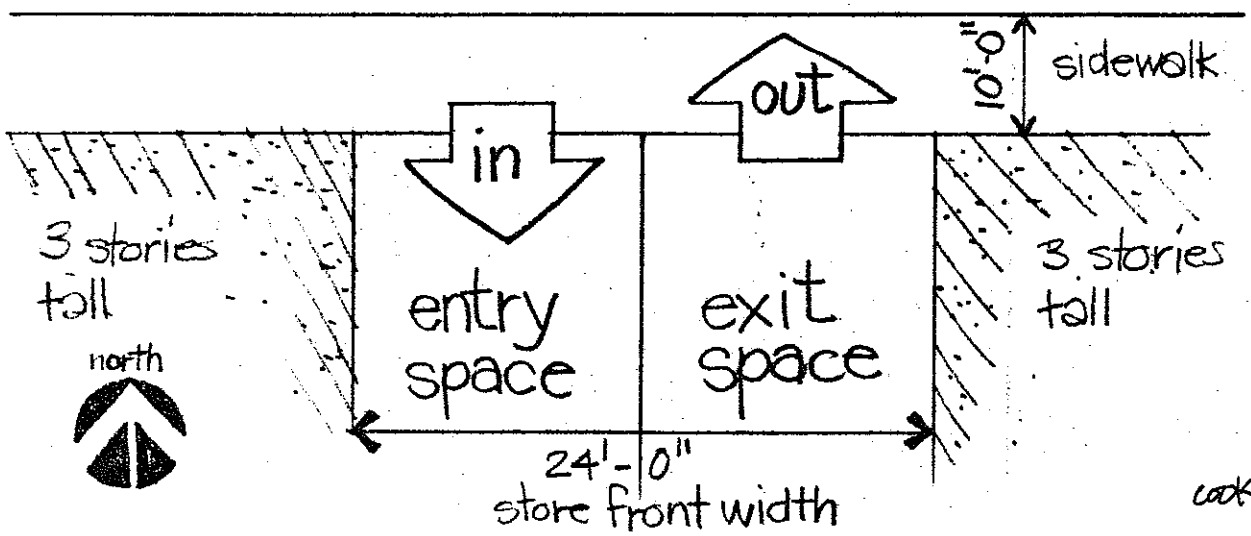
EVALUATION:

A good problem solution is one that uses innate human responses to EVOKE the intended movement pattern; and at the same time provides a maximum of "human delight" in the fulfilment of the entry-exit sequences.

A poor solution is one that, even though it may control one-way movement, does so by frustrating, disappointing, disorienting, or in other noticable ways disabling the users.

PRESENTATION:

model and/or drawings @ 1/2" = 1'-0". You are responsible for a complete definition of your design solution. Include scale figures!



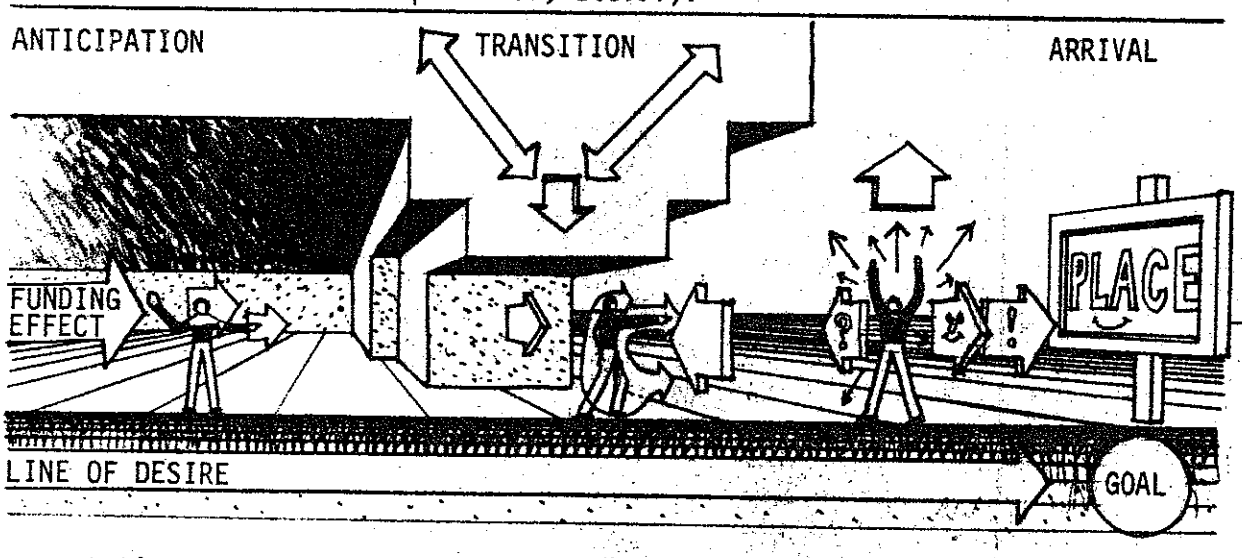
SERIAL VISION

SERIAL VISION is the revelation of portions of the environment in an arranged series (or sequence) usually designed and developed to evoke an intended response in the user. This may involve a consciously predetermined and highly probable information display sequence (series of environmental stimuli) along a "line of desire".

LINE OF DESIRE is the specific path a user takes in going from "here" to "there" where a goal may be reached or sought. It is usually the shortest, most expedient, and in other ways the most desireable route of access to the goal. Some situations contain predictable GOAL RESPONSES of users for which "lines of desire" may be developed as sequencial spacial progressions.

FUNDING is a psychological mechanism that makes it possible to carry over to a considerable degree the results of previous perceptions so that successive perceptions are enriched and influenced by what has gone before. The designed environment can be so structured as to direct a subject's sensory receptors towards particular environmental stimuli. This information display, when programmed sequentially, may establish a desired context of images and ideas (mental set) in the subject. This possibility provides the designer with the opportunity to develop, within limits, specific meaningful and/or emotional relationships. The experiences may be choreographed to evoke such responses as: climax,rhythme, tension, relaxation, paradox, irony, humor, etc...

A perceptive series (and the funding effect) may be operative for a constant 2-dimensional image (where more & more is found in an object of singular aspect) as well as for a 3-dimensional construct which may have many more aspects. Some displays are intrinsically richer than others and require much more funding; e.g. architecture, with its internal as well as external aspects. Architecture also involves many more perceptual modes and is an integral part of its surroundings which are constantly changing (e.g. day/night, sunny/cloudy, dry/wet, calm/windy, the seasonal varieties, vegetation growth, human and animal presence, etc...).



expectation
compression

transition "place"
maximum compression
here; spacial constriction
creates framing effect
which changes psychic distance.

fulfillment
release

cook 29

SOME FACTORS TO CONSIDER WHEN DEVELOPING A SERIAL VISION SEQUENCE:

1. The subject's motivation and likely mental set when beginning the sequence; i.e. to what goal(s) is the user responding?

2. The total sensory load of the subject: visual, aural, olfactory, tactile, gustatory, kinesthetic-equilibratory, and apprehensive senses. An overload of stimuli will minimize the effect of any one specific stimulus unless emphasis is certain to capture awareness of the desired stimmulus.

3. The speed and mode of the subject's locomotion through space: walkling, escalator, motor vehicle, other.

4. Changes in orientation, both horizontal and vertical, as affected by physical barriers.

5. The geometry of vision: perspective, alignment, other depth cues.

6. The space-time movement path of the sensory receptors; i.e. eye level, limits of reach, tactile nature of footpath, etc...

7. The subject's apprehension of places been, the existing view, and the emerging view (metabasis); a sense of anticipation and arrival relative to the subject's goal(s).

8. The possibility to develop secondary as well as primary goals to reinforce the integrity of a line of desire(s) so as to insure a higher probability of realized sequential exposure (choreographed experiences).

9. The value of allowing for choice by the user to deviate from the "designed path" in certain instances so as not to over-specialize a route of access.

THE BASIC MOTIVATIONAL NEEDS:

1. PHYSIOLOGICAL NEEDS - water, air, food, light, sensory stimulation, etc... This is usually the strongest need (homeostasis) if all needs are unfulfilled.
2. SAFETY NEEDS
3. BELONGINGNESS & LOVE NEEDS - shared domains (territory)
4. ESTEEM NEEDS - territory to identify with, dominance by spacial positioning.
5. NEED FOR SELF-ACTUALIZATION - spacial provision for individuation and personalization, a spacial extension of the self identity.
6. COGNITIVE NEEDS - desire to know & understand, curiosity of the unknown.
7. AESTHETIC NEEDS - beauty, order, harmony, unity.

CHARACTERISTICS OF BASIC NEEDS (partial list):

1. the degree of fixity of the heirarchy of needs
2. degrees of relative satisfaction
3. unconscious character of needs
4. multiple motivating aspect (overdetermined behavior), several needs being met by one behavioral act.

SUGGESTED READING:

Appleyard, Lynch, & Myer. The View from the Road. Cambridge: MIT Press, 1964. look 2d

Simonds, J. O. Landscape Architecture. New York: McGraw-Hill Book Co., 1961.

ARCH. 473 PROB. 5

A SURPRISE

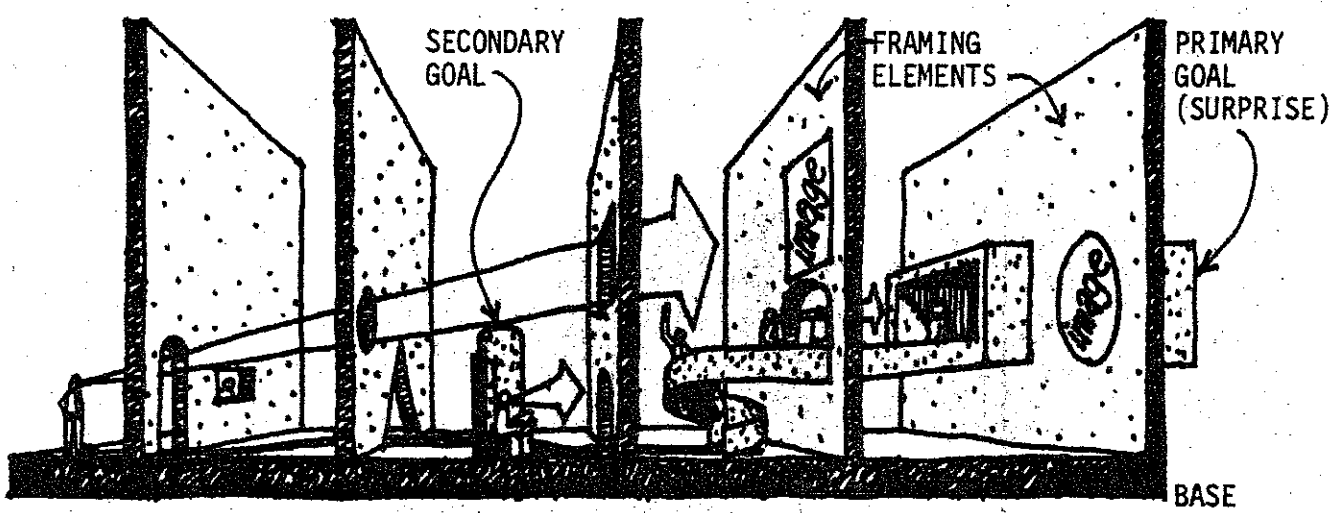
OBJECTIVES:

1. to increase awareness of the factors involved in developing a serial vision sequence.

2. to develop competance in using serial vision to evoke and enrich meaningful and emotional relationships between the dimensions and elements of an architectural language.

PROBLEM DESCRIPTION:

You are to design a model of a serial vision sequence that builds a climax and culminates in a surprise. For your purposes you should assume a specialized route of access. The diagram below is an example of the basic framework to be used in your model.



ANTICIPATION - ascending order of dramatic tension - ARRIVAL (FULFILLMENT)

The model base shall be 9"x24" (actual size). Use 1½" scale figures: ¼"=1'-0". You may use as many framing elements of whatever shape and size you desire as long as they do not excede the width of the base and 9" in height; these elements do not have to be flat planes nor do they need be at right angles to the base or its edge.

The primary goal is the culminating element of surprise. Secondary goals are optional but may serve you well in "setting up" a context of images and ideas against which you can contrast the surprise. You should use a controlled line-of-desire to direct views towards planned openings and images. Place scale figures on your model at or along points of directed attention.

It is your responsability to determine the nature of the surprise. Youn choice of surprise may be derived from 2-D images, from scale manipulations, from a clever use of perspective, or a combination of these and possibly others.

cook 29

Bob Findlay

Body Support Structure

Architecture
Iowa State Univ.
Ames, IO 50001

Project 1: A BODY SUPPORT STRUCTURE

Problem: Design and develop to prototype stage a marketable cardboard structure to aid the human body in postural comfort.

Requirements: The material shall consist of two sheets of 76" x 84" 350# corrugated cardboard as purchased at the University Bookstore. The supply is limited to two sheets per student - plan carefully before proceeding.
Tools shall consist of your hands, a utility knife, and a straight edge for cutting and folding.

No other materials, including adhesive, tape, or color shall be used.

Graphic assembly instructions shall be provided with the disassembled structure at time of evaluation.

Objectives: To experience as a first design problem, a project involving a close fit to human requirements and that contains a full dimension of design experience.

To develop an awareness of design process; including the gathering of design data, the establishment of design and evaluation criteria, the generation and testing of design proposals and the communication of design proposals.

Procedures:
Studio period

1. Analysis of selected posture; anthropometrics, loading, and performance criteria.
2. Generate concepts
3. Develop a selected concept
4. Construct prototype components
5. Develop assembly instructions
6. Evaluate structures by exchanging projects, assembling them as instructed and testing for comfort.

Submitted by: Bob Findlay
Assistant Professor
Department of Architecture

This submittal to the "Best Beginning Design Problems" may, in some circles, be considered an oldie, but it certainly remains a goodie as an introductory problem for design students.

Findlay

R.T. Meeker

Grid Dynamics

Architecture
Univ. of Illinois-
Champaign-Urbana
Urbana, IL 61801

As for your collection of "Beginning Design Course" problems, enclosed please find a "proven effective" problem set I've developed and tested sucessfully over the last few years.

I've selected this problem set because it evokes a lot of good work and involvement and progressive development in beginning design students. It tests them effectively on a broad spectrum of skills -- media handling -- and introduces a number of fundamental architectural concepts. It covers a lot of ground in a short period and leaves them much in the way of theory, method and skills to use in future problems. They also usually get a good portfolio entry from it -- pictures of the final model. While deceptively simple, this problem has sufficient depth to challenge the best students. As for relevancy to the students, to educational goals and to course and curriculum, please refer to my paper.

Department of Architecture
University of Illinois at Urbana - Champaign

Architecture 171: Formal Fundamentals of Architectural Design
Spring 1979 Professor R.T. Meeker

PROBLEM SET #2: GRID DYNAMICS

Duration: 3 weeks (36 hours)

Introduction: Grid Dynamics

Consider and explore the potential of grids in terms of cellular permutation and the patterns that may be created. A grid and its dynamic potentials represents a far-ranging architectural concept. Grids provide two and three dimensional matrices for organizing space, form and structure in orderly and consistent ways.

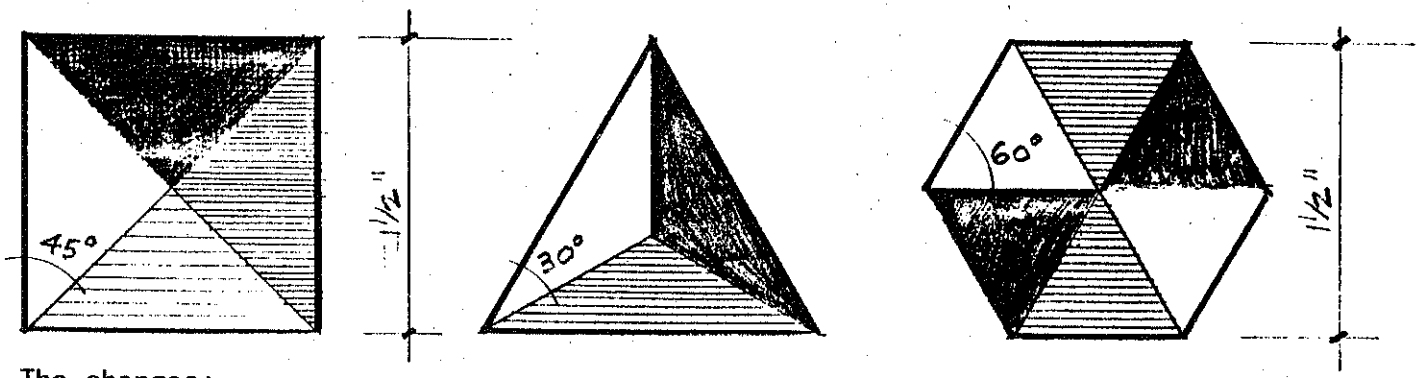
Grid Related Design Principles

A GRID is a regular and repetitive lattice formed by intersecting lines which generate a network of cells, all of which may be geometrically similar.

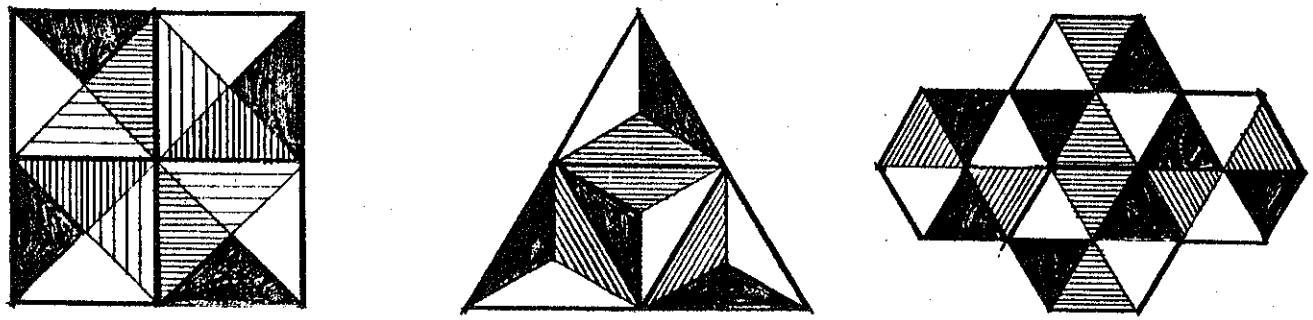
We are especially interested in the three grids whose cells are squares, equilateral triangles and hexagons, respectively. One may explore the dynamics of these grids by introducing color. When the cells of these grids are colored, the designer may explore a host of strategic design principles. In this set of exercises the cells will measure 1½" [redacted] and will be internally divided by their own diagonals. Colors may be applied to these subcells. Permutation is achieved by rotating the cells. A "cell" in these exercises is precisely defined as a specific set of colors in a specific relationship which does not change.

Meeker 25

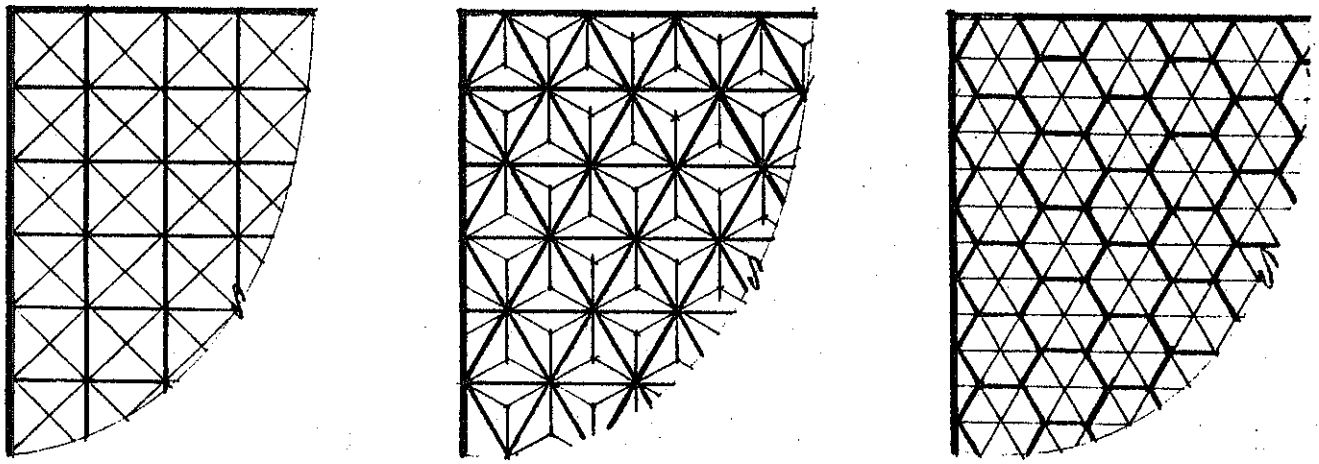
The cells:



The changes:



The grids:



SQUARE EQUILATERAL TRIANGLE HEXAGON

Meeker 26

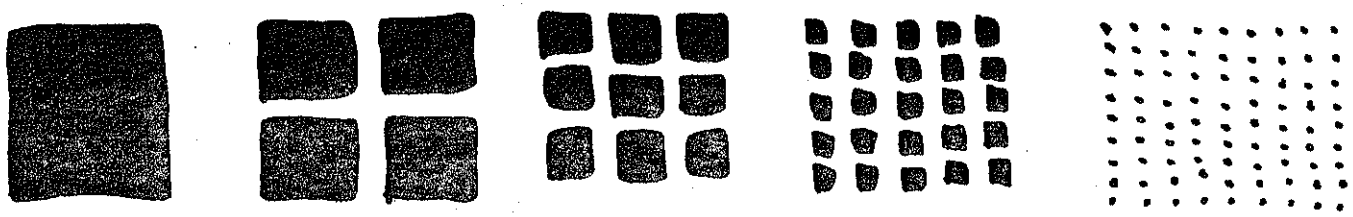
Grid Related Design Principles, cont'd.

A GRID, continued. It is essential that a designer understand grid dynamics if the designer will use structural grids effectively and appropriately.

REPETITION means the reoccurance of similar qualities, elements and patterns. In perceptual terms people perceive repetition first according to reoccurring qualities such as shape, size, color, texture, mass and relative position in space. An element or component may be said to exhibit qualities. If several elements exhibit the same qualities, they may be said to be similar. The more of the same qualities they exhibit, the more similar they are, thus the more repetitive they are. The mind notes such similarities. Grid cells are similar in shape, size, and in this case, in color organization as well. Cells in these exercises are differentiated in two ways: by color organization and by relative position -- rotational, locational and relational.

CONTRAST means comparative dissimilarity of qualities in elements. If relative (adjacent in space) elements share such qualities as shape, size, color, texture, mass, and relative position (in Cartesian terms), then contrast is the apparency of differences in qualities between the elements. As the number of differences and the degree of dissimilarity in qualities increases, the apparency of contrast will also increase. The more elemental qualities which differ by greater degrees, the greater the apparent contrast. By our mind's capacity to note, analyse and evaluate REPETITION and CONTRAST, we are able to better organize our comprehension of reality.

HIERARCHY means a graduated series of elements which are repetitive in most qualities, but contrast in one or two qualities. The dominant concept of hierarchy states that the graduated series of elements are similar in most qualities and vary only in size and number of occurances. That is to say, as size increases, the number of occurances decreases -- repetition of the elements in space and time decreases. There are fewer large elements in the series and more small elements.



A "Family" of elements would be a group of elements which are generally similar, contrasting only in size and possibly shape, but here in a modulated way; that is the contrast is not great and tends to be proportional.

Meeker (27)

Grid Related Design Principles, cont'd.

PATTERN is a perceptible and orderly arrangement, constellation or composition of contrasting and similar elements.

PERMUTATION means an alteration in pattern of a given set of objects or of an object in space; the alteration [redacted] rotational, locational or relational. The qualities of the lements are not changed, only their relative positions. The more elements in the pattern, the greater the number of all possible permutations.

TO PERMUTE means to change the order of, to change through, to go through changes.

Problem Statements

Problem #2-A: Drafting Grids (6 hours)

Draw each of the three grids described in this problem set on sheets of fine white tracing paper or plastic drafting film, sized 24" x 30"(one sheet for each grid, thus three sheets). Each grid should measure 18" x 24", centered on the 24" x 30" sheet. First layout the grids lightly in pencil. Then draft in ink the border of the whole grid with a #4 inking pen (about 1/16" thick). Draft the cell outlines in ink with a #2½ inking pen (about 1/32" thick). Draft the cell diagonals with a #0 inking pen (about 1/64" thick). Get three clear reading blackline prints of each of the three grids, thus nine prints in all.

Problem #2-B: Single Cell Permutation (6 hours)

Select one of the grids (prints) and color it with felt-tip markers or colored pencils. It is very important that you use only one cell, i.e. color organization in this exercise, so that you may see the variety of patterns to be made [redacted] by single cell permutation. Explore column, row and block patterning. You should be able to develop several clearly distinct patterns. Be aware of your color selection, especially in terms of contrast. When you are finished, cut out the grid along the border and mount in with glue on a vertically oriented 20" x 30" sheet of illustration board (white, cream, tan or light grey), leaving 1" borders at the top and sides. Use a heavy black line to create a 1" border at the bottom and a 4" x 20" space at the bottom for titles. Develop an appropriate title block, printing in felt-tip markers and pens.

Meeker (28)

Problem Statements, continued

Problem #2-C: Two Cell Permutation (6 hours)

Select a different grid and color it with felt-tip markers or colored pencils, using two different cells (different color organizations). Explore patterning. Mount and title in the same manner as in problem #2-B.

Problem #2-D: Multiple Cell Permutation (6 hours)

With the remaining grid, color it as you wish, exploring patterns. Mount and title in the same manner as in problem #2-B.

Problem #2-E: Three-Dimensional Grid Dynamics (12 hours)

In this problem you have one week to develop an architectonic construction by applying the principles you have learned thus far. Previously the problems have been more constrained; this problem allows you more latitude. Select one of the three grids and mount prints of it on 1/8" "Foamcore Board" or corrugated cardboard. These shall be floors, ceilings and the roof. They may be shaped as you wish and have holes in them. They may be colored or plain. At regular intervals in the grids, use 1/8" diameter dowells as the columns of your construction, running continuously from floor to floor and glued in place. For walls use colored cardboard. Develop systems of walls, where for example, different height walls may be different colors. Walls may be shaped and have holes in them, but they must run along the lines of your grid cells. Explore the design principles we have been studying. Think three-dimensionally. Sketch your ideas first or work with study models. Use the walls and floors and roof to make space. Organize space in a meaningful and systematic way. This architectonic construction is at 1/8" scale; that is, 1/8" in the model equals 1'-0" in actuality. Put some scale figures in your construction.

Meeker (29)

W.H. Huff

Architecture-Hayes Hall
State Univ. of New York
at Buffalo
Buffalo, NY 14214

"Best Problems" from Basic Design -- 20 Feb. 1979

R E V I S E D 3/11/79

THE PARQUET DEFORMATION

The task:

To fashion a continuous series of parquet events into a temporal composition of flowing (rather than static) rhythms; to execute the design with ruling pen and ink.

The principle:

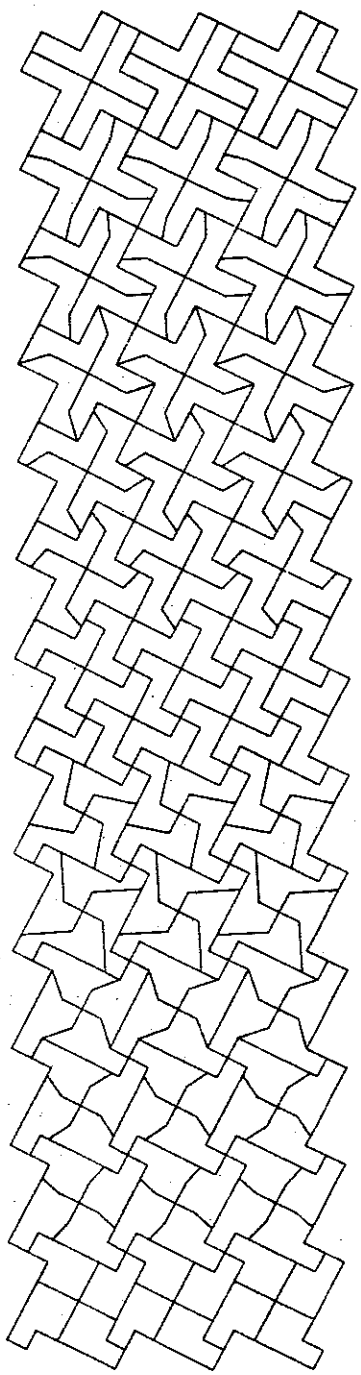
A parquet is an endless configuration of congruent pieces (otherwise called "tiles") that pack the plane -- without overlapping or leaving holes. The best known families of parquets conform to lattices, usually rigidly, occasionally loosely. It is possible to construct a few parquets (e.g., the 1 x 2 brick) with relative randomness; and there are recent identifications of other non-periodic arrangements of congruent tiles.

Each lattice type has its mutation groups and sub-groups and infinite variation possibilities, within the group's limitations. Some of the most interesting parquets are developed on the square lattice and on the special ($60^\circ - 120^\circ$) rhombic lattice -- the latter allowing both equilateral triangular and regular hexagonal tesselations. The more general lattices, especially the parallelogram lattice, are more limiting, since they afford less sub-division possibilities; the parallelogram, in fact, allow only one -- a two-fold rotational subdivision.

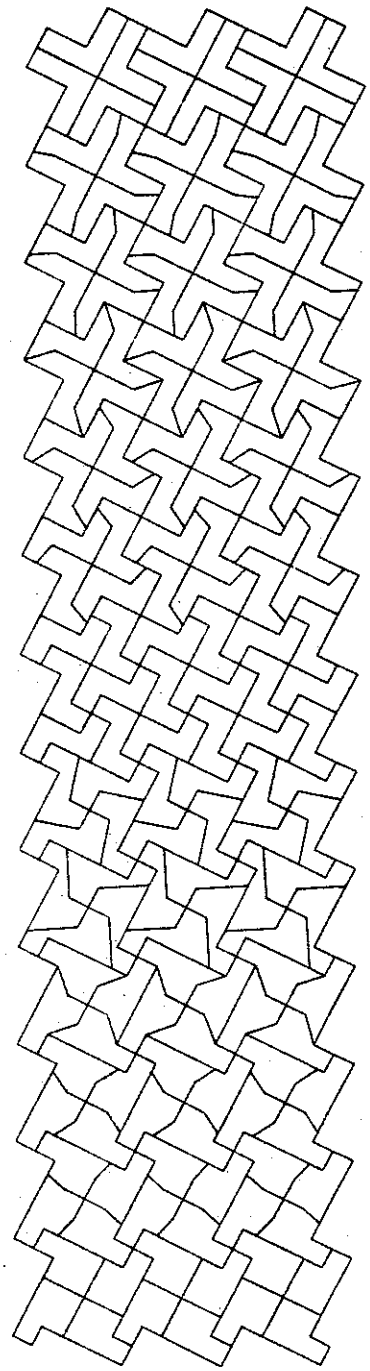
In this project, many of the parquet variant shapes of any one lattice system are linked together by subtly deforming one shape into another and then on again into yet another. These continuous deformations are most often developed along syngenometric lines. The total compositions are not intended to be viewed spatially but temporally, as a sort of visual music. The Oriental scroll paintings are of one of the few great traditions of temporal, visual compositions. Viewing them, then, is akin to the manner in which film is seen, poetry read, and music heard.

The pedagogic goal:

To have the student become totally familiar not only with the families of congruent figures (tiles, parquets) that fill a plane and their topological relationships, but with the fundamental principle of continuous deformation (after Dürer and D'Arcy Thompson) and to have him design an aesthetically coherent composition that is essentially temporal in contrast to the spatial compositions more familiar of the history of our Western visual culture.



Huff 31



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