ROCHESTER INSTITUTE OF TECHNOLOGY

A Thesis Submitted to the Faculty of

The College of Imaging Arts & Sciences

In Candidacy for the Degree of

MASTER OF FINE ARTS

The Spatial Experience In Visual Communication

by

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Date: _May 12, 1994_

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Acknowledgement

Contents

Space is a common denominator of visual composition, but many people still treat it only as a background. They arrange the subjects within space without knowing the interaction between figure and ground. My thesis is an investigation of some theoretical views of space. I intended to study space as a signifier and show that space can be as dramatic as the subject. For the final application, I presented my theories in a guide book and a poster.

For this thesis report, I presented the whole process of my thesis from the very beginning of choosing a topic to the final application and arranged it accordingly on a quarter by quarter basis. In addition, I explained the idea behind each developmental stage. The appendix contain the final presentation of each quarter, and the final application of my thesis.

So the front part of this thesis report, the main content, emphasized the process, and the rear part, the appendix, presented the theory, concept and application. I hope this thesis can benefit whomever views it.

Choosing A Topic

I started my thesis in the summer of 1993. I wanted to decide on a proper topic early, for then I would have more time to do my thesis research. I discussed this idea with Prof. Roger Remington, and he agreed to it. I then took a summer class with him and worked on my thesis topic as my first assignment. Basically, I wanted my thesis to review what I had learned at RIT and to determine how it could be applied to my future teaching jobs. (I plan to apply teaching jobs after graduation.) The most important reason for choosing Mind-Space as a topic can be traced back to Fall and Winter Quarter (1992) when I took my major with Prof. Remington. He always reminded us about the importance interval and negative space in class. This gave me an awareness of the interaction between positive objects and negative space. I decided it would be an interesting topic for my thesis. I discussed this idea with Prof. Remington at the second class time and he agreed to my topic .

General Research

In that summer class, Prof. Remington set up the course goal for me: to clearly define my thesis topic which should be presented in a visually decisive way--a notebook with a chart. He also suggested that I browsed through book in

different fields to better understand the meaning of space in different areas, such as architecture, spirit, psychology, culture, graphic design, etc. This allowed me to clarify my final direction rather than worry about the final application of my thesis. So I went to the library to use Einstein and CD-ROMs to check out all the information which related to space. I browsed through them daily and made notes of important information. I met Prof. Remington every week to show him what I had found.

Selecting My First Associate Advisor

I learned a lot from the books which I read, but the more I read, the more I felt my knowledge was shallow. When I read about Gestalt Perceptual Principles, I felt confused. Prof. Remington suggested that I ask Dr. Richard D. Zakia about the Gestalt laws. He had taught me Visual Semiotics previously and is a very knowledgeable person. I explained my situation and thesis theme to him, and asked him to be my associate advisor. Dr. Zakia showed an interest in my project and agreed to help me. He met me weekly to teach me about perception individually on his own initiative during that summer quarter. It was a great help for me as I dealt with my "Perceptual Psychology's View" in my later thesis project.

Summer Final Notebook

At the end of quarter, I presented a notebook which included two different paradigms with the same information (see Appendix 1) and a brochure which had the same contents as the notebook, but more briefly organized. The computer software which I used to design the notebook and the brochure was Design Studio. Prof. Remington was pleased with what I did and gave me positive feedback. I learned a lot from what I read that summer. Later, it truly proved that the general research was very useful and important for my whole thesis.

Mini Proposal

By the third week of the fall quarter, there was a requirement to write a mini proposal to my department for submission and approval. The mini proposal should contain a statement identifying a problem or an area of study, and should contain an indication of how the thesis will be carried out. I wrote a mini thesis proposal statement which could cover the overall scope of my thesis. The finished proposal read:

"The purpose of this thesis is to study the perceptual use of space as a dynamic in graphic design. I intend to investigate the theory and methodologies of non-physical space to breach the limitation of physical space in which we work. I hope to show that physical space is not merely background but a primary factor in graphic design which makes the image more interesting.

The application of this thesis might be an interactive media program, a series of posters, or a prototype of handout brochures." (see Appendix 2)

Selecting The Second Associate Advisor

While I wrote the title page of the mini proposal, I noticed that I needed a second associate advisor. I consulted with Prof. Remington about who would possess knowledge of my thesis topic. He suggested Dr. Barbara J. Hodik. I showed

her my summer notebook and explained my thesis theme to her. I was very glad when she agreed to be my advisor. Having her on my thesis committee was very helpful to me. She gave me great assistance in my later thesis process.

Thesis Planning

After finishing the mini proposal, I began to work on planning for the thesis project which was reviewed by Prof. Remington weekly. This thesis planning was also part of my thesis report. In order to insure a uniform presentation format, I designed a grid system for my thesis (see Appendix 2). The software I used was QuarkXpress which replaced Design Studio in all the school's computer labs. The following processes were all according to this software grid system.

Writing the situation analysis, problem statement, mission statement, and goals (see Appendix 2) allowed me to analyze my own ideas and problem solving methods. This analysis let me narrow my idea to four key areas: art history, psychological spatial theory, philosophic theory, and design principles. Then the scope of my thesis achieved clarity and conciseness. I met each committee member periodically. Both Dr. Zakia and Dr. Hodik reviewed all my writing thought the quarter.

It is worth mentioning the value of timeline (see Time Plan in Appendix 2), in helping me to make sure how many things I had to do and when I should finish them. The time schedule allowed me to complete my thesis application in the second thesis show successfully. For the final presentation of fall quarter, I submitted to each committee member a notebook which not only contained the components of the project proposal plan, but also included my fall research and a modification of summer research (see Appendix 2).

The First Committee Meeting

I arranged my first committee meeting at the beginning of Winter Quarter (Dec. 9, 1993.) Basically, I wanted my committee members to review my proposal and make sure all of them agreed with my direction. I presented to them my final outline (see Appendix 3), and I explained why I decided to choose the four key areas from my general research.

1. **Art Movements**, from a historical perspective, looks at specific art movements as breakthroughs in the limitations of the concept of two-dimensional space. It is important to understand the historical perspective in order to understand why graphic design treats space in certain ways (i.e. Cubism was multi-dimensional).

2. **Chinese Concepts of Space**: Ever since American contact with the East in the late 1960s, the wisdom of ancient Eastern philosophy was found to be very useful in all fields of human life. The Yin-Yang Doctrine is very simple and its influence has been extensive. Lao-tzu's theory also deals mainly with intangible content as a means of composition. The principle of Lao-tzu is seen in the use of negative means (intangible content) to achieve a positive end (what is expected.)

3. **Perceptual Theory**: Gestalt is basic to the way humans group information. Understanding how people perceive and respond to the various spatial aspects within an environment is important for designers. Without this understanding, the process of communicating or creating forms is difficult. To help achieve this awareness it is essential to learn some of the perceptual concepts of spatial cues as they relate to the perception of depth and form.

4. **Design Principles**: Principles should be established to assist in the creative form of the generation process. This can be achieved by using visual organizational principles to structure the relationship among the visual elements of form, the compositional elements, and the desired message.

All my committee members agreed with my ideas, but they suggested I change the titles of these four areas to Western View, Eastern View, Perceptual Psychology's View, and Designer's View to unify the titles.

Specific Research

After I submitted my thesis proposal, my research narrowed to four specific areas, and after having my committee members' approval, my thesis achieved a clear final direction. I shifted from general research to specific research. I

concentrated on my final four areas in my research. In the Western View, Dr. Hodik gave me a lot of suggestions. In addition, I also reviewed the art history and design history books. *A History of Graphic Design* was very helpful for me in writing this part. In the Eastern View, although I had read *Tao Teh Ching*, *Chuang-tzu*, and The *Golden Mean* when I studied at junior high school, I still spent a lot of time re-thinking their meanings and how they could be applied to my project. In the Perceptual Psychology's View, Dr. Zakia's lecture and Visual Semiotics class, of fall '92, and his extra individual teaching during summer '93 let me understand Gestalt law. Furthermore, his books, *Visual Concepts for Photographers* and *Perception and Photography* were important references for me. In the Designer's View, both Prof. Remington and Prof. Beardslee gave me specific instruction since I came to RIT. In addition, *Graphic Design Processes* and *Basic Visual Concepts and Principles*, both of these two books were also very useful when I worked on the Designer's View.

Guide Book Outline/Content

The whole research of my thesis was a big project. In order to organize information of my research, I wrote down the information and its resource on 3 in. x 5 in. index cards. In addition, I used color labels to classify this information.

I met each of my committee members on an individual,
weekly basis in order to receive necessary feedback.
Dr. Zakia always suggested that I add some illustrations for
reference in my notebook, and he continuously gave my
some nice quotations to enhance the content of my
notebook. Dr. Hodik provided suggestions on the Western
View. In addition, she checked every section carefully
several times. At the end of the quarter, I finished the
contents of the four views, and organized them in a
notebook format (See Appendix 4).

The Second Committee Meeting

By the end of Winter Quarter (Feb, 9, 1994), I held a second
committee meeting to review this quarter's notebook and
decide how the application would function. I decided to add
illustrations to my final research and presented it as a real
design reference book in my application. I discussed this
idea with my committee members. They agreed to my idea
and suggested that my book could be an information guide
book about the use of space in visual communication.
Furthermore, I also wanted to design a poster to represent
the brief contents of my book for instant understanding. The
guide book and poster clearly became the main themes in
my application.

Guide Book design

My thesis show was on April 4, 1994, the sixth week of the

Spring Quarter. In order to meet the schedule, I used

Winter break to create and seek the appropriate illustrations

for my guide book. I scanned all images in Photoshop

software. In order to get high resolution images without

occupying too much memory, I decided to use 132 dpi to

scan color and grayscale images, and use 300 dpi to scan

line art images. In the guide book design, I decided to con-

tinue using the grid system which I had created. I placed

texts on the left side pages, and illustrations on the right

side pages. I finished the main contents of my guide book

design at the beginning of Spring Quarter. I had practiced

book design during Spring Quarter '93, so in this guide book

design, I was able to apply what I had previously learned

at RIT.

Four Diagrams Design

Four diagrams are the title pages of the four views and

represent the main ideas of the four views of my guide book.

When designing the four diagrams, I considered that I would

also apply them to my poster, and I thought the geometric

shape would be easy for me to arrange them on the poster.

Having this point in mind, I did a couple thumbnail sketches,

and then developed my final four diagrams:

Diagram of Western View: I designed a ladder-shaped diagram, and placed the events that followed in a timeline from top to bottom. I also summarized the contents of each event within the diagram. These events indicated the evolution of space exploration in western art history (see Appendix 5). This diagram represents a brief Western View. The software which I used was QuarkXpress.

Diagram of Eastern View: Dr. Zakia suggested that the diagrams themselves should represent and should relate to their own contents. So I thought that the circular shape which plays an important role in eastern culture would be the best symbol to present the Eastern View. I placed the Yin-Yang symbol on the center in the Diagram of Eastern View, and four small circles derived from it and surrounded it. In addition, this diagram shape also looks like a Mandala, symbolizing the universe (see Appendix 5). The software which I used was Adobe Illustrator.

Diagram of Perceptual Psychology's View: There are a number of factors and visual cues that contribute to the dimensionality, depth, and stability of figures placed on the picture plane. The most important factor that influences the perceptive of form and dimensionality is our perceptual experience. So I used perceptual theories to design a

ambiguous cube which can be perceived as either a two- or

three-dimensional form for the Diagram of Perceptual

Psychology's View. The fluctuation is caused by having the

front and back parallel same length lines and the slanting

line from the right top to left bottom through four corners of

the cube (see Appendix 5). I placed the "Gestalt" on the

center which represented Gestalt integrated by the

principles of perception which were placed on each corner.

The software which I used was Adobe Illustrator.

Diagram of Designer View: I designed a rhombus and set

up the module on the inside of the rhombus for the Diagram

of Designer's View. Then I added varieties of typographies

which are represented according to their meaning on the

rhombus. In this diagram, I used an overall formal theme,

unity and contrast, edge relationships, and grid to organize

the whole shape to present the content of Designer's View

(see Appendix 5). The software which I used was

QuarkXpress.

Poster and Guide Book Cover Design

The last stage of the application was to design a poster. I

wanted my poster to represent a summary of the content of

my guide book and to explain the relationship among the

four diagrams. Prof. Remington suggested a compass

layout, with the diagram of the Western View placed on left side (symbolizing the Western Side), and the diagram of the Eastern View placed on right side (symbolizing the Eastern Side). I used this idea to develop my poster. I put four diagrams on four sides. An eye divided into four parts with four textures also symbolized the four views. Four arrow lines lead our attention from the center outward exploring the four diagrams. On the left side, there are Picasso's and Miro's paintings on the background to emphasize western feeling and on the right side, there is a Chinese calligraphy poem filled with Taoist symbolism on the background to add the eastern sense. I discussed my layout with Prof. Remington (see Appendix 6) and he suggested that the elements which I used should have a hierarchy to direct viewer's gaze. Specifically, the suggestion to change the perspective of the Diagram of Designer's View to a two-dimensional step pattern to break the line between light and dark was appropriate and created a useful visual ambiguity. When I finished the second modified poster (see Appendix 6), I also made an appointment with Prof. Beardslee and asked advice. Among other things she suggested a unification of the line weight, reduction of the letter space and increase of the word space on the title letter, and alignment of the margin. The guide book cover would be derived from the poster but would be more simple (see Appendix 7).

The Third Committee Meeting and Final Output

Before I sent all my application designs to print out, I arranged the third committee meeting (March 29, 1994) for a final check of my applications and discussion of how to display them in the thesis exhibition. After some discussion, my committee members suggested that I use a glass case to cover my guide book at the exhibition time.

I decided on my poster size according to the capabilities of the printing company because I had hoped the poster would come out in one single piece. Sentry Color Labs can have 42" x 42" output, so I decided on a poster size of 40" x 20". During the printing process, I still met with a lot of problems. My poster is black and white with light gray tone and their printing system is different from Mac. If my poster was enlarged to 40", it would lose its light gray tone and could only be printed out in low resolution. I checked with other printing companies, but the largest output could only reach to 24" x 17". What they could do was to shoot the small output and enlarge it in a darkroom. But they still had the same problem--losing light gray tone and printing in low resolution. Finally, I decided to print out my poster at Master Typography print company by dividing my poster into three 17" x 24" sheets. I still can have a high resolution poster, although I had to glue these three sheets to one sheet. The result was better than I thought; the overlapping lines were

almost invisible. The softwares packages which I used

were Adobe Photoshop, Adobe Illustrator, and QuarkXpress.

Thesis Show and Evaluation

The night that every M.F.A. graduate student longs for

finally arrived. My thesis reception occurred at 7:00 pm

April 8,1994. There was an excellent crowd. My committee

members, friends, and classmates were present with their

approval and support. In order to evaluate and modify my

project, I gave copies of a questionnaire to the audience

during my thesis show (see Appendix 8). The audience

seemed enthusiastic and interested in my thesis application.

Their responses were positive. I was very pleased with the

results of my hard work and achievements.

My graduate thesis has been a very fulfilling and rewarding experience, personally and professionally. I am so pleased with the outcome of my thesis, which I did not expect at the beginning. The four areas which I chose are appropriate. They successfully cover the art history, philosophy, and psychology perspectives, as well as the design aesthetic principles to present useful information about space (see Appendix 9).

Like the Yin-Yang symbol, space is a signifier. And the most important function of space is to reach a balance. Although space cannot exist alone, it has meaning only when it interrelates and interacts with something. An awareness and appreciation of space is needed by designers for enlightenment, insight, and knowledge of their own graphic design. The study of space can open doors of creativity and enhance the complexity of the visual arts.

Rome was not built in one day; neither was my thesis. I not only contributed this year as a whole to my thesis process, but also applied the skills and knowledge that I have learned from RIT in the past two years, and even what I had learned in the past. For this thesis, I applied new computer graphic techniques, western design principles, concept, history, methodology, and perceptual semiotics. By doing

so, I know more about Western design. In addition, I also

reviewed and recovered the traditional Chinese philosophy

and concept in design. The Chinese have a saying,

"Graduation is not the end of learning, but another beginning

of learning." I would like to continue this research, docu-

mentation, and improve upon the application through my

professional career.

1.Summer Notebook

2. Fall Notebook

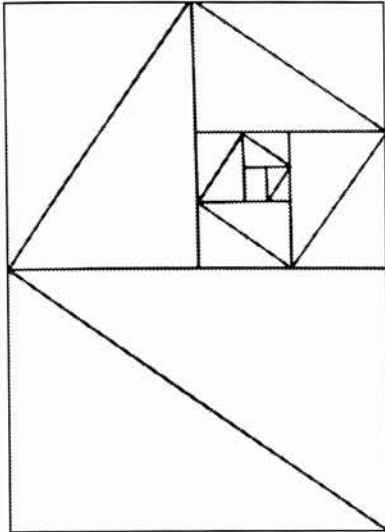3. Final Outline

4. Winter Notebook

5. Four Diagrams

6. Sketch

7. Poster and Guide Book Cover Design
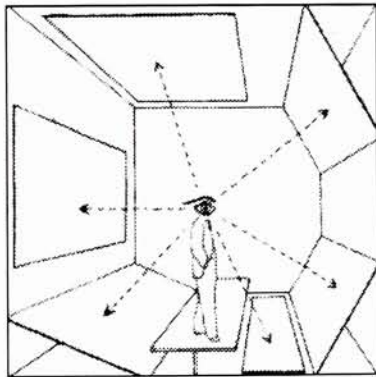
8. Questionnaire

9. Final Guide Book

Appendix 1 Summer Notebook

Contents

Definition

- interval or distance between two or more objects
- area or volume
- the three-dimensional, continuous expanse extending in all directions and containing all matter
- room in newspaper, magazine or TV, available for use by advertisers
- a bank piece of type metal used to separate characters or words
- the area left vacant by mechanical or electronic means on a printed or type line
- telegraphy an interval when the key is open, or not in contact.
- a two- or three-dimensional area defined by the visual elements. For example, a two-dimensional space might be a picture plane or format, and a three-dimensional space might be an environment or building interior.

Artists space

- performance space
- painted space

Art space

- exhibit space (environment & art)
- art and audience space
- Space and time
  A book is a three-dimensional object and the elements the designer must relate have a definite progression through it in space and time. The expanding of space and the contracting of time is characteristic of the world we know through science. Therefore, the designer should not think in terms of so many flag pages to be designed; rather, he should visualize the cumulative effect of these parts. Think of the book as rectangular block, to be shaped into a form that will give unified expression to the manuscript. The progression from the outer layer of the cover into the front matter-through the text to back matter-would thus be related in depth.
  A television screen is two dimensional, but the time-and motion equation heightens the illusion of dimensional space.
- Space and movement
  We see with our eyes in two ways-visual perception with the eyes at rest and kinesthetic impressions from eye movements. Our awareness of the spatial relationships existing between various elements is derived from eye movements in different directions over different distances. The purpose of a layout is to direct the eye in an orderly path. The various points of the layout are united by eye movements that create

a coherent total impression.

Elements in two-dimensional format
- point: the simplest and most minimal of the visual elements used in art, architecture, and design. It is considered the prime generator of all form and can be used to determine and define location in space.
- line: conceptually, a point in motion having only one dimension, length. Line has both a position and a direction in space.
- plane: conceptually, a two-dimensional expression of length and width. A plane is line that is stretched in two-dimensional space in a direction other than that of its length.
- shape: a two- or three-dimensional area defined by the visual elements.

Environment
- viewing distance with object
- viewing angle
- background

Grid
- Grids are a measuring guide used to help ensure consistency in planning a visual message. A grid shows type and image area dimensions, trim, and margins, and is used to define constant dimensions of space.
- compositional
- constructional
- proportional
- typographic unit

Architecture
- architecture-a lining space: The most physically apparent organization of space is found in architecture. We all spend much of our time within buildings, some of which can be thought of as architecture and many as just constructions. In some buildings space is defined by mass so that it contributes greatly to the quality of life within it.
- Architecture is the first manifestation of man creating his own universe, creating it in the image of nature.

Sculpture
- sculpture-making space visible: The sculpture intensifies the life of the sensory space, inducing its existence into our senses and into our consciousness.
- A piece of sculpture is a center of three-dimensional space. It is a virtual kinetic volume, which dominates surrounding space, and this environment derives all proportions and relation from it as the actual environment does from one's

self. The work is the semblance of a self, and creates the semblance of a tactual space-and, moreover, a visual semblance. It affects the objectification of self and environment for the sense of sight. Sculpture is literally the image of kinetic volume in sensory space.

- Sculptural form is a powerful abstraction from actual objects and the three-dimensional space which we construe by means of them, though, namely the semblance of kinetic space.

Definition

- Space is the indefinable, great, general receptacle of things. It is continuous and infinite and ever present. It cannot exist by itself because it is part of everything.
- Space is far more than just what is left over after important things have been laid down.
  Space as we know it in the practical world has no shape. Even in science it has none, though it has "logical form" there as spatial relations, but there is no concrete totality of space, space itself is amorphous in our active live and purely abstract in scientific thought.
- Space is perceptual experience.

Gestalt

- figure/ground: positive and negative
- figure: outline or contour of an object, shape, form, image and so on.
- ground: That which is behind a figure, without dominant form.
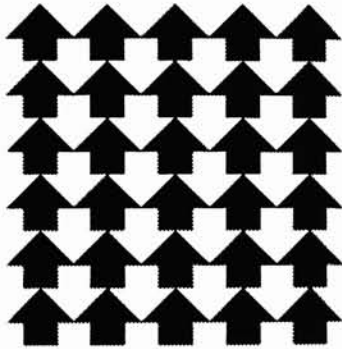- proximity: The distance between elements. The law of proximity states that elements that are nearer to each other in a composition will be seen as "belonging" together.
- similarity: viewers tend to see similar shapes as belonging and similar figures as a group.
- continuity: We will group elements in continuous line.
- closure:

Colors

- hue: A specific color or light wavelength found in the spectrum, ranging circularly from red through yellow, green, blue, and back to red.
- chroma: Strength of a hue. The chroma range extends from neutrality (grayness) to the strength, most intense color a pigment or phosphor can provide.
- value: Brightness; it is the relative degree of lightness or darkness of color measured in relationship from back to white.

Lao-tzu

- "Thirty spokes converge upon a single hub;
  It is on the hole in the center that the use of the cart hinges.
  We make a vessel from a lump of clay;
  It is the empty space within the vessel that makes it useful.
  we make doors and windows for a room;
  But it is these empty spaces that make the room livable.
  Thus, while the tangible has advantages,
  It is the intangible that makes it useful."
- The leaving of blank space is an art within Chinese painting.

Although these spaces have not been touched by brush or ink, they are not be considered "hole," or unfinished portions of the painting. They are rather, integral and important parts of the painting as a whole. It could be said that the practice of leaving blank space in the translating of Lao-tzu's philosophy of "non-action which leaves nothing unacted" into the field of esthetics. In other word, the leaving of blank space within a painting does not indicate a lack of representation; It, on the contrary, has an active and positive role to play within the composition. Call it "non-action," yet it "leave nothing unacted"; this "non-being" includes the unlimited possibilities of " being."

I Ching

- Yin stood for cold, softness, contraction, wetness, femininity and the like.
- Yang stood for heat, hardness, expansion, dryness, masculinity, and the like.
- Yin and Yang cannot be understood separately.
- The opposition, alternation, and interaction of the the two forces give rise to all phenomena in the universe, in continuous advance and regression of vital forces in nature. nothing remains static. Good fortune and ill are forever moving against each other according to cosmic rules. It is said that "when the sun reaches the meridian, it declines, and when the moon becomes full, it wanes." As Lao-tzu sums it up, "Reversal is the nature of the Tao." The art of good living lies in the ordering of one's life in harmony with the cosmological movements of the Yin and the Yang. This principle applies to specific problems at hand, as well as to the grand generalizations of universal transformation.

Sacred space

- paradise/heaven
- hell/hades
- pre-existence
- this life
- after life
- god and human space

Spiritual space

- internal life
- genesis (beginning)
- nirvana (terminate)
- unfrock (return)
- Zen

Human Space

- personal space
- public space
- intimate space
- cyber space

Definition

- Physical space is measured with straight edges, rules, and transits, following the rules of Euclidean geometry. These measurements are based on the assumption that an object may be displaced or rotated without deformation and with objects can be assigned positions in a cartesian (rectangular) coordinate system.
- Math: a set of points or elements assumed to satisfy a given set of postulates (Ex: space of one dimension is a line and of two dimensions is a plane.
- An interval or period of time, often one of specified length area or room sufficient for or allotted to something

Mathematics

- Euclidean (equation): of the geometric principles of Euclid,
- Greek mathematician
- X and Y axis
- X, Y, and Z axis

Physics

- sound wave
- force movement
- magnetic field

Chemistry

- chemical elements
- atom
- molecule
- nucleus
- electron
- particle
- neutron
- chemical equation

Geography

- land
- sea

Astronomy

- universe
- constellation
- orbit
- solar system
- celestial body

The Whole System Map of Spatial Paradigm

visual space

- artists space
  - performance space
  - painted space
- art space
  - exhibit space (environment & art)
  - art and audience space
  - space and time
    - drama
      - scene
      - act
      - stage
      - proscenium
      - back stage
    - dance
    - book / magazine (reading)
    - video art/movie/ TV
- 2D
  - fine art
    - painting
      - point
      - line
      - plane
      - shape
      - visual texture
      - combination
      - grid
        - typographic unit
        - constructional
        - compositional
        - proportional
    - printing
  - applied art
    - illustration
    - graphic design
    - visual design
    - commercial design
- 3D
  - kinetic space
    - sculpture
    - packaging
    - architecture
      - length
      - depth
      - width
  - living space
    - interior design
      - within
      - outer space
      - inner space
      - open space
      - enclosed space

social space

- psychology (sensuous space)
  - gestalt
    - figure/ground
      - positive space
      - negative space
    - proximity
    - similarity
    - continuity
    - closure
    - isomorphism
  - colours
    - hue
    - chroma
    - value
- culture
  - philosophy
    - western
    - eastern
      - Lao-tzu
      - I ching
  - religious
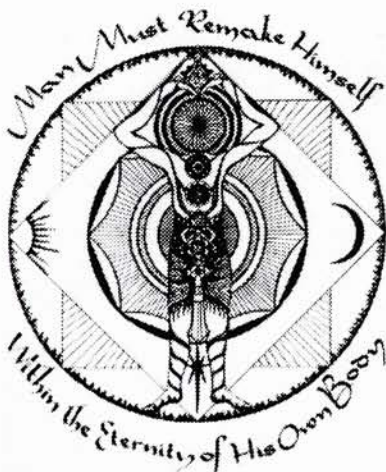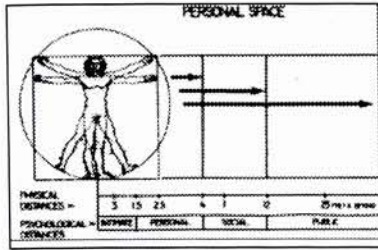   - sacred space
      - paradise/heaven
      - hell/hades
      - pre-existence
      - this life
      - after life
      - god and human space
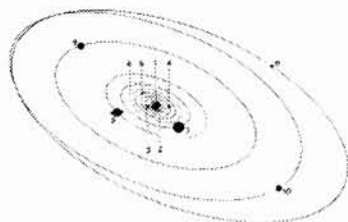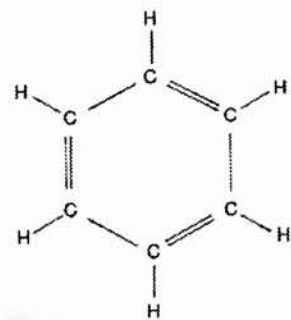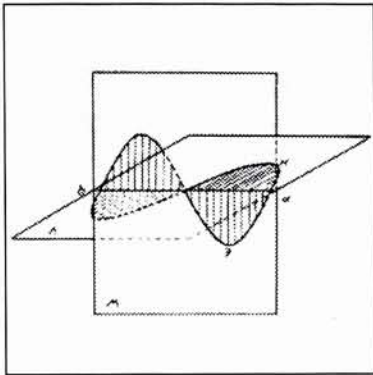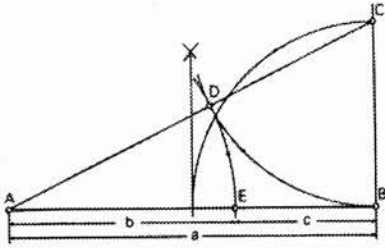   - spiritual space
      - internal life
      - genesis
      - nirvana
      - unfrock
      - zen
  - human space
    - personal space
    - public space
    - intimate space

physical space — science
- mathematics
  - Euclidean (Equation)
  - X and Y axis
  - X, Y, and Z axis
- physics
  - sound wave
  - force movement
  - magnetic field
- chemistry
  - chemical elements
    - atom
    - molecule
    - nucleus
    - electron
    - particle
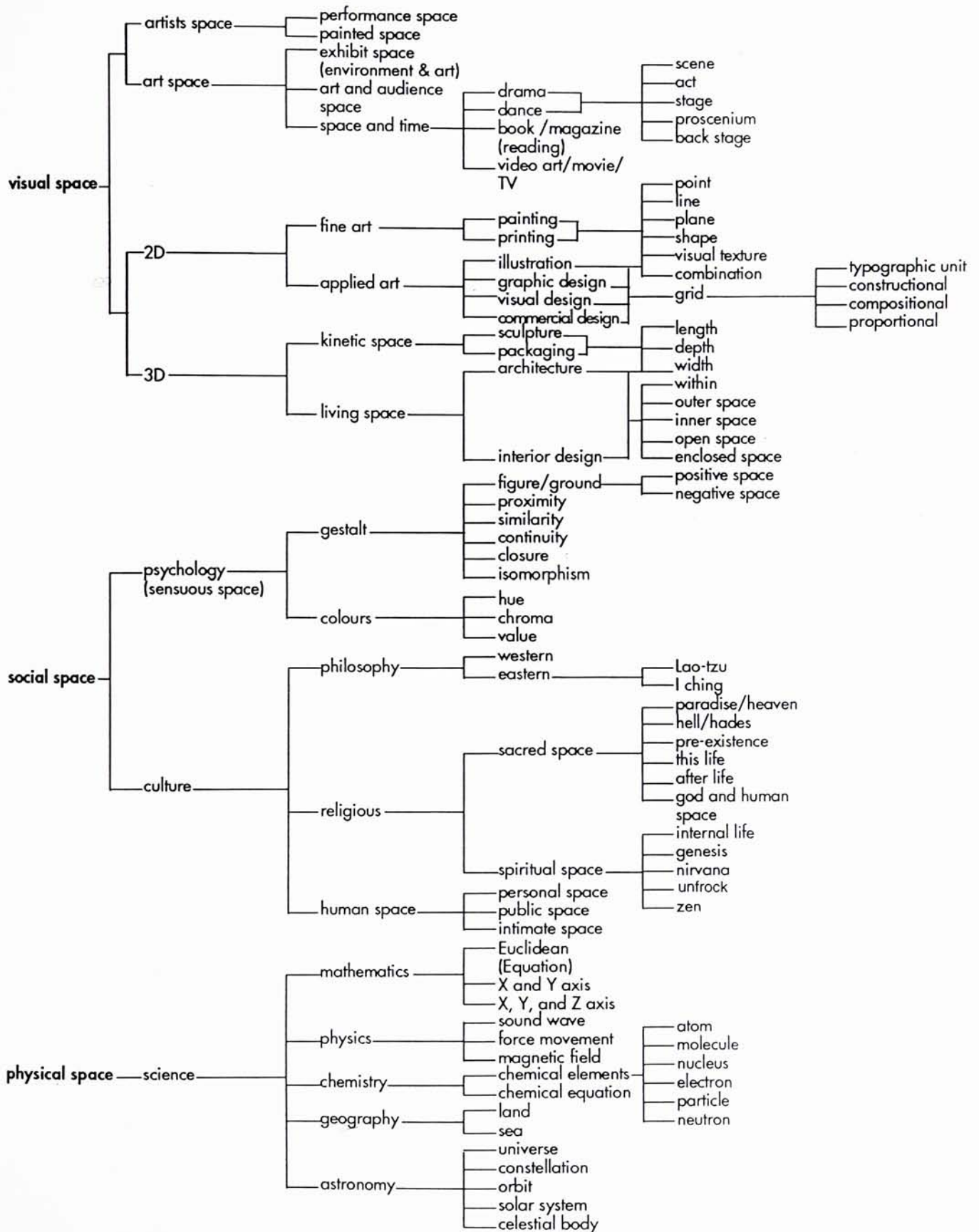   - neutron
  - chemical equation
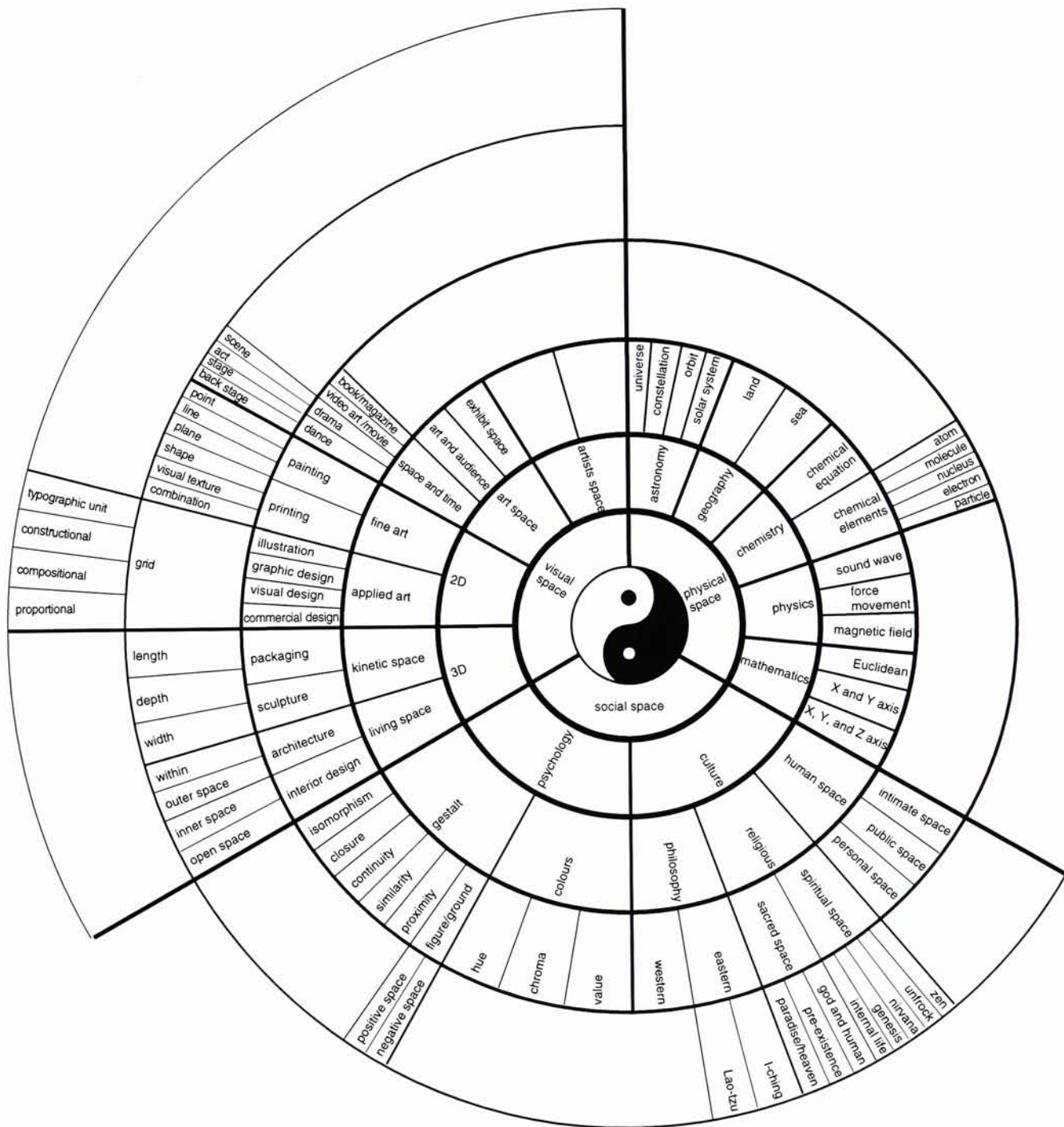- geography
  - land
  - sea
- astronomy
  - universe
  - constellation
  - orbit
  - solar system
  - celestial body

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Appendix 2 Fall Notebook

Contents

Project Title   The Spatial Experience in Graphic Design

Designer and Address Ya-Li Hsu
                          336 Kimball Drive
                          Rochester, New York 14623

Situation Analysis   Space is a common denominator of a visual composition,
                          but many people still treat it only as background. They
                          arrange the subjects within the space without knowing the
                          interaction between figure and ground. Artists and design-
                          ers should know space and organization methods, otherwise
                          the outcome will be disorganized. What designers need is a
                          clear understanding of issues of space, history, and meth-
                          ods by which they can work more effectively with spatial
                          consideration in their work.

Problem Statement   I intend to study space as a signifier and show that it can be
                          as dramatic as the subject. A possible way to do this study
                          could be from a historical perspective, using western and
                          eastern theories and examples with relation to space, and
                          design principles. The audience for my thesis would be
                          design educators, professional designers, and particular
                          audiences who are interested in space.

"**Design without structure is
anarchy.**"
          M. Vignelli

Mission Statement

This thesis is an investigation of the theoretical views of space that will inform and educate designers and potential designers about space that will aid in the integrity of their design.

Goals	Objectives	Process and Strategies
To establish a basic concept of space	Given a diagram of the whole system spatial paradigm map, the viewer will be able to identify at least four factors contributing to the general concept of space.	- Gather fundamental information about space in psychology, philosophy, cultural, and science. - Analyze fundamental information. - Synthesize and evaluate the fundamental information - Diagram the whole system map of spatial paradigm.
	Given a diagram of the relationship between art movements and graphic design, the viewer will be able to name at least five events contributing to the specific concept of space.	- Gather specific information about space in art and graphic design history movements. (breakthrough events, movements, or person, such as Cubism, Suprematism, Dada, Picasso, Kandinsky...) - Analyze their influence on graphic design. - Synthesize and evaluate the influences. - Diagram the relationships between the movements in art and graphic design.
	Given a diagram of the evaluation of spatial design principles, the user will be able to organize at least four factors contributing to the existing concept of space in graphic design.	- Gather existing spatial design principles in graphic design. (such as grid system, modular, scale, size...) - Analyze these design principles. - Synthesize and evaluate

Goals	Objectives	Process and Strategies
		these principles.
		▪ Diagram the evaluation of spatial design principles.
To establish the theory of spatial perception	Given a diagram of psychological spatial theory, the user will be able to construct at least five factors contributing to the theory of visual spatial perception.	▪ Gather perceptual theories about space that has influenced graphic design. (gestalt: closure, continuation, proximity, similarity, figure/ground...) ▪ Analyze these theories. Synthesize and evaluate these theories ▪ Diagram these perceptual theories.
	Given a diagram of the philosophic theory which can be applied to graphic design and space, the user will be able to construct at least three theories contributing to the theory of spiritual spatial perception.	▪ Gather philosophic theories about space that have influenced graphic design. (I-Chin, Lao Tzu, Chuang Tzu, interaction, balance, harmony, unity...) ▪ Analyze these theories. ▪ Synthesize and evaluate these theories. ▪ Diagram the philosophic theories and how they can be applied to graphic design and space.
To establish the application of the uses of space	Given examples of good and bad use of space in design, the user will be able to formulate at least four factors contributing to the effective uses of space.	▪ Gather good and bad examples of using space in graphic design. ▪ Analyze how much white space each has, how it has been used, and which are most effective in terms of white space. ▪ Synthesize and evaluate these comparisons. ▪ Diagram the comparison
	Given a reference for applications of space, the user	▪ Arrange collected information and theories from above.

Goals	Objectives	Process and Strategies
	will be able to solve at least four problems dealing with space in graphic design.	- Synthesize the information and theories into a spatial system. - References for applications of graphic design
	Given an example application of space, the user will be able to combine the applications and theories of the use of space in roughly 30 minutes.	- Graduate show--visual example of the application of using space - Graduate thesis--Literal reference of the application of space
To evaluate this project and to modify accordingly	Given a questionnaire, the user will be able to identify the reliability and validity of the three goals of this project.	- Design a questionnaire - Test a variety of people during the thesis show - Modify the thesis according to the questionnaire

1993 Summer Jun./Jul.	7-11	14-18	21-25	28-2	5-8
	Classes begin Choose a topic	Research and study on elements in two-dimensional format, space/time, and space/movement	Research and study fundamental information about space and Chinese philosophy	Gather all information Analyze and synthesize Definition Design a diagram Meeting with Dr. Zakia	**Final critique** Diagram the whole system map of spatial paradigm

Fall Sept.	1-4	5-11	12-18	19-25	26-30
	Classes begin	**First class**	First draft of proposal Meeting with Dr. Zakia	Mini-proposal due Problem statement Situation analysis Meeting with Dr. Zakia	Problem statement Situation analysis Mission statement Meeting with Dr. Hodik

Oct.	1-2	3-9	10-16	17-23	24-31
	Situation analysis Problem statement Mission statement Goal, Objective, Process	Situation analysis Problem statement Mission statement Goal, Objective, Process	Situation analysis Problem statement Mission statement Goal, Objective, Process Time plan Meeting with Dr. Zakia Meeting with Dr. Hodik	Time plan Generative matrix Rework summer research	Time plan Generative matrix Pragmatic consideration Dissemination Bibliography Glossary of terms

Nov.	1-6	7-13	14-20	21-27	28-30
	Final refine the proposal/plan Generative matrix	**Last class** Final critique Fall proposal/plan Summer Research	**Fall/winter break** Research and study about space in art movement Analyze their influence on graphic design	**Thanksgiving day** Research and study on perceptual theories about space Analyze these theories	Research and studies on philosophic theories about space Analyze these theories

Winter Dec.	1-4	5-11	12-18	19-25	26-30
	Classes begin Gather all information and organize	First committee meeting Review proposal and fall break research	Synthesize and evaluate the fall break research Meeting with Roger	**Christmas day** Diagram the relationships between art movements and graphic design Meeting with Roger Meeting with Dr. Hodik	Diagram the psychological spatial theories

1994					
Jan.	**1** **New Years day**	**2-8** **Classes Resume** Diagram the philosophic theory Meeting with Roger Meeting with Dr. Zakia	**9-15** Gather existing spatial design principles in graphic design Analyze, synthesize and evaluate these principles Diagram the evaluation of spatial design principles	**16-22** Gather good and bad examples of using space in graphic design Analyze, synthesize and evaluate them Diagram the comparison	**23-31** Gather all of research and diagrams Organize all of information
Feb.	**1-5** Second committee meeting Review above information and diagrams Talk about application suggestion from committee	**6-12** Gather images of generative matrix Develop system idea themes and design methods Design a format Begin sketches Meeting with Roger	**13-19** **Last Class** Final critique Organize all information from summer, fall, and spring Meeting with Roger Meeting with Dr. Zakia Meeting with Dr. Hodik	**20-26** Develop rough layouts	**27-28** **Winter/spring break** Refine layout
Spring **Mar.**	**1-5** Final design	**6-12** **Classes begin** Final design Meeting with Roger Meeting with Dr. Zakia	**13-19** **First thesis show opens** Re-fine final design Third committee meeting Go over layout, ideas, and exhibition	**20-26** Final refine Print out Design a questionnaire Meeting with Roger	**27-31** Mount all works Design the thesis show display Re-fine the questionnaire Begin writing thesis Meeting with Roger Meeting with Dr. Hodik
Apr.	**1-2** Set up exhibit with lighting	**3-9** **Second thesis show opens** Thesis show Evaluate this project Invite the thesis committee and my friends Outline of thesis content	**10-16** Thesis show Evaluate this project Writing thesis	**17-23** Thesis show Evaluate this project Writing thesis Meeting with Dr. Hodik	**24-30** **Third thesis show opens** Writing thesis Meeting with Dr. Zakia
May	**1-7** First draft of thesis Give a copy to each committee member Refine first draft	**8-14** **Last Class** Seconds Draft finished Fourth committee meeting Suggestions	**15-21** **Thesis finished**	**22-28** **Spring/Summer Break**	**29-30**
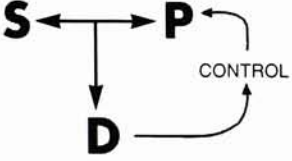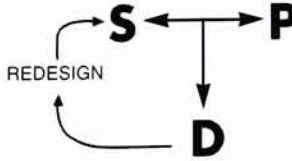
Pragmatics
Considerations

Budget Estimated

Copying	$ 50
Paper	50
Glue	10
Spray adhesive	30
High laser print	120
Mount	70
Lights	10
Purchase books	200
Incidental expenses	100

Resources

Wallace Library
Computer
Lights

Dissemination

This application will be assembled and displayed in the Bevier Gallery at RIT for a duration of 3 weeks (April 4-20). The thesis notebook is for educational use at RIT. It may be translated to Chinese for author's personal reference.

Evaluation Model	Objectives	Evaluate Strategies
Control-Performance S ← → P ┐ │ CONTROL ↓ ↑ D ──────┘	■ Given a diagram of the whole system spatial paradigm map, the viewer will be able to identify at least four factors contributing to the general concept of space. ■ Given a diagram of the relationship between art movements and graphic design, the viewer will be able to name at least five events contributing to the specific concept of space. ■ Given a diagram of the evaluation of spatial design principles, the user will be able to organize at least four factors contributing to the existing concept of space in graphic design. ■ Given a diagram of psychological spatial theory, the user will be able to construct at least five factors contributing to the theory of visual spatial perception. ■ Given a diagram of the philosophic theory which can be applied to graphic design and space, the user will be able to construct at least three theories contributing to the theory of spiritual spatial perception.	■ Method: Presentation & discussion ■ Goal: Control thesis performance ■ Target Audience: Graphic design graduate students at RIT ■ Date: Jan. 24, 1994 ■ Playing Time: One hour ■ Place: Room 3510 ■ Material Included: 1.Diagram the whole system map of spatial paradigm 2. Diagram the relationships between the movements in art and graphic design 3. Diagram the evaluation of spatial design principles 4.Diagram the psychological spatial theory 5. Diagram the philosophic theory ■ Feasibility Analysis: This presentation will introduce the 5 diagrams. Through presentation and discussion, I'll modify the diagrams according to the feedback.
Redesign-Standard ┌→ S ← → P REDESIGN │ ↑ ↓ └──── D	■ Given examples of good and bad use of space in design, the user will be able to formulate at least four factors contributing to the effective uses of space. ■ Given a reference for applications of space, the user will be able to solve at least four problems dealing with space in graphic design.	■ Method: Discussion & evaluation ■ Goal: Redesign the standard ■ Target Audience: Graphic design graduate students at RIT ■ Date: Mar. 8, 1994 ■ Playing Time:

Evaluation Model	Objectives	Evaluate Strategies
	▪ Given an example application of space, the user will be able to combine the applications and theories of the use of space in roughly 30 minutes.	One hour ▪ Place: Room 3510 ▪ Material Included: 1. Diagram of the comparison good and bad example of using space 2. A reference for applications of space 3. Visual example of the application of using space 4. Literal reference of the application of space ▪ Feasibility Analysis: This discussion will presented the layout and literal reference of the application. Through evaluation and discussion, I'll refine the layout and literal reference
Termination-Program S◄───►P │ ▼ **D** │ ▼ TERMINATION	▪ Given a questionnaire, the user will be able to identify the reliability and validity of the three goals of this project.	▪ Method: Questionnaire ▪ Goal: To evaluate the project, to modify accordingly and to terminate the thesis ▪ Target Audience: RIT fine art students and faculty ▪ Date: April 4-22, 1994 Playing Time: 9:00 am to 5:00 pm ▪ Place: Bevier Gallery at RIT ▪ Material Included: 1. Questionnaire 2. Thesis show ▪ Feasibility Analysis: The questionnaire will test a variety of people during the thesis show. After testing, I'll list statistical data for modifying this project and terminate my thesis.
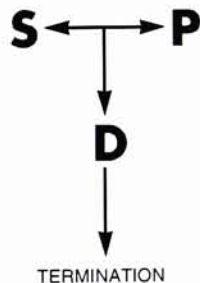
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Zakia, Richard D.
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New York: Focal Press Inc., 1980.

Zakia, Richard D.
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New York: Light Impressions Corporation, 1980.

Abstract art: Art with a basis in visual reality, but without natural representation as its primary concern. Forms observed in the natural world may be simplified or altered selectively to suit the artist's concepts. The term is sometimes also used to describe nonrepresentational works which make no reference to objects or forms in the outside world.

Aesthetic: Of or pertaining to the sense of the beautiful and the accepted notions of what constitutes good taste artistically.

Ambiguity: Doubt or uncertainty in meaning. Ambiguous: capable of being understood in two or more possible senses; equivocal.

Anamorphosis: Optical magnification ordinarily in one direction or along only one axis. Anamorphic drawings or paintings are distorted images that may be viewed undistorted from a particular angle of view or with the use of a special instrument.

Art Nouveau: A late nineteenth-century style characterized by curvilinear, organically based ornamental forms.

Balance: A design concept in which elements are equally or symmetrically positioned.

Confucius: Chinese philosopher and teacher.

Contrast: A differentiation between design elements to set them apart from other copy in a layout.

Color: A property of light, not of bodies or pigments. As sensed by photoreceptors in the eye, our perception of color results from a certain bundle of wavelengths of electromagnetic energy bombarding the retina. Color has three "dimensions" or characteristics.

Cubism: A twentieth-century art movement in formulist abstraction developed by Picasso and Barque beginning about 1908. Analytical Cubism was an early stage (from 1909-1912) in which subjects were observed from different angles, shattered, and reconstructed as geometric shapes. Synthetic Cubism soon followed. During this stage collage was introduced and geometric shapes were manipulated into abstract subjects which were not based on the artist's direct observation.

Dada:
The Dada movement originated in Zurich (Switzerland), and in New York during World War I. Dada was a mode of fantasy art based on the concept of absurdity and nonsense. It pared the way for the later Surrealist movement.

de Stijl:
The de Stijl movement developed in neutral Holland during World War I. It was a formulist trend in nonrepresentation which grew out of Cubism. Mondrian was the best known painter in the movement.

Form:
The shape or structure of a thing as opposed to its matter or substance. In the arts, the term is used broadly as a synonym for design or patternmaking; and it includes all aspects of composition, organization, and structure.

Grid:
A pattern of lines commonly at 90° to one another like a checkerboard. Grids, however, may employ diagonal lines, circles and arcs, or arbitrary or freely chosen configurations. Grids are categorized as regular when they consist of geometric arrays of lines and as arbitrary if they consist of random or irregular lines.

Interval:
1) a space between two things; gap; distance. 2) a period of time between two points of time, events, etc. 3) the extent of difference between two qualities, conditions, etc. 4) music the difference in pitch between two tones.

Kinetic:
Moving; pertaining to motion; produced by motion.

Margin:
The area or space around a group of design elements.

Modular:
The Modular is a system based on a mathematical key. Taking account of the human scale, it is a method of achieving harmony and order in a given work.

Notan:
Notan is a Japanese word meaning dark-light.

Perspective:
A method of representing three-dimensional objects in space on a two-dimensional surface. Some perspective methods are simple, such as vertical stacking, overlapping, and diminishing size of objects represented in a picture. Atmospheric perspective involves a use of paler color and loss of clarity in distant forms in a picture. Linear perspective was developed during the Renaissance to provide a

more regulated spatial scheme in art. One-point and two-point perspective methods involve the use of vanishing points set on the horizon line (which conforms to the eye level of the viewer).

Physical: 1) of material (contrasted with moral and spiritual) thing. 2) of the body; bodily. 3) of the laws of nature. 4) of the natural features of the world.

Physical Space: Physical space is measured with straight edges, rules, and transits, following the rules of Euclidean geometry.

Picture Plane: The flat surface on which artists draw or paint as bounded by the edges of the material (the canvas, board, or frame) or by a line that circumscribes the area in which the artist composes a design or picture, length by width.
a repetition of design elements to create an artistic effect.

Rhythm: Repetition of any visual component--interval, shape, color, or motif (figure)--in a regulated patternmaking process. Shapes or motifs may be repeated in their entirety, fractionalized, compressed or expanded, and so on, throughout a work.

Shape: The overall outline or contour of any perceived unit, figure or ground, particularly when related to a two-dimensional surface. Shape is a preferred term in this text as it is more specific.

Surrealism: An art movement that originated in 1924 as an outgrowth of Dada. It was influenced by the writings of Freud and strove to rely on the subconscious and the world of dreams as the basis of artistic expression.

Semiotics: A theory of how meaning is created through signs and symbols in our lives, is both a strategy for looking, as well as a model for expressing meaning -- especially that which is less obvious or more deeply represented in culture.

Symbol: A subject which alludes to a meaning beyond its obvious appearance.

T'ai-Chi: T'ai-Chi is the concept that all of life is composed of, and has been set in motion by, the constant interplay of two vital

energies: Yin, the passive, and Yang, the active principle. "T'ai-Chi is the mother of Yin and Yang (everything female and male)," which has given rise to everything under the sun.

Tension: The interaction of figures that tends to draw them together ("magnetic attraction") visually--a factor in Gestalt proximity. In general, the closer the figures, the greater the tension; the tension up to the point where figures are perceived to have no relationship at all. Tension sets up stress points within a work of art that increase a sense of movement, direction, and dynamism.

Unity: The quality of any work of art that pulls it together and forms one whole as opposed to a random association of parts.

Visual Space: The physical space that is experienced through our eyes.

White Space: Unused open space in or around a design.

Zen Painting: Zen Buddhist painting was characterized by its abbreviated, abstract forms. It was felt by Zen painters that spiritual enlightenment could best be achieved through a spontaneous and intuitive response to nature, rather than a carefully studied one. Mu Chi's Six Persimmons illustrates this approach in its extremely simple treatment of its subject, capturing its essence without descriptive detail.

1. Summer Research

2. Fall Research

3. Mini Proposal

4. A Grid System for This Project

Visual Space

Definition

- interval or distance between two or more objects
- area or volume
- the three-dimensional, continuous expanse extending in all directions and containing all matter
- room in newspaper, magazine or TV, available for use by advertisers
- a bank piece of type metal used to separate characters or words
- the area left vacant by mechanical or electronic means on a printed or type line
- telegraphy an interval when the key is open, or not in contact.
- a two- or three-dimensional area defined by the visual elements. For example, a two-dimensional space might be a picture plane or format, and a three-dimensional space might be an environment or building interior.

Artists space

- performance space
- painted space

Art space

- exhibit space (environment & art)
- art and audience space
- Space and time
  A book is a three-dimensional object and the elements the designer must relate have a definite progression through it in space and time. The expanding of space and the contracting of time is characteristic of the world we know through science. Therefore, the designer should not think in terms of so many flag pages to be designed; rather, he should visualize the cumulative effect of these parts. Think of the book as rectangular block, to be shaped into a form that will give unified expression to the manuscript. The progression from the outer layer of the cover into the front matter-through the text to back matter-would thus be related in depth.
  A television screen is two dimensional, but the time-and motion equation heightens the illusion of dimensional space.
- Space and movement
  We see with our eyes in two ways-visual perception with the eyes at rest and kinesthetic impressions from eye movements. Our awareness of the spatial relationships existing between various elements is derived from eye movements in different directions over different distances. The purpose of a layout is to direct the eye in an orderly path. The various points of the layout are united by eye movements that create

a coherent total impression.

Elements in two-dimensional for-mat
- point: the simplest and most minimal of the visual elements used in art, architecture, and design. It is considered the prime generator of all form and can be used to determine and define location in space.
- line: conceptually, a point in motion having only one dimension, length. Line has both a position and a direction in space.
- plane: conceptually, a two-dimensional expression of length and width. A plane is line that is stretched in two-dimensional space in a direction other than that of its length.
- shape: a two- or three-dimensional area defined by the visual elements.

Environment
- viewing distance with object
- viewing angle
- background

Grid
- Grids are a measuring guide used to help ensure consistency in planning a visual message. A grid shows type and image area dimensions, trim, and margins, and is used to define constant dimensions of space.
- compositional
- constructional
- proportional
- typographic unit

Architecture
- architecture-a lining space: The most physically apparent organization of space is found in architecture. We all spend much of our time within buildings, some of which can be thought of as architecture and many as just constructions. In some buildings space is defined by mass so that it contributes greatly to the quality of life within it.
- Architecture is the first manifestation of man creating his own universe, creating it in the image of nature.

Sculpture
- sculpture-making space visible: The sculpture intensifies the life of the sensory space, inducing its existence into our senses and into our consciousness.
- A piece of sculpture is a center of three-dimensional space. It is a virtual kinetic volume, which dominates surrounding space, and this environment derives all proportions and relation from it as the actual environment does from one's

self. The work is the semblance of a self, and creates the semblance of a tactual space-and, moreover, a visual semblance. It affects the objectification of self and environment for the sense of sight. Sculpture is literally the image of kinetic volume in sensory space.

- Sculptural form is a powerful abstraction from actual objects and the three-dimensional space which we construe by means of them, though, namely the semblance of kinetic space.

Social Space

Definition

- Space is the indefinable, great, general receptacle of things. It is continuous and infinite and ever present. It cannot exist by itself because it is part of everything.
- Space is far more than just what is left over after important things have been laid down.
  Space as we know it in the practical world has no shape. Even in science it has none, though it has "logical form" there as spatial relations, but there is no concrete totality of space, space itself is amorphous in our active live and purely abstract in scientific thought.
- Space is perceptual experience.

Gestalt

- figure/ground: positive and negative
- figure: outline or contour of an object, shape, form, image and so on.
- ground: That which is behind a figure, without dominant form.
- proximity: The distance between elements. The law of proximity states that elements that are nearer to each other in a composition will be seen as "belonging" together.
- similarity: viewers tend to see similar shapes as belonging and similar figures as a group.
- continuity: We will group elements in continuous line.
- closure:

Colors

- hue: A specific color or light wavelength found in the spectrum, ranging circularly from red through yellow, green, blue, and back to red.
- chroma: Strength of a hue. The chroma range extends from neutrality (grayness) to the strength, most intense color a pigment or phosphor can provide.
- value: Brightness; it is the relative degree of lightness or darkness of color measured in relationship from back to white.

Lao-tzu

- "Thirty spokes converge upon a single hub;
  It is on the hole in the center that the use of the cart hinges.
  We make a vessel from a lump of clay;
  It is the empty space within the vessel that makes it useful.
  we make doors and windows for a room;
  But it is these empty spaces that make the room livable.
  Thus, while the tangible has advantages,
  It is the intangible that makes it useful."
- The leaving of blank space is an art within Chinese painting.

Although these spaces have not been touched by brush or ink, they are not be considered "hole," or unfinished portions of the painting. They are rather, integral and important parts of the painting as a whole. It could be said that the practice of leaving blank space in the translating of Lao-tzu's philosophy of "non-action which leaves nothing unacted" into the field of esthetics. In other word, the leaving of blank space within a painting does not indicate a lack of representation; It, on the contrary, has an active and positive role to play within the composition. Call it "non-action," yet it "leave nothing unacted"; this "non-being" includes the unlimited possibilities of " being."

I Ching

- Yin stood for cold, softness, contraction, wetness, femininity and the like.
- Yang stood for heat, hardness, expansion, dryness, masculinity, and the like.
- Yin and Yang cannot be understood separately.
- The opposition, alternation, and interaction of the the two forces give rise to all phenomena in the universe, in continuous advance and regression of vital forces in nature. nothing remains static. Good fortune and ill are forever moving against each other according to cosmic rules. It is said that "when the sun reaches the meridian, it declines, and when the moon becomes full, it wanes." As Lao-tzu sums it up, "Reversal is the nature of the Tao." The art of good living lies in the ordering of one's life in harmony with the cosmological movements of the Yin and the Yang. This principle applies to specific problems at hand, as well as to the grand generalizations of universal transformation.

Sacred space

- paradise/heaven
- hell/hades
- pre-existence
- this life
- after life
- god and human space

Spiritual space

- internal life
- genesis (beginning)
- nirvana (terminate)
- unfrock (return)
- Zen

Human Space
- personal space
- public space
- intimate space
- cyber space

Physical Space

Definition

- Physical space is measured with straight edges, rules, and transits, following the rules of Euclidean geometry. These measurements are based on the assumption that an object may be displaced or rotated without deformation and with objects can be assigned positions in a cartesian (rectangular) coordinate system.
- Math: a set of points or elements assumed to satisfy a given set of postulates (Ex: space of one dimension is a line and of two dimensions is a plane.
- An interval or period of time, often one of specified length area or room sufficient for or allotted to something

Mathematics

- Euclidean (equation): of the geometric principles of Euclid, Greek mathematician
- Greek mathematician
- X and Y axis
- X, Y, and Z axis

Physics

- sound wave
- force movement
- magnetic field

Chemistry

- chemical elements
- atom
- molecule
- nucleus
- electron
- particle
- neutron
- chemical equation

Geography

- land
- sea

Astronomy

- universe
- constellation
- orbit
- solar system
- celestial body

Western historical content

Art Nouveau: Art Nouveau offered an ambiguous space invaded by interactive, complex, flame-like curves.

Paul Cezanne: Cezanne adapted the impressionist technique to a study of space relationship.

Cubism: The first phase of Cubism, about 1906, had rejected the traditional single point view of objects in order to explore their structure, both internal and external. Influenced by Cezanne, early Cubists such as Picasso and Braque recognized a continuity of space and found that initially this required a rejection of the continuity of associated with Art Nouveau. The penetration of total space required fragmentation of the object and its environment and the adoption of superimposed multiviews, translucency and transparency.

Constructivism/Suprematism: Constructivism is thus devoted to the conscious organization of all forms of energy, potential and kinetic, into enduring and memorable identities and things.

Kandinsky:

Dada:

de Stijl: All De Stijl design was based on the rectangle and the use of black, white, gray, and the primary colors.

Bauhaus:

Surrealism: Surrealism was inspired by the Freudian exploration of dreams and launched, in 1922, by Andre Breton into the intellectual ferment caused by Dadaism. The world of dreams, with its irrational juxtaposition of images, challenged the constructivist endeavor to build a new, modern, geometry.

El Lissitzky:

Eastern Theories

I-Ching:

Confucian:

Lao Tzu:

T'ai Chi:

Notan: As a guiding principle of Eastern art and design, Notan (a Japanese word meaning dark-light) focuses of the interaction between positive and negative space, a relationship embodied in the ancient symbolism of the Yang and the Yin, In composition, it recognizes the separate but equally important identity of both a shape and its background.

Chinese Characters: Chinese Characters makes the writer aware of negative and positive space. Each part of the character achieves harmony between the two elements and

Design Principles

Modular:
Grid System:
Interval:
Figure and Ground:
Scale / Size:

Mini Proposal

The Spatial Experience in Graphic Design

Submitted by: Ya-Li Hsu

Date: September 30, 1993

Thesis Committee:

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to the Dean for Graduate Affairs:

(signature of Special Assistant to the Dean)

Date:

Committee Approval:

Date

The Spatial Experience in Graphic Design
The purpose of this thesis is to study the perceptual use of space as a dynamic in graphic design. I intend to investigate the theory and methodologies of non-physical space to breach the limitation of physical space in which we work. I hope to show that physical space is not merely background but a primary factor in graphic design which makes the image more interesting.
The application of this thesis might be an interactive media program, a series of posters, or a prototype of handout brochures.

Appendix 3 Final Outline

The Spatial Experience in Visual Communication

Perceptual Theory

Art Movements

Chinese Concepts

Design Principles
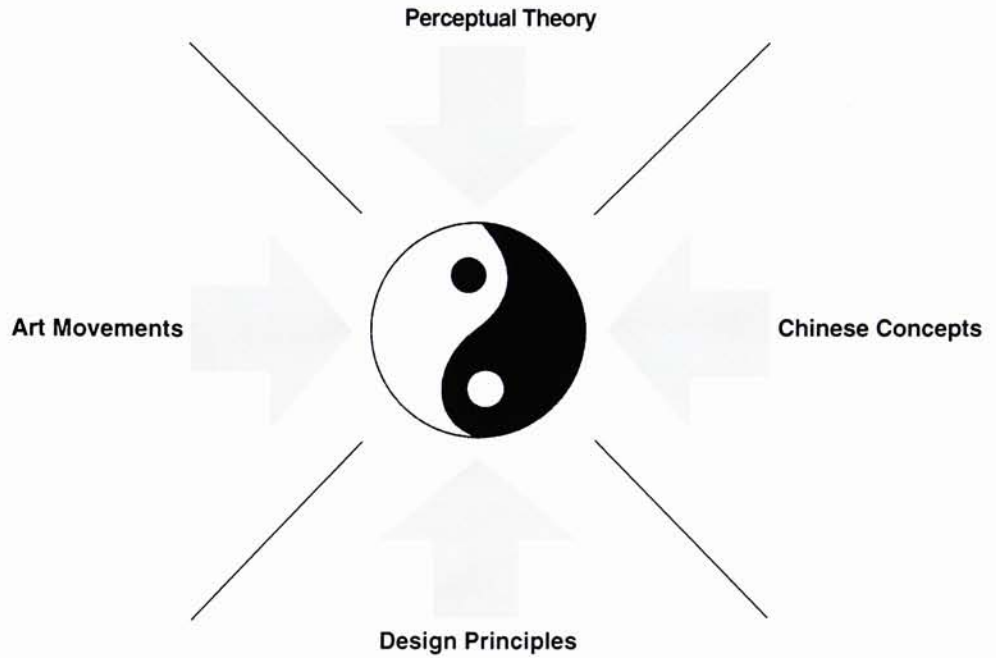
Art Movements (History + Philosophy)	Breakthrough the limitation of two-dimensional space	1. Greek and Roman (imply a depth in painting) 2. Renaissance (perspective) 3. Cubism (multi dimensional) 4. Surrealism (dream, abstraction)
Chinese Concepts of Space (History + Philosophy)	Simple, balance, harmonious, interaction	1. Lao-tzu 2. I-Chin 3. Tai-chi 4. Confucian
Perceptual Theory (Psychological)	Encourage people to see the relationship designers want them to see	Gestalt law: 1. Proximity 2. Similarity 3. Continuity 4. Closure
Design Principles (Method)	Basic design principles	1. Grid system 2. Modular 3. Size / scale 4. Interval

Appendix 4 Winter Notebook

Contents

This guide book is an investigation of some theoretical views of space. Each topic unit focuses on: a historical perspective, using Western and Eastern theories with examples of relation to design principles. It can yield both insights and inspiration. The investigation is supported by relevant information in the units that come before and after.

The audience for this guide book would be graphic design practitioners, and other in related disciplines (architecture, industrial design, photographers, etc.) This guide can inform and educate them about space that will aid in the integrity of their work.

Space is a common denominator of a visual composition, but many people still treat it only as background. They arrange the subjects within the space without knowing the interaction between figure and ground. Artists and graphic designers should know space and organization methods, otherwise the outcome will be disorganized. What designers need is a clear understanding of issues of space, the history of design space, and methods by which they can work more effectively with spatial consideration in their work.

In this electronic age, graphic tools have changed dramatically and will continue to do so, with great momentum. The computer may help to solve some of these design problems. But a computer has no understanding of what a concept is, nor can it make a decision without being given a command. Design is a process of ordering visual elements, so studying the visual experience will greatly help us deal with design problems. Visual experience is one of complex interrelationship. Unlike mathematics or chemistry, there exists more than a single way of interpreting the visual language. However, in order to discuss visual form it will be necessary to recognize the potential of the various elements and their interactions. The number of elements and the terms used to identify them vary considerably among artists and teachers. and basic visual experiences can be categorized into Space; Color, and Time. The visual arts are referred to as spatial arts because visual elements are organized in space and time. Color is an aspect of light. Color affects our emotions directly, modifying our thoughts, mood, actions, and even our health. Effective use of color can highlight the elements which the designer chooses. Time is the period between events or during which something exists, happens, or acts. Space and time are both continuous elements in the visual arts, which we experience simultaneously.

In this guide book, emphasis is placed on space. There are numerous ways of defining space, with depend on your field of expertise. From the mathematician's point of view, physical space is defined as classical Euclidean geometry or Newtonian universe of mathematical equations. From the physicist's point-of-view, space is defined as a force created when each elemental charge creates a disturbance in the space around it, so that any opposing charge present will be felt as a force. The most physically apparent organization of

Visual Experiences

Space	Color	Time
Shape	Hue	Movement
Form	Chroma	Flicker
Size	Value	Sparkle
Position		Glitter
Interval		Fluctuation
Transparency		
Number		

space can be found in architecture. There space is defined
as living space. Although different fields have different inter-
pretations of space, there are also common points of view:
Space can not exist alone, it must interrelate and interact
with something; and the function of space is in order to
reach a balance. The further I penetrate into the definitions
of space the more microscopic the world, because I intend
to study space as a *signifier* and show it can be as dramatic
as the subject. I will concentrate my interpretation on four
key viewpoints (The Western View, The Eastern, The
Psychologist's View, and The Designer's View) which I think
are more relevant for designers.

Western View, from a historical perspective, looks at specific
art movements as breakthroughs in the limitations of the
concept of two-dimensional space. It is important to under-
stand the historical perspective in order to understand why
graphic design treats space in certain ways (i.e. Cubism was
multi-dimensional).

Eastern View: ever since American contact with the East in
the late 1960's, the wisdom of ancient eastern philosophy
was found to be very useful in all fields of human life. The
Yin Yang Doctrine is very simple but its influence has been
extensive. Lao-tzu's theory also deals mainly with intangible
content as the means of a composition. The principle of
Lao-tzu is seen in the use of negative means (intangible
content) to achieve a positive end (What is Expected.)

Perceptual Psychologist's view: Gestalt is basic to the way
humans group information. Understanding how man per-
ceives and responds to the various spatial aspects within an
environment is important for designers. Without this under-
standing, the process of communicating or creating forms is
difficult. To help achieve this awareness it is essential to
learn some of the perceptual concepts of spatial cues as
they relate to the perception of depth and form.

Designer's View: principles should be established to assist
in the creative form generation process. This can be
achieved by using visual organizational principles to struc-
ture the relationship among the visual elements of form, the
compositional elements, and the desired message.

This guide book is basically a collection of information with different views and quotes of the information related to these views. However, it requires analytical thinking to arrive at an understanding of the possibility of using that information in dealing with the spatial experience.

10,000 BC	**Stone Age**	▪ The beginnings of visual art might be found in cave paintings produced toward the end of the Paleolithic period, about thirty thousand years ago. The paintings of animals at Lascaux show an impressive regard for realism. (Croix 1991, 28)
		▪ The art of the Neolithic or New Stone, Age mirrored the different lifestyle that arose between 10,000 and 8000 B.C., when agricultural communities began to provide people with more stable lives. The naturalism of Paleolithic art characterized by the cave paintings at Lascaux gave way to abstract patterning, often based on geometric form. In sculptured fertility figures, as well as in painted images, abstraction was favored over realism. Abstract animal and plant motifs were painted on clay vessels, sometimes with highly stylized pictographic characteristics. These picture-writing forms anticipated the later development of alphabets. (Meggs 1992, 6)
400 AD	**Roman**	▪ The term perspective refers to the illusion of three-dimensional objects in space created on a two-dimensional surface through the use of certain methods of representation. Stages of its progress can be seen throughout the history of ancient art up to the times of the ancient Romans. During the Middle Ages interest in implying three-dimensional depth in painting declined; artists were more motivated by the spiritual and decorative aspects of two-dimensional forms than by a concern with realism. (Jones 1992, 13)
1400 AD	**Renaissance**	▪ Strictly this art is of the period from ca. 1400 to ca. 1520, but sometimes can be traced back to the time of Giotto, ca. 1300. During the 14th century, Italian art, especially painting, increasingly took account of scientific perspective and moved toward realism. (de la Croix 1991, 10)
1890AD	**Post-Impressionism**	▪ Paul Cezanne adapted the impressionist technique to a study of space relationship. He invented a new method of defining space called color modeling. This involved making color work independently as a perspective method, which Cezanne offered as an alternative to the the Renaissance approach of linear perspective. The basic idea involved manipulating warm and cool colors, creating a spatial system of juxtaposition where some color forms advanced while others receded. (Meggs 1992, 238)
	Expressionism	▪ The major figure in Der Blaue Reiter movement in Munich

was the Russian artist Wassily Kandinsky (1866-1944). He took a bold step beyond Fauvism in his Expressionist paintings, which evolved from abstraction into nonrepresentation. He felt that line and color by themselves could communicate strong emotional feeling without any reference to subject matter. (Meggs 1992, 270)

Art Nouveau
- Art Nouveau offered an ambiguous space invaded by interactive, complex, flame-like curves as well as a more rectilinear approach to spatial organization of Geometric forms. (Heller 1988, 41)
- Charles Rennie Mackintosh, Margaret and Frances Macdonald, and J. Herbert McNair, all called the Glasgow Four, demonstrated the rising verticality and integration of flowing curves with rectangular structure by applying the geometric spatial division and lyrical organic forms. The work of the Glasgow Four was similar in appearance and character of that of the Vienna Secession. (Meggs 1992, 220)
- The journal of the Vienna Secession, *Ver Sacrum*, featured an unprecedented use of white space in its page layout. Sleek-coated stock, and unusual production methods gave an aura of quality and ensured a visual design unity. (Meggs 1992, 224)

1907AD

Early Modernism
- Frank Lloyd Wright saw space as the essence of design, and had a profound influence upon all areas of twentieth-century design. He looked to Japanese architecture and design for a model of harmonious proportion and visual poetry; in pre-Columbian architecture and art, he found lively ornament restrained by a mathematical repetition of horizontal and vertical spatial division. Wright's repetition of rectangular zones and use of asymmetrical spatial organization were adopted by other designers. He incorporated white and black space as an element in his designs to establish and work within parameters, and combined varied materials into a unified whole. At the turn of the century, he was operating at the forefront of the emerging modern movement. (Meggs 1992, 218)
- Peter Behrens used a grid system that was used to structure space in his graphic design. Behrens was a noted architect, some of whose students went on to form the Bauhaus.
- J. L. Mathieu LauWeriks was fascinated by geometric form and had developed an approach to teaching design based on geometric composition. His grids began with a square

circumscribed around a circle; numerous permutations then could be made by subdividing and duplicating this basic structure. The geometric patterns thus developed could be used to determine proportions, dimensions, and spatial divisions in the design of everything. (Meggs 1992, 231)

Cubism

- The first phase of Cubism, about 1906, had rejected the traditional single point view of objects in order to explore their structure, both internal and external. Influenced by Cezanne, early Cubists such as Picasso and Braque recognized a continuity of space and found that initially this required a rejection of the continuity associated with Art Nouveau. The penetration of total space required fragmentation of the object and its environment and the adoption of superimposed multiviews, translucency and transparency. Cubist painting was a new approach to handling space and expressing human emotions. (Meggs 1992, 238)
- Multiplicity of viewpoints and the spatial illusions of perspective give way to an ambiguous shifting of two-dimensional planes in the next phase of cubism.
- By innovating an approach to visual composition, Cubism changed the course of painting and graphic design. Its formal language became a catalyst for experiments that pushed art and design toward geometric abstraction and new approaches to pictorial space. (Meggs 1992, 238)
- Picasso was one of the greatest artists of the twentieth century. He explored a broad range of styles, at times working in more than one at the same time. Early in the century, after evolving out of his Blue and Rose Periods, Picasso pioneered the development of Cubist painting. He continued to work in and out of the Cubist mode throughout his career. (Meggs 1992, 239)
- Juan Gris used the golden section proportions and a modular composition grid. He was to have a profound influence upon the development of geometric art and design. (Meggs 1992, 238)

Futurism

- Chiefly an Italian literary and artistic movement, Futurism stressed the dynamism of motion and encouraged young Italian artists to reject the art of the academies and museums. The first "Manifesto of Futurist Painters," was proclaimed by Carlo Carra, Giacomo Balla, Gino Severini, and L. Russolo. Attempting to represent time and motion, these painters and sculptors showed multiples of moving parts in

many positions simultaneously. While Futurism was not directly associated with Fascism until after World War I, evidence of right-wing political ideas and the glorification of war can be found in Boccioni's *States Of Mind* of 1910-1911. (Meggs 1992, 241)

1917AD	**Dada**	• Negative, destructive and perpetual exhibitionists who were concerned with shock, protest, and nonsense, Dada artists claim to have invented Photomontage, the technique of manipulating found photographic images to create jarring juxtaposition and chance association. (Meggs 1992, 246)
	Surrealism	• Surrealism was inspired by the Freudian exploration of dreams and was launched, in 1922, by Andre Breton into the intellectual ferment caused by Dadaism. The world of dreams, with its irrational juxtaposition of images, challenged the constructivism endeavor to build a new, modern geometry. (Meggs 1992, 250)

• Surrealism was inspired by the Freudian exploration of dreams and was launched, in 1922, by Andre Breton into the intellectual ferment caused by Dadaism. The world of dreams, with its irrational juxtaposition of images, challenged the constructivism endeavor to build a new, modern geometry. (Meggs 1992, 250)

• Professing a poetic faith in man and his spirit, the world of intuition, dreams, and the unconscious realm was a way of thinking and knowing, a way of feeling, and a way of life. (Meggs 1992, 253)

• Space, color, perspective and figures are rendered in careful naturalism, but the image is an unreal dreamscape.

• Surrealism's impact on graphic design has been diverse. It provided a poetic example of the liberation of the human spirit. It pioneered new techniques and demonstrated how fantasy and intuition would be expressed in visual terms.

• The Spanish painter Joan Miro (1893-1983) represented the abstract side of Surrealism. His paintings relied on flatly colored nongeometric, organic shapes. These shapes are sometimes referred to as biomorphic, meaning that they resemble biological organisms. His art was based on automatism. This term means "Automatic action" and it refers to a painting process whereby the Abstract Surrealists entered a trancelike state, allowing the subconscious to take control of actions while engaged in the act of painting. (Meggs 1992, 253)

Constructivism

• Constructivismwas devoted to the conscious organization of all forms of energy, potential and kinetic, into enduring and memorable identities and things.

• Constructivists rejected a social or political role, believing the sole aim of art to be realizing perceptions of the world by

inventive forms in space and time.

- The Constructivist El Lissitzky used the mathematical and structural properties of architecture as a basis for his art. He often constructed his designs on a dynamic axis with asymmetrical balance. He imposed the modular structure and mathematic order of a grid upon his design. (Meggs 1992, 276)

de Stijl

- All de Stijl design was based on the rectangle and the use of black, white, gray, and the primary colors. (Heller 1988, 125)
- Working in an abstract geometric style, de Stijl practitioners sought universal laws of equilibrium and harmony for art, which could then be a prototype for a new social order.
- de Stijl artists sought an expression of the mathematical structure of the universe and universal harmony of nature and brought order to the design by dividing the space into rectangles.
- Mondrian used a pure, geometric abstraction composed of horizontal and vertical lines and produced a body of paintings of incomparable spirit and form made up of primary colors (red, yellow, and blue) with neutrals (black, gray, and white), straight horizontal and vertical lines, and flat planes limited to rectangles and squares. (Meggs 1992, 280)

Bauhaus

- The architectural school of Walter Gropius, founded in Germany, 1919, it promoted a synthesis of painting, sculpture and architecture and the adaptation of science and technology to architecture.
- A communications hierarchy developed from careful analysis of content. Type and image are organized in a functional progression of size and weight from the most important information to supporting details. (Meggs 1992, 295)
- Dynamic composition with strong horizontals and verticals characterize Herbert Bayer's Bauhaus period.
- Piet Zwart designed the space as a "field of tension" brought alive by rhythmic composition, vigorous contrasts of size and weight, and a dynamic interplay between black form and white page. (Meggs 1992, 305)

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                              ┌── The Confucian Anecdotes
           Confucianism ── Confucius ──┤
                              └── The Golden Mean        ┌── Wu-chi ──┐
I-Ching ──┤                                              ├── Tai-chi ──┤── Literary painting
                    ┌── Lao-tzu ──── Tao Teh Ching ──┐   ├── Yin ──────┤
           Taoism ──┤                                  ├──┤── Yang ─────┘
                    └── Chuang-tzu ──── Chuang-tzu ──┘

           Chinese Buddhism ── Zen Sect ──────────────────────── Zen painting
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1050 B.C.	I-Ching	▪ The Asian philosophical concept of change is most pro-
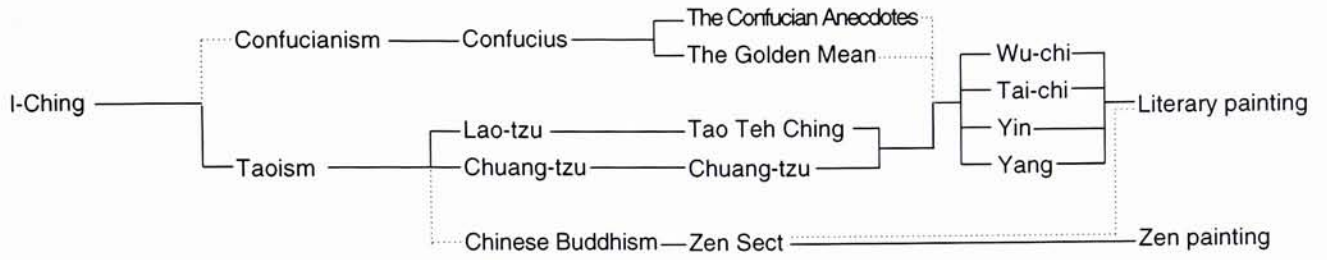
1050 B.C. **I-Ching**

▪ The Asian philosophical concept of change is most profoundly expressed in the I-Ching or Book of Changes, written in about 500 B. C. It reiterates Buddhist and Taoist notions, was a pervasive tool among artists. The I-Ching, characterized by the character "I," is usually simplified in translation as "change." "Ching" is the unchangeable. The message is one of flux, randomness and openness to all possibilities. More elaborate definitions are found in the character combination of the sun and moon (Yin and Yang). The most literal meaning of "I" is easy, simple, understated. The emphasis in this book is to view life as simple. (Gelburd 1990, 10)

▪ The I-Ching is an oracle book as well as a philosophy. It contains 64 hexagrams made up of six broken or solid lines, with texts and commentaries. These lines symbolize the forces of action and change. The broken lines represent Yin (negative, passive, weak, docile); the solid lines Yang (positive, active, strong). The underlying concept is that the two forces are always interacting and producing changes. The one constant in life is that there will always be change. Through simplified forms we can reveal life's constant change.

600 B. C. **Confucianism**

▪ The ethical system taught by Confucius, emphasizes ancestor worship, devotion to family and friends, and the maintenance of justice and peace.

Confucian

▪ The Confucian tradition defined artistic excellence through the mastery of poetry, music, calligraphy and painting. Thus no claim to artistry could be successful without a studied knowledge and highly developed ability in each of these areas. It was thought that only by such means could an individual grasp the interrelation of things and ultimately approach an understanding of universal harmony and order.

600 B.C. **Taoism**

▪ A Chinese religion and philosophy based on the doctrines of Lao-tzu and the advocation of simplicity, selflessness, and other similar characteristics.

Lao-tzu

▪ Lao-tzu is fairly well known in the west today. Regarding reality as what we think it is instead of as what it is, Lao-tzu develops every variation of his thinking according to a relative viewpoint, the theme most brilliantly presented by his

follower Chuang-tzu: "Limited by space, a frog in a well cannot understand what is an ocean; Limited by time, an insect in summer cannot understand what is ice." (Chang 1956, 4)

- In Lao-tzu's text, it is called the "formless form" or the "intangible phenomenon." As vague as it seems, to grasp its reality, one need only think of a female image in a man's mind or vice verse. Similarly, one pole is self-sufficient and has its intangible opposite. The meaning as well as the vitality of "things" in biological, physical, and psychological aspects exist in the combining of a pair of obvious opposite beings, each not having the attributes of the other and each needing the other.

- The basic idea of Lao-tzu's thinking is that once the point of tangible fulfillment is reached, the potential of growing is exhausted. This general point is most powerfully expressed in terms of the constituency of physical space: "Moulding clay into a vessel, we find the utility in its hollowness; Cutting doors and windows for a house, we find the utility in its empty space. Therefore the being of things is profitable, the non-being of things is serviceable." This statement in relation to architecture suggests that the immaterial, that which is likely to be overlooked, is the most useful. Void, conventionally regarded as negative is actually more important because it is always capable of being filled by a solid. (Chang 1956, 7)

- Following the line of Lao-tzu's thinking, a void and a solid must be organically related. In this case, the positive end expected is the rectangular formation of the reference points of objects existing in physical space. Immediate perception received at a certain distance is something incomplete and has its intangible content. "Greatness means vanishing; Vanishing means distance; Distance means return of greatness." In Lao-tzu's thinking, gain and loss are always in balance. What is vanishing in space implies the increase of distance. Inversely, what is decreasing in size has the potential of becoming great. The potential of becoming great is proportional to somethings distance from us. The farther it is, the greater its potential to grow. (Chang 1956, 18)

- "The way to acquire positive is to contain negative." The full meaning of existence is beyond the power of any manifestation. What appears tangible, graphic or natural, is only a means to suggest that which is lacking in appearance and existing in man's intangible understanding and aesthetic

feeling. (Chang 1956, 13)

- Lao-tzu's idea of formation is heavily concerned with empti-
  ness or non-existence. To him who regards nothing as per-
  sistent, what is essentially important in things is the possibili-
  ty of becoming something, not the opportunity of remaining
  as something confronting deterioration. Consequently,
  meaningful incompletion is taken as the most desirable state
  of a tangible being. (Chang1956, 26)
- "The greatest perfection seems imperfect, And yet its use
  is in exhaustible. The greatest fullness seems empty, And
  yet its use is endless." (Wu 1961, 65)
- "The finest has no shape." What exists in physical space
  could not even have temporary being without our conceptual
  interpretation and what exists in our mind would have no
  meaning without reference to physical formation. (Chang
  1956, 25)
- "Long and short will manifest each other; High and low will
  attract each other." Lao-tzu's idea of the relationship of
  things concerns the growth and change between them. This
  is apparent in surface quality, or brightness contrast which,
  as has been mentioned, has no definite being itself. It
  becomes a certain thing at a certain moment only by being
  in contrast with another thing existing either in immediate
  coexistence or experienced association. (Chang 1956, 31)
- "The way to weaken is to strengthen." Usually, change or
  interest in graphic composition depends much on the inter-
  mittent change between uniform shapes and empty spacing
  to give rhythm. (Chang 1956, 44)
- Throughout Lao-tzu's text we see his emphasis on the non-
  being because, to him, no definite being can survive change
  unchanged. What he is looking for is not the remaining state
  of things, not to be one way or the other, but to be
  adjustable between two extremes and thus always be in the
  state of intangible balance. For him, the quality of lively form
  is neither definitely symmetrical nor definitely asymmetrical.
  (Wu 1961, 33)
- "Things are the manifestation of being. Being comes from
  non-being." Lao-tzu never strays from his idea of insuffi-
  ciency in individual things. Again and again, he tries to
  emphasize the organic relationship between things, not the
  things themselves. Obviously, in relation to our mind, the
  being of one thing is always made possible by the non-being
  of another thing. Within the dimension of time, independent
  ideas cannot exist concurrently unless they are generalized

and become a synthetic abstraction. The meaning of a whole and a part will concurrently exist in our mind only when we think about the relationship between them instead of about the things themselves. (Chang 1956, 6)

- "Being isolated only by the range of vision and audition, Neighboring elements achieve their unity by individuality." The most concrete and constructive point suggested by Lao-tzu in his book is his idea of social unity. Quite different from most concepts, his method of achieving unity depends on deliberate isolation. (Chang 1956, 65)

- "Thirty spokes converge upon a single hub;
  It is on the hole in the center that the use of the cart hinges.
  We make a vessel from a lump of clay;
  It is the empty space within the vessel that makes it useful.
  We make doors and windows for a room;
  But it is these empty space that make the room livable.
  Thus, while the tangible has advantages,
  It is the intangible that makes it useful." (Wu 1966, 15)

- "When all in the world understands beauty to be beautiful, then ugliness exists; when all understand goodness to be good, then evil exists." The mystic transcends this realm of intellectual concepts, and in transcending it he becomes aware of the relativity and polar relationship of all opposites. He realizes that good and bad, pleasure and pain, life and death, are not absolute experiences belonging to different categories, but are merely two sides of the same reality; extreme parts of a single whole. The awareness that all opposites are polar, and thus a unity, is seen as one of the highest aims of man in the spiritual traditions of the East.

- The leaving of blank space is an art within Chinese painting. Although these spaces have not been touched by brush or ink, they are not be considered a "hole," or unfinished portions of the painting. They are rather, integral and important parts of the painting as a whole. It could be said that the practice of leaving blank space is the translation of Lao-tzu's philosophy of "non-action which leaves nothing unacted" into the field of esthetics. In other words, the leaving of blank space within a painting does not indicate a lack of representation; on the contrary, it has an active and positive role to play within the composition. Call it "non-action," yet it "leave nothing unacted"; this "non-being" incudes the unlimited possibilities of "being."

Tao Teh Ching   - Tao Teh Ching captured the essence of Taoism the void and

the balance of opposites. It denotes the natural state of viewing, simplicity, purity, and infinite potentiality.

Chuang-tzu

- The central theme of the Chuang-tzu may be summed up in a single word: freedom. Essentially, all the philosophers of ancient China addressed themselves to this same problem: how is man to live in a world dominated by chaos, suffering, and absurdity? Chuang-tzu's answer to the question is: free yourself from the world.

- "Non-action does not mean doing nothing and keeping silent. Let everything be allowed to do what it naturally does, so that its nature will be satisfied." (Capra 1975, 117)

- The men of old, while the chaotic condition was yet undeveloped, shared the placid tranquillity which belonged to the whole world. At that time the Yin and Yang were harmonious and still; their resting and movement proceeded without any disturbance; the four seasons had their definite times; not a single thing received any injury, and no living being came to a premature end. Men might be possessed of the faculty of knowledge, but they had no occasion for its use. This was what is called the state of perfect unity. At this time, there was no action on the part of anyone---but a constant manifestation of spontaneity.

- The sayings, "Shall we not follow and honor the right and have nothing to do with the wrong?" and "Shall we not follow and honor those who secure good government and have nothing to do with those who produce disorder?" show a want of acquaintance with the principles of Heaven and Earth and with the different qualities of things. It is like following and honoring Heaven and taking no account of Earth; it is like following and honoring the yin and taking no account of the yang. It is clear that such a course cannot be pursued.

- "The 'this' is also 'that'. The 'that' is also 'this'..... That the 'that' and the 'this' cease to be opposites is the very essence of Tao. Only this essence, and axis, as it were, is the centre of the circle responding to the endless changes." (Lo 1987, 218)

"Opposites are complementary"
Niels Bohr

Zen

- The Zen mind can never be wiped clean, for it always reflects, though it possesses nothing. In the Buddhist temples, the stupa outside represents the center of the universe. The interaction between form and space is important for Zen.

Zen Painting

- "Zen Buddhist painting was characterized by its abbreviated, abstract forms. It was felt by Zen painters that spiritual enlightenment could best be achieved through a spontaneous and intuitive response to nature, rather than through a carefully studied one. Mu Chi's Six Persimmons illustrates this approach in its extremely simple treatment of its subject, capturing its essence without descriptive detail." (Jones 1992, 217)

- The Zen artist conveys a stronger sense of swiftness and vigor, working chiefly in simple washes and broad, scratch strokes made with a straw brush. Drawing in line is reduced to minimal indications: trunks of trees, roofs of houses, a few fishermen in boats. It is the wonder of the painting that a convincing impression of light and shade, mist and space, is created with these simple means. The Zen painter's awareness of a single reality underlying the seemingly disjunct phenomena of nature is communicated with the same immediacy as the truths of the Zen doctrine, which cannot be conveyed by translating them into the intellectual concepts of ordinary discourse and expecting the listener to translate them back into something like the original impulse. The Zen artist typically defines his subject only at a few key points, leaving the rest ambiguous, suggestive rather than descriptive. The viewer completes the image, as the Zen novice pieces out by intuition the cryptic utterances of the master. (Sulivan, 1984, 196)

"To define is to destroy, to suggest is to create."
Stephane Mallarme

Yin & Yang

- "Yin-Yang refers to the complementary nature of pairs of dualities; in western language these opposites could be man/woman, active/passive, day/night, black/white, up/down. In Asian thought these dualities collapse and lead to cooperation rather the competition." (Gelburd 1990, 12)

- The concept of Yin -Yang is operative in the new subject/object relationship. Pondering Yin-Yang leads to a reconsideration of the relationship between matter and spirit or essential nature. Matter is seen as the visible carrier of the spirit. Matter is conceived of in an Einsteinian relativistic state. Therefore, the subject of the object of the work of art is essence or '-ness'..the life quality, the Chinese 'chi.' Within a world view made up of assimilated Far Eastern conceptions subject, object, and working method become "spontaneity." (Gelburd 1990, 32)

Quotations about Form and Space

- "Form is void and void is form. There is no separation, the void is a positive, generative field. Time is the mind of space and space is the body of time." (Richard Pousette-Dart in Gelburd 1990, 29)
- "When space, matter, was 'nothing' art was making something out of nothing. Now when space, matter, are 'something' art is making nothing out of something." (Ad Reinhardt in Gelburd 1990, 29)
- "Forms appear out of consciousness. In western art the picture is generally conceived as seen in a frame or through a window. But the oriental image really exists only in our mind and heart and is thence projected or reflected onto space." (Morris Graves in Gelburd 1990, 29)
- "Form and void are equal, one is no more important than the other, voids are fields of energy." (Jane Teller in Gelburd 1990, 29)
- "It was the notion of fullness versus emptiness as a notion of the void that drew me to Zen ideas and encouraged me to go further." (Harvey Himelfarb in Gelburd 1990, 29)
- "One way I pass on these eastern notions in my teaching is to insist that the students pay as much attention to the voids as to the forms, sometimes they are more important. And the humor, it changes ones perspective." (John Baldessari in Gelburd 1990, 29)
- "To see an object in space means to see it in context" (Rudolf Arnheim)
- "The interval invites participation, it creates riddles that involve one." (Edmund Carpenter)
- "Every thing is connected to everything else." (Lenin)
- "Everything is shared by everything else; their are no discontinuities. (Fredrich Sommer)

Perception

- "Perception is a decision--making process involving the act of classifying. In order to perceive something in a meaningful way, a person must be able to relate it to an existing category within his memory bank." (Zakia 1980, 62)
- "The human visual apparatus functions on the basis of coordinated binocular, or 'stereoscopic' vision. The eyes look in the same direction at any given time, and the brain combines the two resulting two-dimensional images, which differ because the eyes are differently located, into a single spatial impression. Space perception derives from the fact that the eyes, being on the average 65mm (approximately $2\,{}^{9}/_{16}$ inches) apart, record an image from two different perspectives. because of the relatively small base, as the distance between the pupils is called, spatially well differentiated depth perception ranges from approximately 25 cm to 50m (10 inches to 160 feet). All spatial impressions beyond this range are based on estimates founded on past experience. Our visual environment is made up of what we want to see in it, not what it actually contains." (Weber 1980, 10)
- In the eighteenth century, Bishop Berkeley's "New Theory of Vision" posed questions about how ideas are formed or how the sense for space, distance, size and the solidity of objects is formed. Berkeley's theoretical concept the "Muscle Movement Theory of Visual Space," is presented by Julian Hochberg in Perception (1964): "The most influential theory of space perception in Western thought has been that distance is not a direct visual sensation at all. Instead the empiricist theory maintains, when the retinal image of some objects brings to mind the memories of the grasping or walking motions that have been made in the past in order to reach that object, those memories provide the ideal of 'distance'." (Wallschlaeger 1992, 306)
- "A more recent theoretical approach to space perception was presented by Kurt Koffka in 1935. Gestaltist Koffka explained space perception as a whole pattern composed of interacting forces rather than separate parts or characteristics. Similarly, in 1950 James J. Gibson theorized that retinal stimulation from the environment is not point-to-point stimulation but is the result of relational patterns and grouping of images on the retinal surface." (Wallschlaeger 1992, 307)

Gestalt

- In Gestalt psychology the integrated structures or patterns that make up all experience have specific properties which

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"The body responds not only to the stimulus itself, but also to all the symbols associated with the memories of the past, the experiences of the present, and the anticipations of the future. Anything that impinges on man thus affects both his mind and his body and causes them to interact -- an inescapable consequence of the evolutionary and experimental past."

Rene Dubos

"All works of art are created on a certain scale. Altering the size alters everything."

Edward Hall

"Memory images serve to identify, interpret, and supplement perception. No neat borderline separates a purely perceptual image -- if such there is -- from one completed by memory or one not directly perceived at all but supplied entirely from memory residues."

Rudolf Arnheim

"This thou must always bear in mind, what is the nature of the whole, and what is thy nature, and how this is related to that, and what kind of a part it is of what kind of a whole; and that there is no one who hinders thee from always doing and saying the things which are according to the nature of which thou art a part."

Marcus Aurelius

can neither be derived from the elements of the whole nor considered simply as the sum of these elements.

- "The Gestalt movement began in Germany in the 1920s. Gestalt theory is concerned with issues in visual perception, memory and association, thinking and learning, social psychology, and the psychology art. The Gestalt theory regarding figure perception evolved from the study of perceptual organization problems and generated a series of experiments and demonstration involving perceptual phenomena. The primary aim of the Gestalt psychologist's research was to analyze and define the way humans perceive. The emphasis of the research dealt with the configural aspects of perception in order to understand how and why configurations of form are perceived differently parts. The tendency to perceive shapes and forms is verified by studies of Gestalt psychologists Max Wertheimer, Wolfgang Köhler, and Kurt Koffka." (Wallschlaeger 1992, 337)

- "The Gestalt constitutes a clearly recognizable entity, which is structured, self-contained and distinct. The entity is different from the sum of its individual elements. (Weber 1980, 16) To work with gestalt principles in visual imagery is to deal with basic human response, a natural visual activity of the human organism." (Berryman 1990, 8)

- "The Gestalt laws are important to conceptualize, for if a designer knows how a person most probably organizes or groups visual elements when looking at images, he can then arrange the elements to favor or disfavor certain groupings." (Zakia 1979, 32)

- "Gestalt theory teaches us that, by classifying and grouping, our visual perception system constantly strives to simplify the recognition and understanding of our surroundings, so that we can more easily orient ourselves in them." (Weber 1980, 147)

- "Gestalt visual principles have long been used to analyze images. Most fine arts have been considered from other viewpoints with rather mystical 'esthetic' judgments. Gestalt principles give us the opportunity to evaluate the end effectiveness of visual imagery. Designers should thoroughly learn Gestalt perceptual psychology and experiment with its exciting forms." (Berryman1990, 8)

"To make something simple is difficult."
Richard D. Zakia

Figure-Ground

- "In 1914, the Danish psychologist, Rubin, studied visual perception in terms of two basic components, figure and ground. Long before that, artists were making playful appli-

cations of this perceptual experience. Discriminating figure from ground involves the process of selective attention. That which attracts your attention emerges as figure and that which does not remains as ground. At different times, what is seen as figure may change. This depends on what in the visual field has the greatest organizational strength due to association from memory." (Zakia 1980, 134)

- "The most significant insight of Gestalt theory is its distinction between figure and ground. From the first moment we look at a scene or a picture, we instinctively select one object to serve as figure, with the rest of the scene becoming the background. The time required for this selection is only 1/100 of a second. This initial phase of perception thus defines the difference between the figure (which seems more important to us) and the background (which seems less important)." (Weber 1980, 16)

- The differentiation between figure and ground is subject to the following factors:
  "1. Even though the figure and ground are in the same physical plane, the figure often appears nearer to the observer.
  2. Figure and ground cannot be seen simultaneously, but can be seen sequentially.
  3. Figure usually occupies an area smaller than does ground.
  4. Figure is seen as having contour; ground is not.
  5. Figure is seen as having shape or form quality; ground is not." (Zakia 1979, 19)

- "Whenever we look at something, that which we see as an object is called figure and is always seen against some background. The first step in perception is distinguishing figure from ground. Sometimes it is easy to see figure against ground. Sometimes it is not." (Zakia 1979, 19)

Ambiguous figure

- "It is impossible to perceive both figure and ground simultaneously; they can only be seen alternately. How can this phenomenon be explained? Gestalt psychologists are of the opinion that our visual perception system identifies objects on the basis of their contours. But a contour line can delineate both the area or figure to its left as well as the one to its right. Since in this case both solutions are possible, and both appear logical and simple, the figure-ground relationship reverses itself. An ambiguous figure-ground relationship exists when ever several perceptual possibilities have equal certain attraction, they lack impact." (Weber 1980, 21)

"When a contour is common to both figure and ground it creates a competition."
Richard D. Zakia

- "Ambiguous figures are images created in such a way that they can represent two different figures or single figure. These figure are sometimes referred to as fluctuating, reversible, or equivocal figures. Figures within the ambiguous image share the same contour line. That is, the contour line is functioning for both figures and tends to confuse the perception of what is actually being enclosed as the dominant figure. Since ambiguous figures and their contours function for more than one figure, the eye and brain have difficulty assigning the contour to one figure over another; therefore fluctuation takes place between the two figures." (Wallschlaeger 1992, 349)

Impossible figure

- "Impossible figure conveys two sets of contradictory spatial cues that cause the brain to make conflicting spatial interpretations. The perceptions are contradictory because they are based on what are seen as impossible connections between the linear members of a single form and what is know to be possible from learned perceptions. An understanding of these figures can help determine inaccuracies in other forms or drawing, and can be used to design visual puns or riddles." (Wallschlaeger 1992, 354)

Proximity

- "Apply the Gestalt law of proximity to the arrangements of things you design and you can encourage people to see the relationships you want them to see. For the most part they will be unaware of how you arranged the visual elements since spatial and temporal proximity are natural way for us to group things. When things are experienced as grouped, we see the whole and not the individual elements that make up the whole." (Zakia 1979, 39)
- "The closer two or more visual elements are, the greater is the probability that they will be seen as a group or pattern." (Zakia 1979,32)

THES PACEB ETWE ENWO RDI SIMP ORT ANT

The space between word is important

Closure

- "The figure law of closure is related to visual continuity; that is, a shape with a broken or discontinuous contour is perceived as a whole figure. The law is based on the inclination of the viewer to perceive an incomplete figure as complete. In other words, if a viewer sees an incomplete square, the law of closure asserts that there is a pattern in the brain that completes the square." (Wallschlaeger 1992, 341)
- "Nearly complete familiar lines and shapes are more readily seen as complete (closed) than incomplete." (Zakia 1979, 66)

- "The Gestalt principle of closure states that nearly complete familiar lines and shapes tend to be perceived and remembered as being more nearly complete." (Zakia 1980, 166)
- "Visual shapes and forms may be open or closed, incomplete or complete. If the visual elements of an open or incomplete stimulus are properly positioned and oriented, there is a perceptual tendency to group these elements into a more stable form." (Zakia 1980, 166)
- "The concept of closure is important to every human experience. If the viewer is not allowed to complete things, he can become frustrated and lose interest. On the other hand, it has been shown that completed and incomplete tasks are retained differently in memory. The incomplete tasks tend to set up a tension that facilitates memory for them. Once the task is completed, the tension is released and the tendency to remember it is lessened. In psychology, this is called the Zeigarnik Effect." (Zakia 1980, 166)

Similarity
- "Parts of a picture that are located closely together or that resemble each other tend to be perceived as a unified figure. How did this come about? The closer individual picture elements are located to each other, the more readily they will be grouped into a figure." (Weber 1980, 21)
- "Visual elements that are similar (in shape, size, color, etc.) tend to be seen as related. When we see things that are related we naturally group them and therefore see them as patterns." (Zakia 1979, 47)

Continuity
- "Visual elements that require the fewest number of interruptions will be grouped to form continuous straight or curved lines." (Zakia 1979, 59)
- "One of the Gestalt laws of organization, which predicts that the visual elements requiring the fewest number of interruptions will most likely be grouped to form continuous straight or curved lines." (Zakia 1980, 168)
- "Organization in perception leads the eye to continue along and beyond a straight line or curve." (Berryman 1990, 9)

Zeigarnik Effect
- "The tendency for some people to remember more effectively a task which is interrupted and not completed, than one which is completed." (Zakia 1980, 310)

Depth Perception & Constancy
- "Generally, basic visual studies concentrate on the two-dimensional depth cues that relate to the creation of depth

on the picture plane. In contrast, researchers in the area of perception psychology study depth perception because it is descriptive of the viewer's visual experience of space, depth, and distance within the environment. An oversimplified explanation of the concept of constancy is that past experiences of the viewer will influence what is perceived, since viewers often tend to see what they expect to see rather than what is actually there." (Wallschlaeger 1992, 307)

Illusory Space

- "Forms are considered flat when they have no apparent thickness. Flat forms in illusory space are like forms made of thin sheets of paper, metal, or other materials. Their frontal views are the fullest, occupying the largest area. Their oblique views are narrowed, and occupy less area. The following are some common ways flat forms can be used in illusory space:

  a) Overlapping: When one form overlaps another, it is seen as being in front of or above the other. The flat forms may have no appreciable thickness at all, but if overlapping occurs, one of the two forms must have some diversion from the picture plane, however slight the diversion may be.

  b) Change in size: Increase in size of a form suggests that it is getting nearer, whereas decrease in its size suggests that it is farther away. The greater the range of change in size present in the design, the deeper is the illusion of spatial depth.

  c) Change in color: On a white back-ground, darker colors stand out much more than lighter colors, thus appearing closer to our eyes. On a very dark background, the reverse is true. If both warm and cool colors are present in a design, generally the warm colors appear to advance whereas the cool ones recede.

  d) Change in texture: A form is in full frontal view when it is parallel to the picture plane. If it is not parallel to the picture plane, we can only see it from a slanting angle. Change in view is a result of spatial rotation, creating illusory space though not a very deep one.

  e) Change in texture: Coarser textures normally appear closer to our eyes than finer textures.

  f) Curving or bending: Flat forms can be curved or bent to suggest illusory space. Curving or bending changes their absolute frontality and reflects their diversion from the picture plane.

  g) Addition of shadow: The addition of a shadow to a form

emphasizes the physical existence of the form. The shadow may be cast in front of or behind the form, linked to or detached from it." (Wong 1993, 129)

Anamorphosis
- "An image having different vertical and horizontal scales of reproduction." (Zakia 1980, 232)
- "Anamorphic images are most commonly associated with wide-screen motion pictures, whereby a wide angle of view of the original scene is squeezed onto normal width film and then unsqueezed in projection. This produces a high aspect ratio image that fills a wide screen. Occasionally the squeezed (anamorphic) image is found to be attractive as an end product with the unnatural width to height proportions of familiar objects. A few artists (e.g., El Greco) and sculptors (e.g., Giacometti) have produced effective works incorportions. Also, automobile advertising went through a period in which it was common practice to stretch the images to make the automobiles appear long and low." (Zakia 1980, 232)
- "Optical magnification in one direction or along only one axis. Anamorphic drawings or paintings are distorted images that may be viewed undistorted from a particular angle of view of with the use of a special instrument." (Myers 1989, 73)

Space

- "Great design creates space. That is to say, elements can be used in such a way that space is occupied, consumed--or they can be used in a way that generates new space in a given environment." (Hiebert 1992, 27)

- "Space used as an integral part of design goes beyond formula because it must be conceived as an essential complement to the idea of the text or image--where space is as effective as the type or picture elements in creating the total image. Space then is not background; it is a participant defining proximities and repelling or attracting actions." (Hiebert 1992, 27)

- "We can look at two-dimensional space as stage within which characters move. They need space for their separate identities, and the control of space describes the tension and harmony among these characters. Seeing the elements as characters creates a societal analogy making the abstraction easier to understand." (Hiebert 1992, 27)

- "Space is defined by visual elements placed in the space. It helps to be aware of how the space is designed if these elements are defined in abstract terms. The most elementary language for two-dimensional image construction defines forms as dots and lines. But most imagery is inherently more complex than the language of pure dots and lines permits. The Russian painter and theoretician Wassily Kandinsky in his quest to find a systematic base for visual arts that would correspond to that for music, attempted to show that complex forms were variations on these elements. Their separate character and interrelation, he thought, was the underlying basis for graphic painting and design." (Hiebert 1992, 27)

Grid

- "The grid is a measuring guide used to help ensure consistency in planning a visual message. A grid shows the type and image area dimensions, trim, and margins and is used to define constant dimensions of space. By arranging the compositional elements (images and type) within a grid, the visual message can be presented in a logical manner." Besides, an understanding of grids and proportion can be helpful in dividing space and organizing visual elements within a format. (Wallschlaeger 1992, 397)

- "The modular grid system should not be regarded merely as a convenience of for completely filling in a bunch of rectangles in a predetermined order, nor as a limitation of the designer to choice of only one or two alternate positions,

rather, it is a measure which indicates many positions as well as many shapes and sizes which the elements may assume. By providing multiple choices while simultaneously serving as a built-in control, the grid enable the designer to create dynamic relationships by means of contrast, variation, scale, rhythm, repetition, sequence, and juxtaposition." (Paul Rand)

- A structural system or framework for organizing elements in a format. A grid can be conceptual or physical. It can be build upon typographic, compositional or constructional bases. It can be regular, irregular or progressive in rhythm.

- A grid (the subdivision of a space into columns, margins and spaces) establishes a framework for spacing and proportions of type and pictures in a piece. It determines the constant dimensions of space and it make work easier to give the surface or space a rational organization.

- The principles in adopting any grid for creative use can be summarized as follows: "1) Let the grid account for the elements that are legitimately repetitive. 2) Let it free the designer to play a game of arrangement in a spatial context. 3) Let it be useful for bringing together disparate elements that do not easily fit together." (Hiebert 1992, 20)

- "Grids, which divide space into units through the coordinates of their vertical and horizontal lines, and an ideal solution and valuable tool in the application of a design to a diversity of objects." (Hurlburt 1981, 109)

- "A suitable grid in visual design makes it easier a) to construct the argument objectively with the means of visual communication. b) to construct the text and illustrative material systematically and logically. c) to organize the text and illustrations in a compact arrangement with its own rhythm. d) to put together the visual material so that it is readily intelligible and structured with a high degree to tension." (Muller-Brockman 1981, 12)

- "Who invented the grid system and when is not known with any certainty. After the war it was used by designers like Bill, Newburg, Lohse, Vivarelli and Muller-Brockmann for prospectuses, brochures, books and exhibitions. The international periodical 'Neue Grafik,' founded in 1958 by Lohse, Muller-Brockmann, Newburg and Vivarelli, gave information about the aims and the achievements of the 'Swiss School.' It presented modern graphic design, commentaries on areas allied to graphic design and influencing it, and also the intellectual and artistic background of modern graphic design."

(Muller-Brockmann 1971, 281)

- "Grid systems are valuable for building 'family resemblance' into a series of visual pieces. Corporations which produce hundreds or even thousands of different products must deal effectively with unified methods of cataloguing and promoting them through brochures, sales sheets and advertising. IBM and Westinghouse, under the graphic guidance of Paul Rand, have long used grid systems to bring order to their thousands of printed pieces developed each year. He influenced the American conception of design. His graphic creations are marked by a high ethical sense of responsibility. Swiss and German graphic designers with their de Stijl / Bauhaus roots are exponents of grid design. The Japanese, with their Tatami mat modular building system, have long been grid sensitive. Most newspapers throughout the world have used grid like systems to speed layout and give a consistent appearance." (Berryman 1979, 38)
- Max Bill (b. 1908) was a Swiss architect, painter and sculptor as well as graphic, exhibition and industrial designer. In attempting to apply a purist aesthetic and impose a strict visual discipline on disparate design elements, Bill often employed modular grids and mathematical progressions in his works. (Livingston, 1992, 28)
- This group of graphic designers, artist and architects has had significant impact on functional grid theory. 1. Otl Aicher 2. Frank Ariss 3. Max Bill 4. Willy Fleckhaus 5. Jay Hambidge 6. Allen Hurlburt 7. Le Corbusier 8. Josep Muller-Brockmann 9. Paul Rand 10. Massimo Vignelli 11. Kenneth J. Hiebert. (Berryman 1990, 43)

Module
- "A standard or unit of measurement; the size of some one part taken as a unit of measure by which the proportions of a composition are regulated; repetitive units of space of mass." (Berryman 1979, 38)
- Refers to a spatial unit in any organizational method. A module may be regular or progressive.
- During the 1940s French artist and architect Le Corbusier developed "the modular," an important example of relating a system of proportion to architectural forms as a means for controlling the repetition of similar shapes.
- Massimo Vignelli, a leading exponent of modular systems in graphic and industrial design.

Interval
- "1) a space between two things; gap; distance; 2) a period of

time between two points of time events, etc. intervening period; 3) the extent of difference between two qualities, conditions, etc.; 4) interval between two given numbers and including one, both, or neither end point; 5) Music the difference in pitch between two tones." (Webster's dictionary)

- Rhythm and intervals control the form and the space between them in such a way that we get the most coherence with optimum amount of signal and the least amount of noise, ex. progressive interval. We can develop intervals in several ways--intuitively, proportional grid (geometrically) and regular. Progressive, regular, and irregular intervals can also develop hybrids to control the form. Communication with dots, type, photo etc.
- Structure, rhythm, concept (thinking) communication using simple form to express ideas. Can layer level of interval to add complexity. Intervals use speed and frequency to communicate on a basic level.
- The sequence of intervals is important to the end communication. Example, it can be used to imply motion and can work in 2D as well as 3D.
- "The term interval refers to the spacing between elements. It includes not only space across a flat, two-dimensional surface, but also distances across three-dimensional space (a relationship between movement and time). When an element, like a line, is repeated as a pattern of equally spaced division across a surface, the result is called a periodic pattern. Periodic means recurring at regular intervals. A grid is two periodic patterns overlaid on one another, often at right angles (90 degree), like a checkerboard." (Myers 1989, 54)
- "There are several kinds of interval: 1. The simple repetitive sequence (each interval is the same) 2. Alternation (two differing intervals repeated one after the other) 3. Progression (interval grow larger or smaller in even steps, or interval grow larger or smaller based mathematical formulas)" (Myers 1989, 54)
- Armin Hofmann (b. 1920) Swiss graphic designer and educator evolved a design philosophy based on the elemental graphic-form language of point, line, and plane, replacing traditional pictorial ideas with a modernist aesthetic. He seeks a dynamic harmony where all the parts of design are unified. He sees the relationship of contrasting elements as the means to breathe life into visual design. These contrasts include light to dark, curved lines to straight line, form to counterform and syngamic to static, with resolution

achieved when the creator brings the total into an absolute harmony. (Meggs 1992, 339)

Scale/Size

- Scale refers to designating or comparing relationships of a form in a particular context.
- "Among the factors to which the problem of scale is intimately related are: 1) The relation of space to volume in quantitative sense. 2) The relation of the sizes of parts to the whole picture. 3) The relation of sizes through association. Only through an understanding, integration, and control of each of these factors can we master the problem on scale." (Graham 1970, 351)
- "Visual unity in a composition results not only from the selection and arrangement of visual information, but also from its emphasis within the format. The size and shape of the format relative to the size and shape of the element or elements affect the compositional unity." (Wallschlaeger 1992, 403)
- "Scale refers to the size and dimension of figures and forms relative to a specific unit of measure. Scale can be determined in two ways: through actual measurement or through visual estimates based on comparison." (Wallschlaeger 1992, 215)
- Scale is a learned and applied relationship. Also scale is used to specify or illustrate details based on the relative sizes of objects.
- To make a layout functional, attractive and organized, size plays an important role. It is important to select type sizes and images that are easy for the intended viewer to see and read from the intended viewing distance. (Siebert 1992, 20)
- "With size you can: 1) show which element is most important by making it the biggest. 2) make elements come forward or recede on the page. 3) giver the reader a sense of scale. 4) make all elements easy to see. 5) get a piece noticed. 6) contrast two elements to add interest. 7) break up space in an interesting way. 8) make elements fit together properly in the piece. 9) establish a consistent look throughout a brochure or newsletter." (Siebert 1992, 21)
- "The size of an element within the graphic space and its size relationship to other elements in the design are significant perceptual and communicative factors. An important consideration in the development of scale relationships is establishment of a visual hierarchy, which means a group of visual elements arranged according to emphasis. Other factors

"In the perception of the spatial field as a whole, all distances are fixed primarily with reference to the position of the body, and, secondarily, with reference to each other. It is, in fact, the mutual perception accurate and complete."
John Dewey

influencing visual hierarchy include value, color, position, and proximity. Elements become focal points in the design. Attention to their relative position in the visual hierarchy enables the designer to guide the viewer's eye as it scans the space. Competition for ascendency in the visual hierarchy can create a dynamic tension between elements." (Meggs 1992, 108)

- An approach to organizing graphic space is to transform it into a dynamic field of tension. This effect is achieved by creating taut relationships between the elements of the design and between the elements and the edges of the rectangle. Often, diagonal movements and running off the page are used to create this spatial dynamic. Extreme contrasts of size and scale can play an important role in creating this tension. (Meggs 1992, 94)

- The Dutch designer Piet Zwart (b. 1885-1977) created a synthesis from two apparently contradictory influences: the Dada movement's playful vitality and de Stijl's functionalism and formal clarity. He designed the space as a "field of tension" brought alive by rhythmic composition, vigorous contrasts of size and weight, and a dynamic interplay between black formant white page. (Meggs 1992, 94)

- The "New Dutch Graphics" poster by Cheryl A. Brzezinski uses a variety of complex graphic techniques and relationships to transform the space into a dynamic field of tension. Her work provides the viewer with a complex, multilayered experience. (Meggs 1992, 94)

- Ernst Keller taught graphics for more than three decades at the School of Arts and Crafts in Zurich. His gifts were most evident in his posters. He conceived his designs in broad areas with a pronounced sense of visual tension and a compulsive artistic logic. Both colour and form were the expression of the subject and reduced to the minimum. He drew letters in his own hand and seldom made use of print. (Muller-Brockmann 1971, 265)

Forms

- Form stands for the spatial nature of the external and internal world, of the objects and interspaces that make up the micro-and macrocosmos. It consists in configuration, however definite or indefinite it may be. And in Size, which may in turn consist of Zero, one, two or three dimensions: of point, line, plane, solid--the objects of all geometry. (Gerstner 1986, 26)

- "Form is generally seen as occupying space, but it can also

be seen as blank space surrounded by occupied space. When it is perceived as occupying space, we call it "positive" form. When it is perceived as blank space surrounded by occupied space, we call it 'negative' form. In black-and-white design, we tend to regard black as occupied and white as unoccupied. Thus, a black form is recognized as positive and a white form as negative. But such attribution are not always true. Especially when forms interpenetrate or inter-sect one another, what is positive and what is negative are no longer easily distinguishable." (Wong 1993, 47)

- "Form, whether positive or negative, is commonly referred to as the 'figure,' which is on a 'ground.' Here 'ground' denotes the area surrounding the form or the 'figure.' In ambiguous cases, the figure-ground relationship may be reversible." (Wong 1993, 47)

- "Space is flat when all the forms seem to lie on the picture plane and be parallel to it. The forms themselves should be flat too, and appear equidistant from the eye, none nearer and none farther. It is possible, however, that we can feel the space surrounding the forms to be very deep, leaving all the forms floating on the picture plan." (Wong 1993, 127)

- "In a flat space situation, forms can meet one another by touching, interpenetration, union, subtraction, intersection, coinciding, or just be in detachment, but they can never meet by overlapping. Overlapping suggests that one form is nearer to our eyes than another, thus rendering the space illusory to some extent. Variations in shape, size, color, and texture may also destroy the flatness of space, but this does not always happen." (Wong 1993, 127)

- "Space is illusory when all the forms seem not to lie on or be parallel to the picture plane. Some forms may appear to advance, some to recede, some to present their frontal views. The forms themselves may be flat or three-dimen-sional. The design area opens up like a window or a stage where the forms are displayed in varying depths and/or at different angles." (Wong 1993, 127)

- "Repetition is repeating identical or similar forms in a consis-tent spatial relationship and creating an overall pattern of equal weight. Contrast occurs when unlike elements are introduced into the repetitive sequence. Rhythm is repeat-ing similar elements with a variety of forms or spatial inter-vals and creating variety in repetition. It possesses the ebb and flow of recurring elements in space." (Meggs 1992, 97)

- Between 1925 and 1939 French poster art was given a fresh

impetus, most notably by A. M. Cassandre. The impact of his works are due to their simplicity, to their economy of colour and line, and to their superb stylized forms. Cassandre accentuated broad surfaces and two dimensionality in his designs. However varied the problems confronting him, he found solutions that were clear, definite and telling; his works were ideas reconceived in visual terms, designs everyone could understand, wholly artistic in color and form. (Muller-Brockmann 1971, 265)

- Siegfried Odermatt (b. 1926) and Rosmarie Tissi (b. 1937) have always used strong playful element in their works. They can used a one-color typographic design to achieve the visual impact and power of full-color graphics through the strength of the concept and the manipulation of visual form, space, shape, and tone. They found a logical and effective way to solve a design problem. (Meggs 1992, 344)

Position

- When a layout is designed, a word or a group of words must be placed in certain amount of space. In order to do this, it is necessary to know how to form words and to space letters. The relationship among the different categories of spaces, from letter to word to line to paragraph spacing; the line length; the degree of raggedness; and the paragraph signal.

- Legibility is the net result of the interaction among all facets. In pragmatic problem-solving situations, the aspect that tends to to be most neglected is space. "Getting regrounded in the good, simple, normative base is essential: 1) Letter spacing that is neither crowded nor loose. 2) Word spacing that keeps a strong sense of line without running words together. 3) Line spacing which is greater than word spacing. Line length should be based on legibility. Raggedness should be controlled within a range which, while activating the page, does not distract from reading. Word spacing should not be allowed to fluctuate in ragged settings, since evenness of spacing is a prime advantage for legibility. Justified text must have a wide enough measure--50-60 characters minimum-to permit a consistent gray value and minimum fluctuation from the legibility norms." (Hiebert 1992, 28)

- "With space you can 1) Give the eye a visual rest. (Leave plenty of white space on a spread otherwise filled with copy.) 2) Create ties between elements. (Put less space between elements to make them look related.) 3) Form positive and

negative shapes. 4) Give a layout a three-dimensional qual-
ity. (An element that is overlapped by another looks as if it's
farther back.) 5) Highlight an element. (Put a lot of empty
space around something important.) 6) Make a layout easy
to follow. (Put ample margins around a piece.) 7) Create
tension between two elements. (Place two photos so they
are almost touching each other.) 8) Make a page dynamic.
(Have unequal spacing between elements.) 9) Make type
as legible as possible. (Allow comfortable spacing between
letters, words and lines of type.)" (Siebert 1992, 19)

- Allen Hurburt (b. 1910-83) was an American art director
renowned for publication design during the 1950s and 60s.
After the war he worked for National Broadcasting
Company, New York, and from 1951 for Paul Rand at the
Weintaub Advertising Agency. In 1953 he joined *Look* mag-
azine in New York, establishing a reputation over the next
fifteen years for innovative layout, typography and photogra-
phy. He later moved to London, His interest in design edu-
cation is reflected in his writings and books, including
Publication Design (b. 1971), Layout: The design of the
Printed Page (b. 1977) and The Grid (b. 1978). (Livingston
1992, 103)

- Weingart Wolfgang (b. 1941) Self-taught graphic designer,
typographer and influential teacher who pioneered Post-
Modernism. His intuitive, expressive typographic 'experi-
ments', appearing on poster and cover designs, utilized wide
wordspacing and letterspacing, step rules, reversed type
weight, and diagonal or random placement of letterforms.
During the mid-1970s he began exploring the graphic
imagery made possible with Photolithography, incorporating
Collage, enlarging and overlapping Halftone dote patterns
and experimenting with the design elements to create
uniquely dynamic solution. Weingart taught numerous
American students in Basel including April Geriman and
Daniel Friedman and is a regular visiting lecturer at many
US design schools. His work has had a profound influence
on American graphic design, providing a dynamic alternative
to the predictability of corporate design solution based on
systematic Swiss design principles. (Livingston 1992, 202)

- Neville Brody (b. 1957) British art director, graphic designer
and typographer. His Post-Modernism, in the aftermath of
punk, challenged most of the conventions in editorial design.
Designed and manipulated many images and varieties of
Typeface into new, often illegible, shapes and proportions.

One of the new generation of designers to embrace the creative potential of Apple Macintosh, he has also designed four new fonts for Linotype. (Livingston 1992, 35)

Electronic Space

- During the 1980s, rapid development of electronic and computer technology began to change the process and appearance of design space. Design was revolutionized by microchip technology, in particular by Apple Macintosh computers and graphics software packages. The monitor became the designer's canvas, a very special canvas, which could manipulate images, photographs, sounds and other kinds of digital imagery. Space became electronic in a new virtual, multimedia world.

- Courtesy of the computer, the graphic designer can now enact on the page all the specialties that were once delivered by individuals. The designer is now able to create his or her own typeface, design the illustrations and layout, and get the text and the images printed immediately. CD-Rom technology is even bringing to reality the concept of the electronic book, replacing the current technology of the printed book.

- Virtual Reality is the illusion of space and eventually sensation of space and matter in the realm of time, the 4th dimension. The central component of Virtual Reality is a computer-based image generation system capable of producing real-time stereoscopic computer graphics. The human participant is in the loop of real-time simulation, immersed in a world which can be autonomous and dynamically responsive to actions of the participant. It replaces your reality of space with one that is computer-generated.

- The information superhighway will give access to cyberspace breaking down barriers of distance, boundaries, and eventually even language. It exists today in the form of Home Shopping network, interactive TV, on-line Bulletin Boards, and will continue to grow in scope and content. Cyberspace will change our notions of traditional space, symbolism, meaning, self and culture.

- Perhaps the most impressive graphic designer at the beginning of the 1990s is April Greiman (b. 1948). Her work with the computer has led her to evolve a new kind of illusory space in two-dimensional graphics, creating the illusion of looking into a glass globe rather than at a flat page. We can find examples in her published book *Hybrid Imagery*. She has combined Swiss order with the flexibility and inventive-

"Designing is a very organic process. You use your whole body, not just your hands or your head. The whole idea is one system."

April Greiman

ness that micro-computers and their software can provide. She exemplifies how fluid influences and ideas can be in graphic design, for her work combines original vision with collaging techniques, element of concrete poetry, the surreal, and the echoes of Tschichold's New Typography. (Dormer 1993,113)

- Greiman is not alone in her novel creation of three-dimensional space. As ever, there are precedents and parallel innovators people like Mcray Magleby, Keith Bright, Ken Cato, these are the computer generation,

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Abstract art:	Art with a basis in visual reality, but without natural representation as its primary concern. Forms observed in the natural world may be simplified or altered selectively to suit the artist's concepts. The term is sometimes also used to describe nonrepresentational works which make no reference to objects or forms in the outside world.
Aesthetic:	Of or pertaining to the sense of the beautiful and the accepted notions of what constitutes good taste artistically.
Ambiguity:	Doubt or uncertainty in meaning. Ambiguous: capable of being understood in two or more possible senses; equivocal.
Anamorphosis:	Optical magnification ordinarily in one direction or along only one axis. Anamorphic drawings or paintings are distorted images that may be viewed undistorted from a particular angle of view or with the use of a special instrument.
Art Nouveau:	A late nineteenth-century style characterized by curvilinear, organically based ornamental forms.
Balance:	A design concept in which elements are equally or symmetrically positioned.
Confucius:	Chinese philosopher and teacher.
Contrast:	A differentiation between design elements to set them apart from other copy in a layout.
Color:	A property of light, not of bodies or pigments. As sensed by photoreceptors in the eye, our perception of color results from a certain bundle of wavelengths of electromagnetic energy bombarding the retina. Color has three "dimensions" or characteristics.
Cubism:	A twentieth-century art movement in formulist abstraction developed by Picasso and Barque beginning about 1908. Analytical Cubism was an early stage (from 1909-1912) in which subjects were observed from different angles, shattered, and reconstructed as geometric shapes. Synthetic Cubism soon followed. During this stage collage was introduced and geometric shapes were manipulated into abstract subjects which were not based on the artist's direct observation.

Dada:

The Dada movement originated in Zurich (Switzerland), and in New York during World War I. Dada was a mode of fantasy art based on the concept of absurdity and nonsense. It pared the way for the later Surrealist movement.

de Stijl:

The de Stijl movement developed in neutral Holland during World War I. It was a formulist trend in nonrepresentation which grew out of Cubism. Mondrian was the best known painter in the movement.

Form:

The shape or structure of a thing as opposed to its matter or substance. In the arts, the term is used broadly as a synonym for design or patternmaking; and it includes all aspects of composition, organization, and structure.

Grid:

A pattern of lines commonly at 90° to one another like a checkerboard. Grids, however, may employ diagonal lines, circles and arcs, or arbitrary or freely chosen configurations. Grids are categorized as regular when they consist of geometric arrays of lines and as arbitrary if they consist of random or irregular lines.

Interval:

1) a space between two things; gap; distance. 2) a period of time between two points of time, events, etc. 3) the extent of difference between two qualities, conditions, etc. 4) music the difference in pitch between two tones.

Kinetic:

Moving; pertaining to motion; produced by motion.

Margin:

The area or space around a group of design elements.

Modular:

The Modular is a system based on a mathematical key. Taking account of the human scale, it is a method of achieving harmony and order in a given work.

Notan:

Notan is a Japanese word meaning dark-light.

Perspective:

A method of representing three-dimensional objects in space on a two-dimensional surface. Some perspective methods are simple, such as vertical stacking, overlapping, and diminishing size of objects represented in a picture. Atmospheric perspective involves a use of paler color and loss of clarity in distant forms in a picture. Linear perspective was developed during the Renaissance to provide a

more regulated spatial scheme in art. One-point and two-point perspective methods involve the use of vanishing points set on the horizon line (which conforms to the eye level of the viewer).

Physical: 1) of material (contrasted with moral and spiritual) thing. 2) of the body; bodily. 3) of the laws of nature. 4) of the natural features of the world.

Physical Space: Physical space is measured with straight edges, rules, and transits, following the rules of Euclidean geometry.

Picture Plane: The flat surface on which artists draw or paint as bounded by the edges of the material (the canvas, board, or frame) or by a line that circumscribes the area in which the artist composes a design or picture, length by width.
a repetition of design elements to create an artistic effect.

Rhythm: Repetition of any visual component--interval, shape, color, or motif (figure)--in a regulated patternmaking process. Shapes or motifs may be repeated in their entirety, fractionalized, compressed or expanded, and so on, throughout a work.

Shape: The overall outline or contour of any perceived unit, figure or ground, particularly when related to a two-dimensional surface. Shape is a preferred term in this text as it is more specific.

Surrealism: An art movement that originated in 1924 as an outgrowth of Dada. It was influenced by the writings of Freud and strove to rely on the subconscious and the world of dreams as the basis of artistic expression.

Semiotics: A theory of how meaning is created through signs and symbols in our lives, is both a strategy for looking, as well as a model for expressing meaning -- especially that which is less obvious or more deeply represented in culture.

Symbol: A subject which alludes to a meaning beyond its obvious appearance.

T'ai-Chi: T'ai-Chi is the concept that all of life is composed of, and has been set in motion by, the constant interplay of two vital

energies:Yin, the passive, and Yang, the active principle. "T'ai-Chi is the mother of Yin and Yang (everything female and male)," which has given rise to everything under the sun.

Tension:

The interaction of figures that tends to draw them together ("magnetic attraction") visually--a factor in Gestalt proximity. In general, the closer the figures, the greater the tension; the tension up to the point where figures are perceived to have no relationship at all. Tension sets up stress points within a work of art that increase a sense of movement, direction, and dynamism.

Unity:

The quality of any work of art that pulls it together and forms one whole as opposed to a random association of parts.

Visual Space:

The physical space that is experienced through our eyes.

White Space:

Unused open space in or around a design.

Zen Painting:

Zen Buddhist painting was characterized by its abbreviated, abstract forms. It was felt by Zen painters that spiritual enlightenment could best be achieved through a sponta- neous and intuitive response to nature, rather than a care- fully studied one. Mu Chi's Six Persimmons illustrates this approach in its extremely simple treatment of its subject, capturing its essence without descriptive detail.

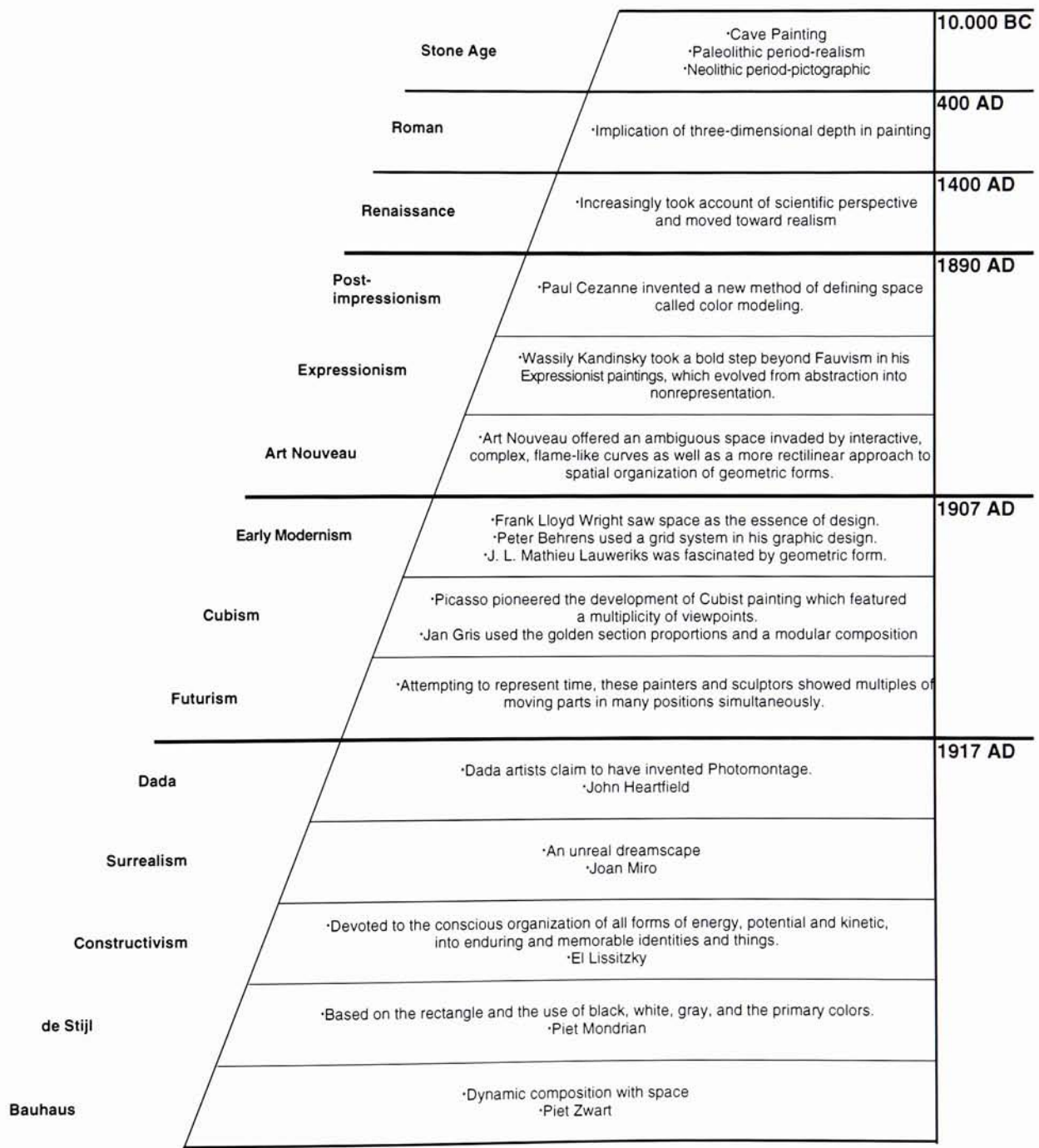# Appendix 5 Four Diagrams

Diagram of Western View

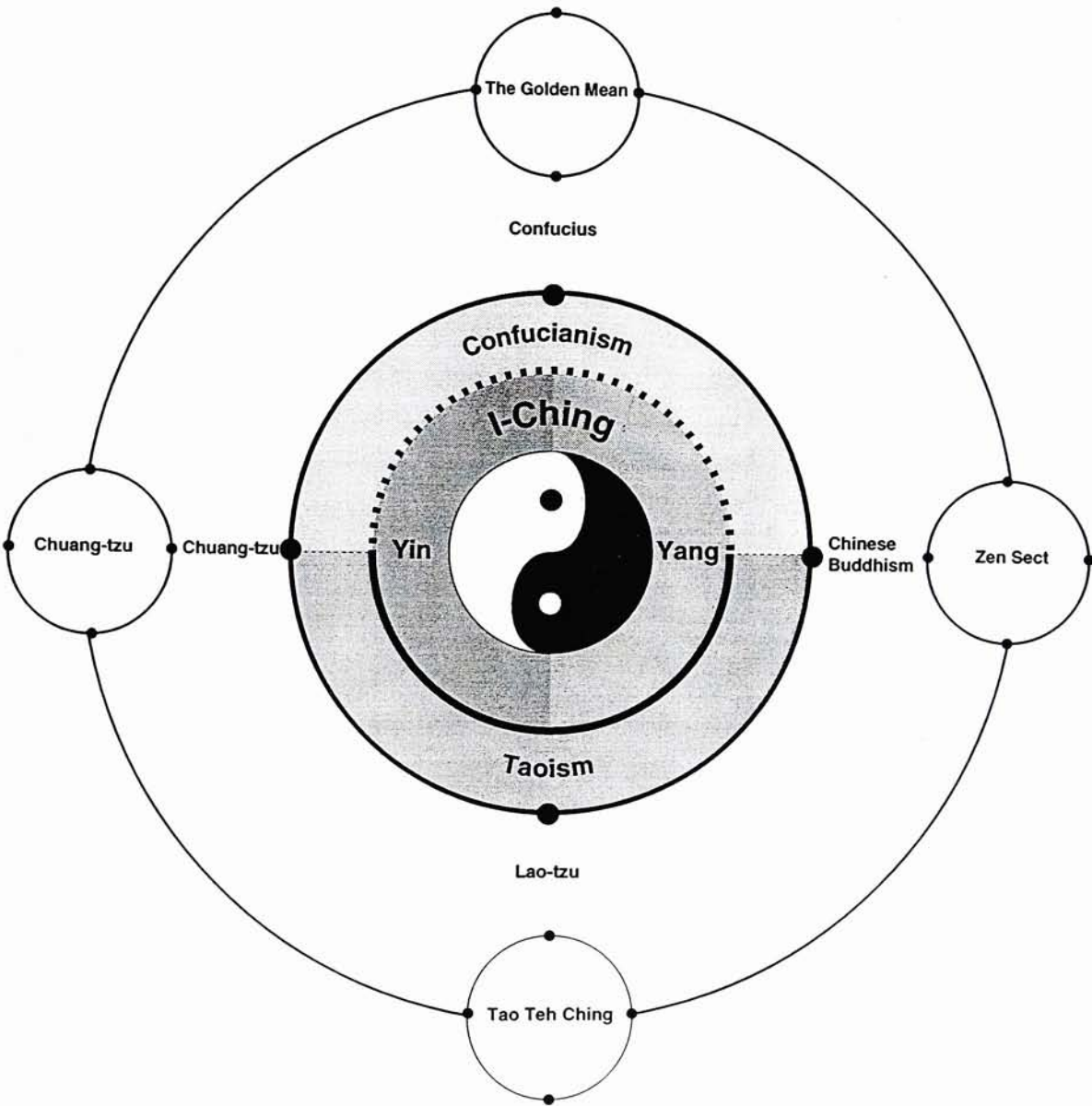|		
Stone Age	·Cave Painting ·Paleolithic period-realism ·Neolithic period-pictographic	**10.000 BC**
Roman	·Implication of three-dimensional depth in painting	**400 AD**
Renaissance	·Increasingly took account of scientific perspective and moved toward realism	**1400 AD**
Post-impressionism	·Paul Cezanne invented a new method of defining space called color modeling.	**1890 AD**
Expressionism	·Wassily Kandinsky took a bold step beyond Fauvism in his Expressionist paintings, which evolved from abstraction into nonrepresentation.	
Art Nouveau	·Art Nouveau offered an ambiguous space invaded by interactive, complex, flame-like curves as well as a more rectilinear approach to spatial organization of geometric forms.	
Early Modernism	·Frank Lloyd Wright saw space as the essence of design. ·Peter Behrens used a grid system in his graphic design. ·J. L. Mathieu Lauweriks was fascinated by geometric form.	**1907 AD**
Cubism	·Picasso pioneered the development of Cubist painting which featured a multiplicity of viewpoints. ·Jan Gris used the golden section proportions and a modular composition	
Futurism	·Attempting to represent time, these painters and sculptors showed multiples of moving parts in many positions simultaneously.	
Dada	·Dada artists claim to have invented Photomontage. ·John Heartfield	**1917 AD**
Surrealism	·An unreal dreamscape ·Joan Miro	
Constructivism	·Devoted to the conscious organization of all forms of energy, potential and kinetic, into enduring and memorable identities and things. ·El Lissitzky	
de Stijl	·Based on the rectangle and the use of black, white, gray, and the primary colors. ·Piet Mondrian	
Bauhaus	·Dynamic composition with space ·Piet Zwart	

Diagram of Eastern View

The Golden Mean

Confucius

Confucianism

I-Ching

Yin Yang

Chuang-tzu Chuang-tzu

Chinese Buddhism Zen Sect

Taoism

Lao-tzu

Tao Teh Ching

Diagram of Perceptual Psychology's View

Impossible Figure

Depth Perception

Proximity

Figure Ground

Constancy

Gestalt

Closure

Continuity

Illusory Space

Zeigarnik Effect

Similarity

Anamorphosis

Ambiguous Figure

Diagram of Designer View

Module

Module

Module

Position

Size

Scale

Interval

S

pace

Grid
Regular
Irregular
Progressive
Compositional Grid
Constructional Grid
Typographic Grid

FORms

Module

Appendix 6 Sketch

Sketch 1

Sketch 2

Appendix 7 Poster and Guide Book Cover Design

The Spatial Experience

A system view of space in visual communication

	Western View	Perceptual Psychology's View	Eastern View	Designer's View
	Stone Age	Perception	I-Ching	Space
	Roman	Gestalt	Confucianism	Grid
	Renaissance	Figure-Ground	Taoism	Module
	Post-Impressionism	Ambiguous figure	Lao-tzu	Interval
	Expressionism	Impossible figure	Tao Teh Ching	Scalar Size
	Art Nouveau	Proximity	Chuang-tzu	Forms
	Early Modernism	Closure	Zen	Position
	Cubism	Similarity	Zen Painting	Electronic Space
	Futurism	Continuity	Yin & Yang	
	Dada	Zeigarnik Effect		
	Surrealism	Depth Perception & Constancy		
	Constructivism	Illusory Space		
	de Stijl	Anamorphosis		
	Bauhaus			

The Spatial Experience
An information guide book about space in visual communication

Ya-Li Hsu

Perceptual Psychology's View · Western View · Eastern View · Designer's View

Gestalt

I-Ching
Yin Yang

Space · Size · Scale · Forms · Position · Module

Western View
Eastern View
Perceptual Psychology's View
Designer's View

The Spatial Experience · A information guide book about space in visual communication · Ya-Li Hsu

Van Nostrand Reinhold — New York
VNR

About this Book

The purpose of this book is to study the perceptual use of space as a dynamic in graphic design. The author intend to investigate the theory and methodologies of non-physical space to breath the limitation of physical space in which we work. The author hope to show that physical space is not merely background but a primary factor in graphic design and it makes the image more interesting.

Jacket design by Ya-Li Hsu © 1994

Van Nostrand Reinhold
115 Fifth Avenue
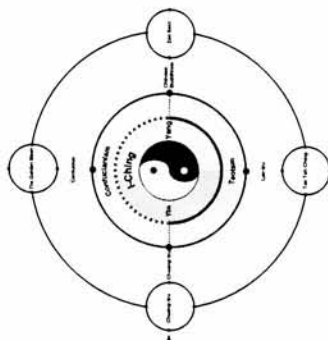New York, New York 10003

Van Nostrand Reinhold — New York
VNR

Timeline:

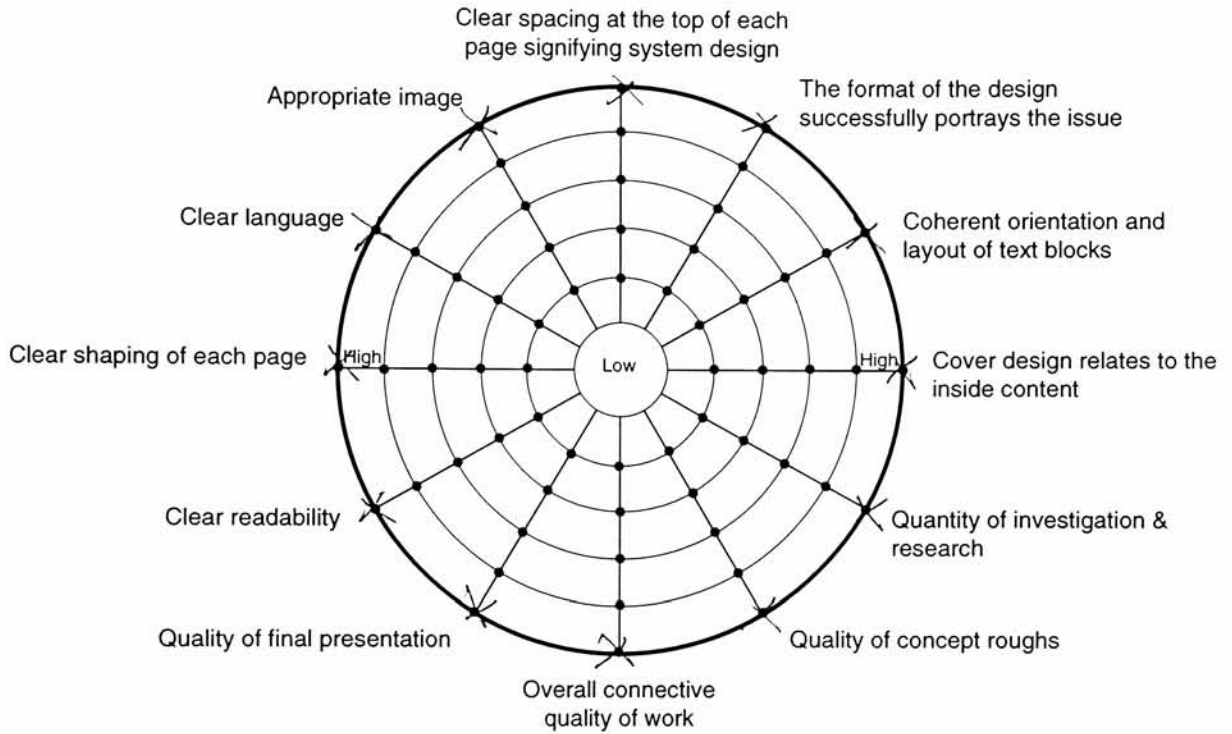| Period	Date
Stone Age	10,000 BC
Roman	400 AD
Renaissance	1400 AD
Post-Impressionism	1890 AD
Expressionism	
Art Nouveau	
Early Modernism	1907 AD
Cubism	
Futurism	
Dada	1917 AD
Surrealism	
Constructivism	
de Stijl	
Bauhaus	

Appendix 8 Questionnaire

Project Evaluation

Ya-Li Hsu

Thesis Statement: Space is a common denominator of a visual composition, but many people still treat it only as background. I intend to study space as a signifier and show that it can be as dramatic as the subject. My thesis is an investigation of some theoretical views of space. It is presented in the guide book and poster which focus on a historical perspective, using Western and Eastern theories with examples of their relation to design principles. This investigation is supported by relevant information in the sections of the guide book.

Radar chart with the following axis labels:
- Clear spacing at the top of each page signifying system design
- The format of the design successfully portrays the issue
- Coherent orientation and layout of text blocks
- Cover design relates to the inside content
- Quantity of investigation & research
- Quality of concept roughs
- Overall connective quality of work
- Quality of final presentation
- Clear readability
- Clear shaping of each page
- Clear language
- Appropriate image

(Center labeled "Low", outer ends labeled "High")

The information presented could help designers to make more effective design. — High ———— Low

The poster and book cover provide a level of visual interest which encourages the viewer to consider the interplay of the four diagrams. — High ———— Low

The book and poster create effective examples of using space. — High ———— Low

The use of image within the design makes the design visually effective. — High ———— Low

Would you buy this book if it was published? — High ———— Low

Additional Comments:

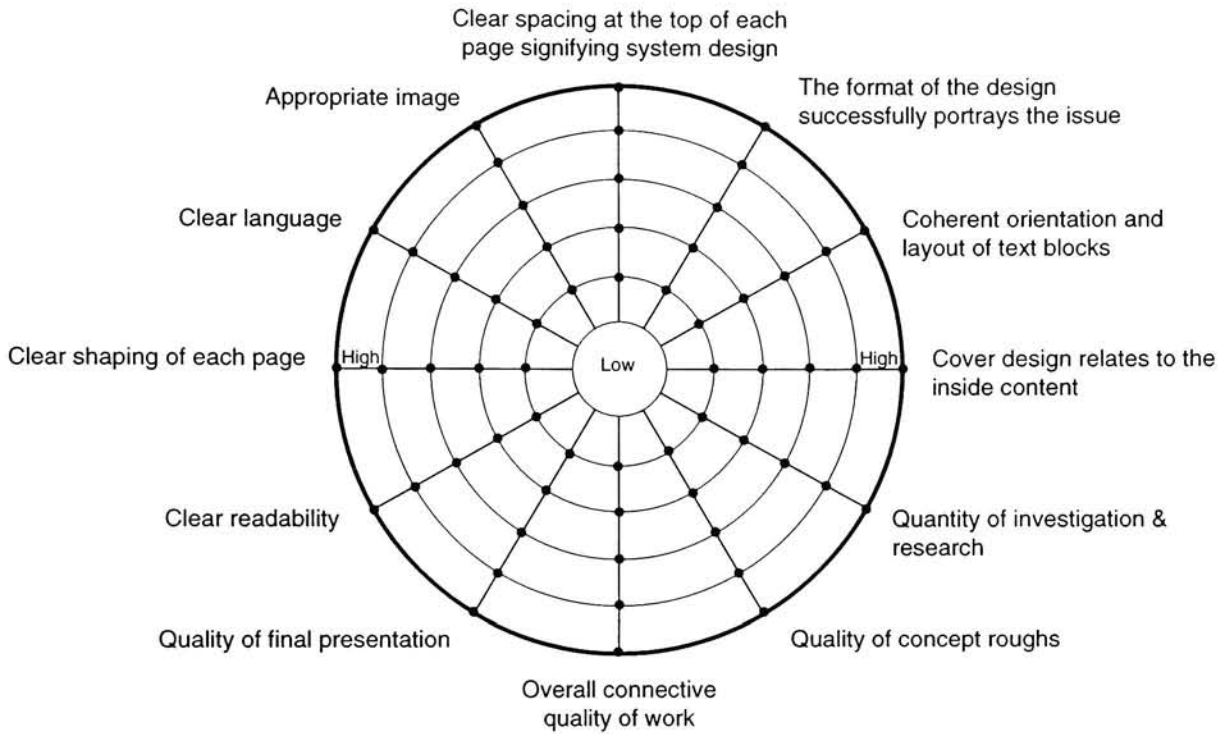*[handwritten] good project.*

Information included on this form will be used to evaluate and modify the thesis.
Your comments are appreciated.

Please return this form to the tray on the pedestal.
Thank You.

Project Evaluation

Ya-Li Hsu

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Clear spacing at the top of each
page signifying system design

Appropriate image

The format of the design
successfully portrays the issue

Clear language

Coherent orientation and
layout of text blocks

Clear shaping of each page   High   Low   High   Cover design relates to the
inside content

Clear readability

Quantity of investigation &
research

Quality of final presentation

Quality of concept roughs

Overall connective
quality of work

The information presented could help designers to make more effective design.

High ———•———•———•———•———•——— Low

The poster and book cover provide a level of visual interest which encourages the viewer to consider the interplay of the four diagrams.

High ———•———•———•———•———•——— Low

Wonderful visual

The book and poster create effective examples of using space.

High ———•———•———•———•———•——— Low

The use of image within the design makes the design visually effective.

High ———•———•———•———•———•——— Low

Would you buy this book if it was published?

High ——Ø——•———•———•———•——— Low

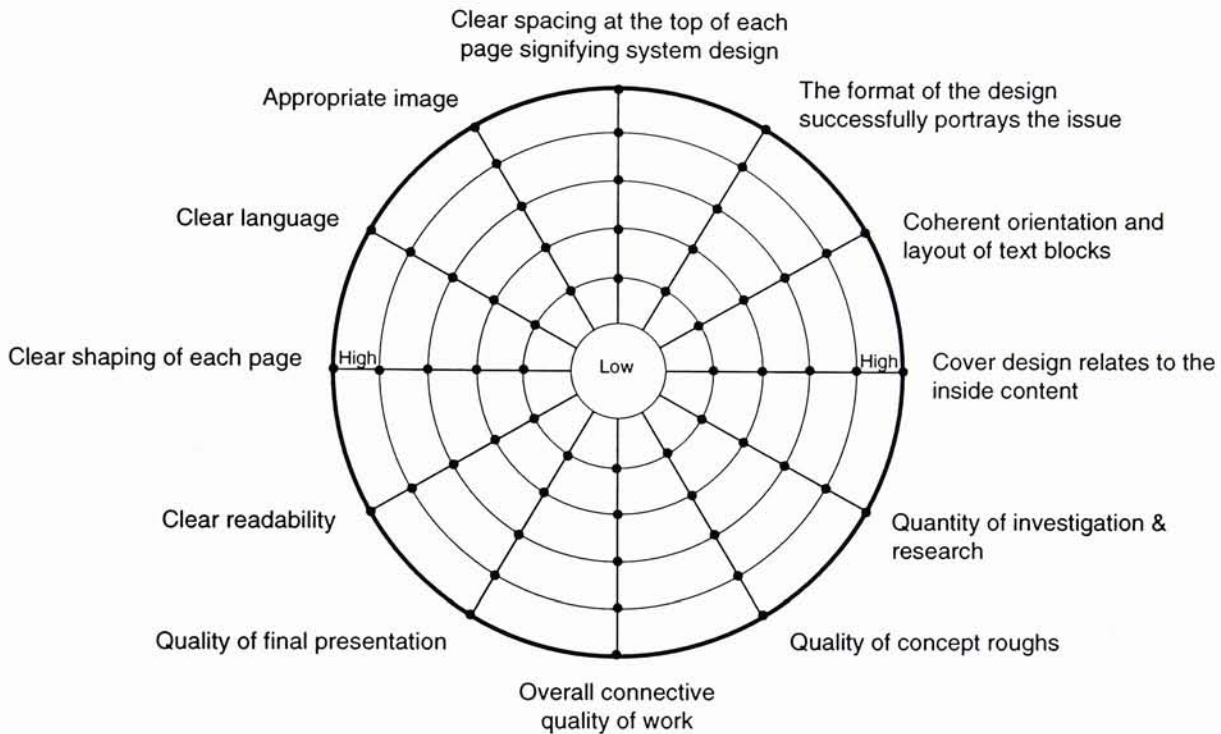**Additional Comments:**

[handwritten, illegible]

Information included on this form will be used to evaluate and modify the thesis.
Your comments are appreciated.

Please return this form to the tray on the pedestal.
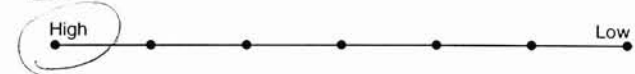Thank You.

Project Evaluation

Ya-Li Hsu

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Radar/web diagram with axes labeled (clockwise from top):
- Clear spacing at the top of each page signifying system design
- The format of the design successfully portrays the issue
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- Quantity of investigation & research
- Quality of concept roughs
- Overall connective quality of work
- Quality of final presentation
- Clear readability
- Clear shaping of each page
- Clear language
- Appropriate image

Center labeled "Low", outer edges labeled "High".

Statement	Rating
The information presented could help designers to make more effective design.	High — Low (marked High)
The poster and book cover provide a level of visual interest which encourages the viewer to consider the interplay of the four diagrams.	High — Low (marked High)
The book and poster create effective examples of using space.	High — Low (marked High)
The use of image within the design makes the design visually effective.	High — Low (marked High)
Would you buy this book if it was published?	YES — High (marked High)

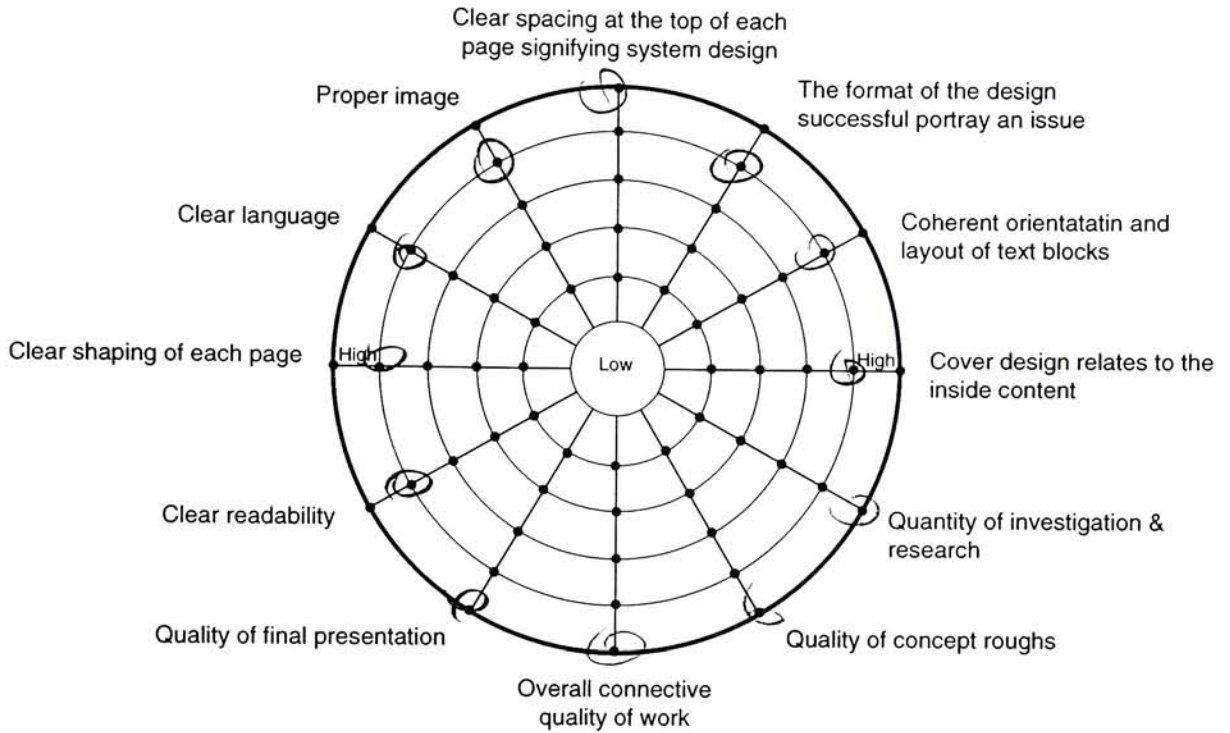**Additional Comments:**

Congratulations!
I'm very happy about you!

Information included on this form will be used to evaluate and modify the thesis.
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Please return this form to the tray on the pedestal.
Thank You.

Project Evaluation

Ya-Li Hsu

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Clear spacing at the top of each page signifying system design

The format of the design successful portray an issue

Proper image

Coherent orientatatin and layout of text blocks

Clear language

Clear shaping of each page

High — Low — High — Cover design relates to the inside content

Clear readability

Quantity of investigation & research

Quality of final presentation

Quality of concept roughs

Overall connective quality of work

The information presented is beneficial for designers in making more effective works — High — Low

The book and poster creates an effective example of using space. — High — Low

The poster and book cover visually appealing provide a level of visual interest which encourages the viewer to consider the interplay of four diagram — High — Low

The use of image within the design make the design visually effective — High — Low

Will you buy this book if it is really published — High — Low

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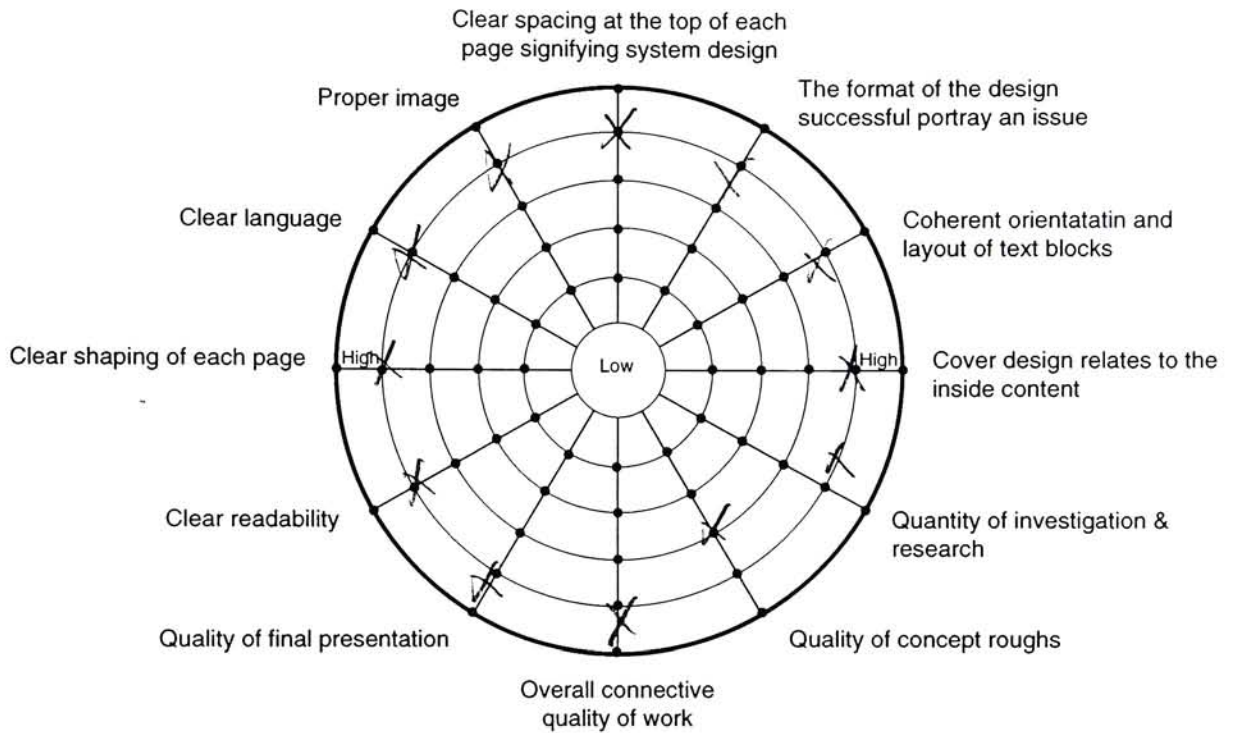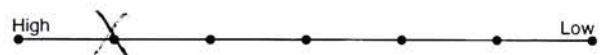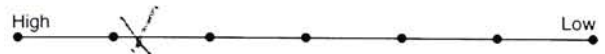**Addition Comments:**

Information included on this form will be used to evaluate and modify the thesis.
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Please return this form to the tray

Project Evaluation

Ya-Li Hsu

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Proper image

The format of the design successful portray an issue

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The use of image within the design make the design visually effective
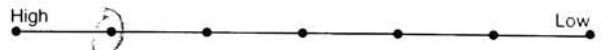
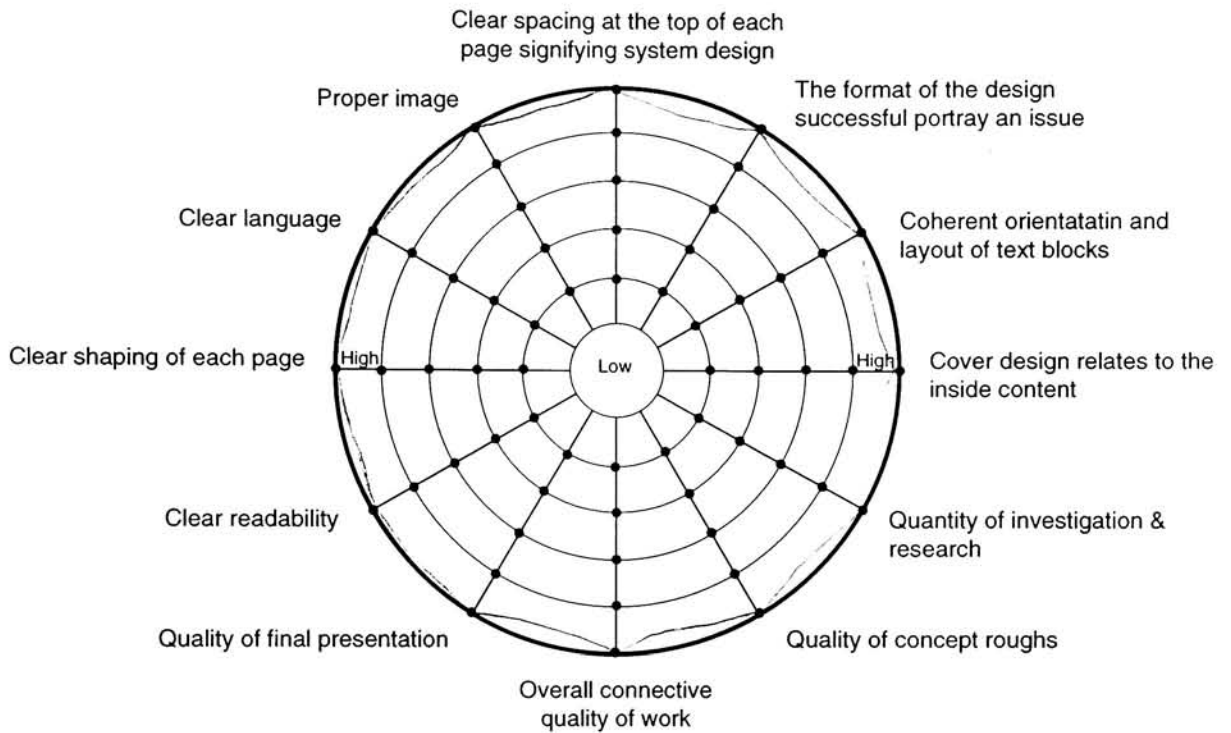Will you buy this book if it is really published
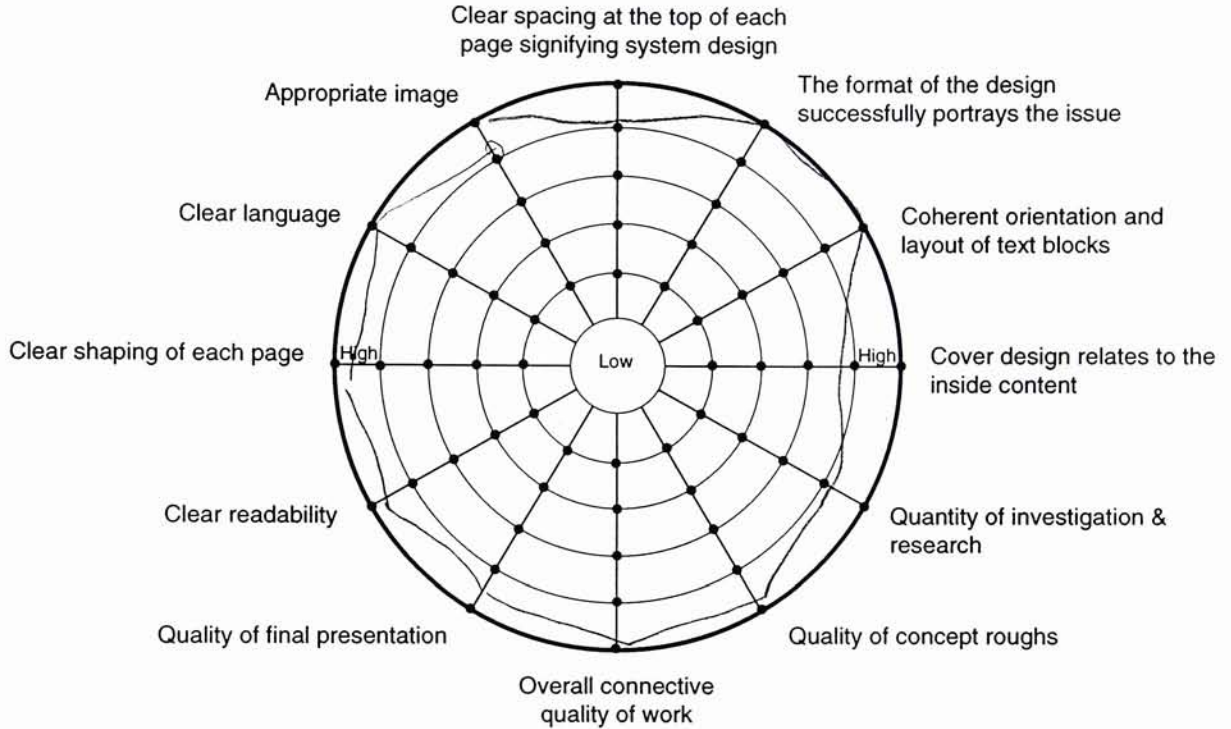

Addition Comments:

EXCELLENT.

Information included on this form will be used to evaluate and modify the thesis.
Your comments are appreciated.

Please return this form to the tray

Project Evaluation

Ya-Li Hsu

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Proper image

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Clear language

Clear shaping of each page — High — Low — High — Cover design relates to the inside content

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Quantity of investigation & research

Quality of final presentation

Quality of concept roughs

Overall connective quality of work

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The poster and book cover visually appealing provide a level of visual interest which encourages the viewer to consider the interplay of four diagram — High — Low

The use of image within the design make the design visually effective — High — Low

Will you buy this book if it is really published   Yes — High — Low

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Addition Comments:
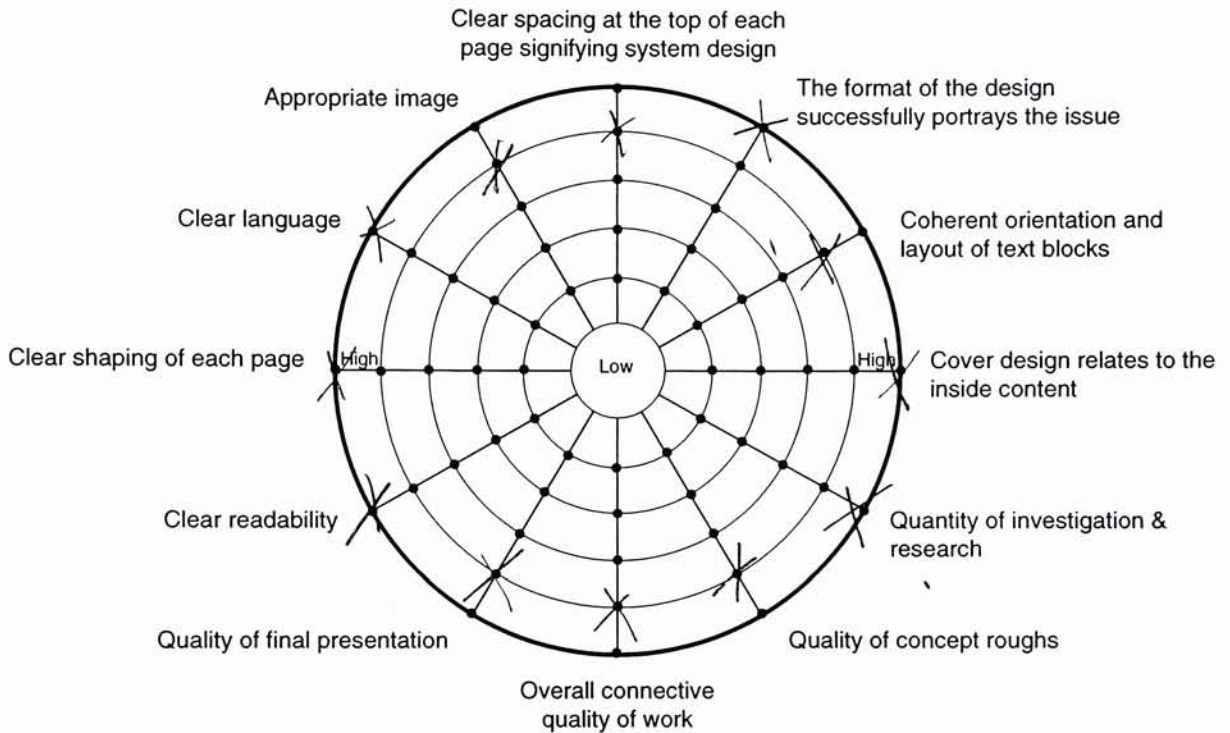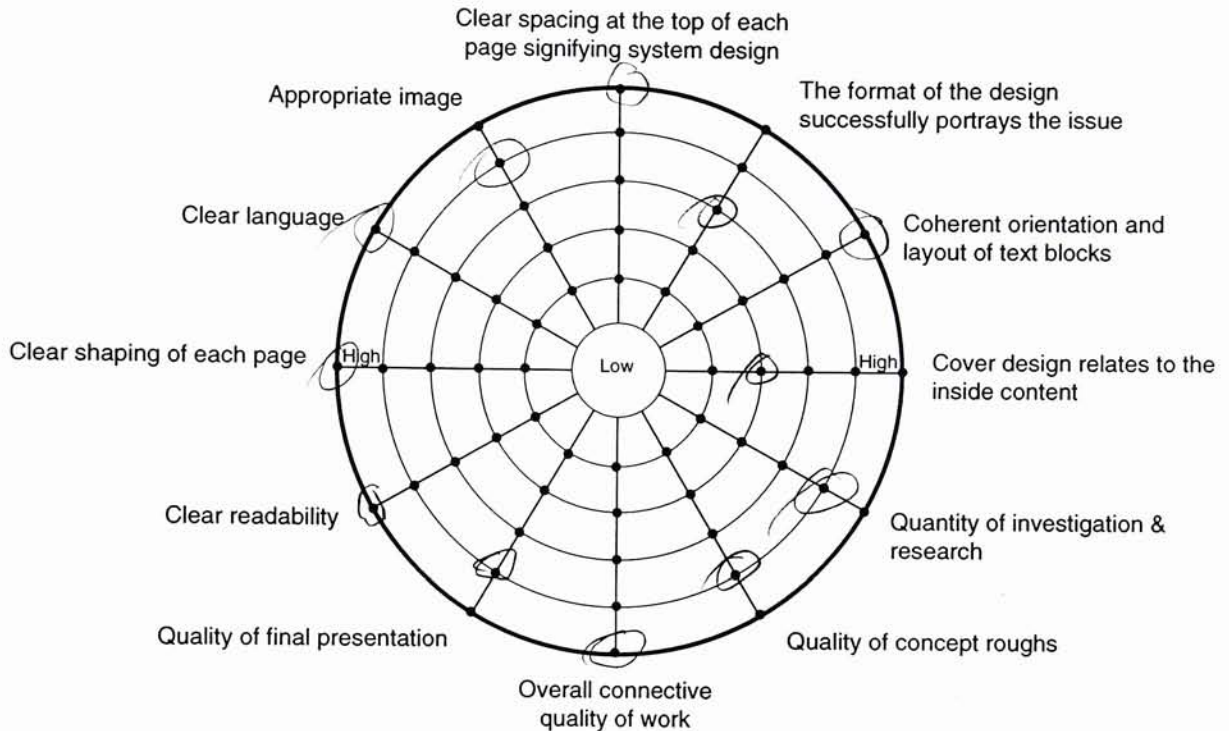
Great Project. Congratulation!

Information included on this form will be used to evaluate and modify the thesis.
Your comments are appreciated.

Please return this form to the tray

Project Evaluation

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Clear spacing at the top of each page signifying system design

Appropriate image

The format of the design successfully portrays the issue

Clear language

Coherent orientation and layout of text blocks

Clear shaping of each page — High — Low — High — Cover design relates to the inside content

Clear readability

Quantity of investigation & research

Quality of final presentation

Quality of concept roughs

Overall connective quality of work

The information presented could help designers to make more effective design.

High / Low

The poster and book cover provide a level of visual interest which encourages the viewer to consider the interplay of the four diagrams.

High / Low

The book and poster create effective examples of using space.

High / Low

The use of image within the design makes the design visually effective.

High / Low

Would you buy this book if it was published?

High / Low

Additional Comments:

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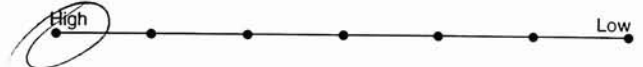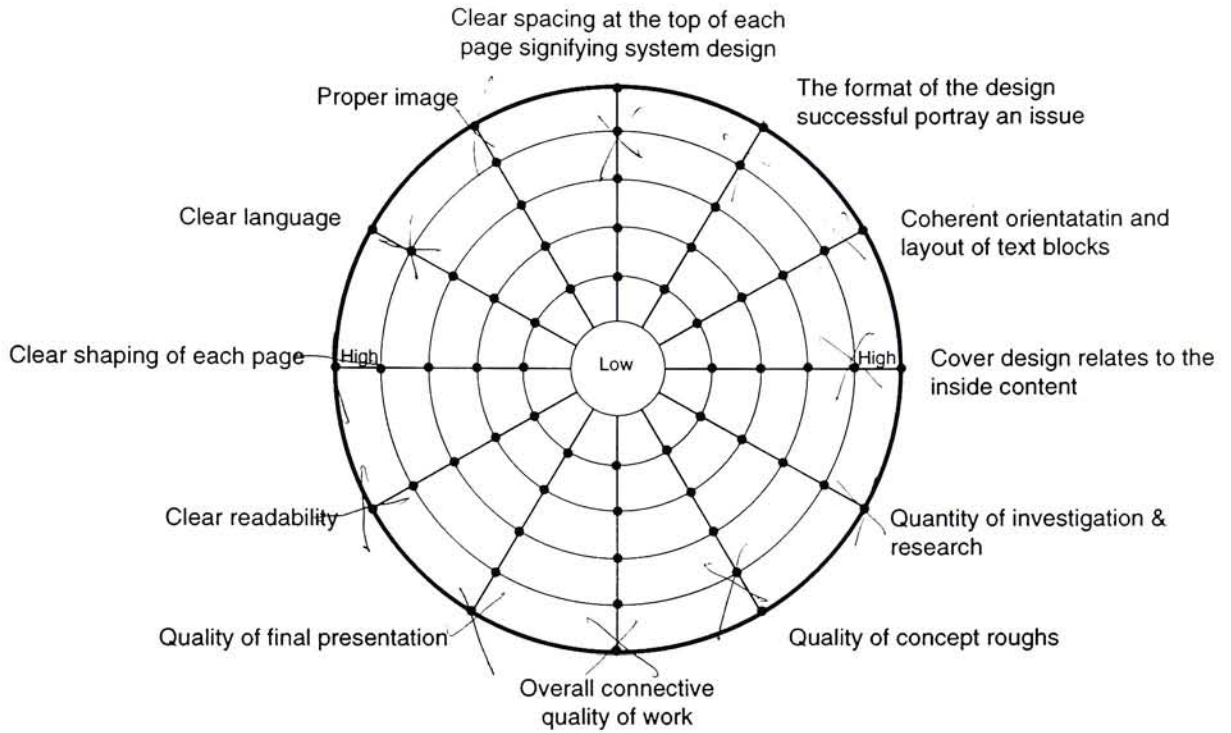Thank You.**

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Clear spacing at the top of each page signifying system design

Appropriate image

The format of the design successfully portrays the issue

Clear language

Coherent orientation and layout of text blocks

Clear shaping of each page

Low

Cover design relates to the inside content

High

High

Clear readability

Quantity of investigation & research

Quality of final presentation

Quality of concept roughs

Overall connective quality of work

The information presented could help designers to make more effective design.

High — Low

The poster and book cover provide a level of visual interest which encourages the viewer to consider the interplay of the four diagrams.

High — Low

The book and poster create effective examples of using space.

High — Low

The use of image within the design makes the design visually effective.

High — Low

Would you buy this book if it was published?

High — Low
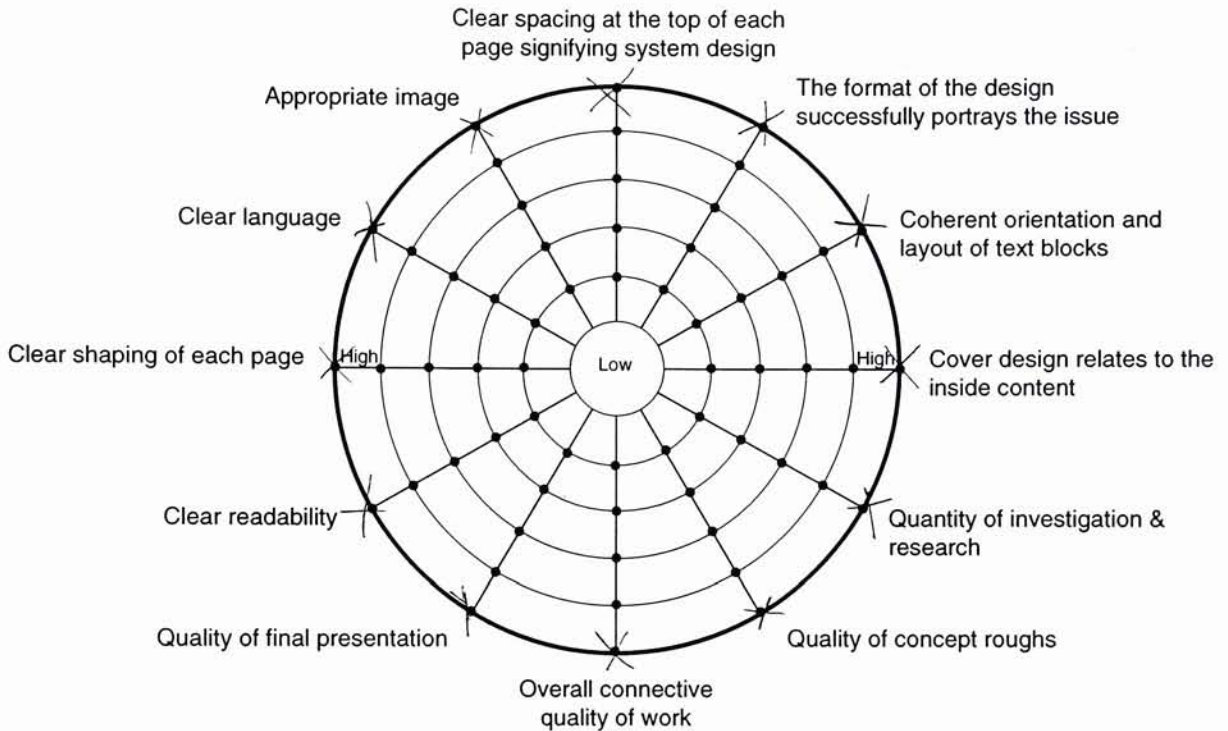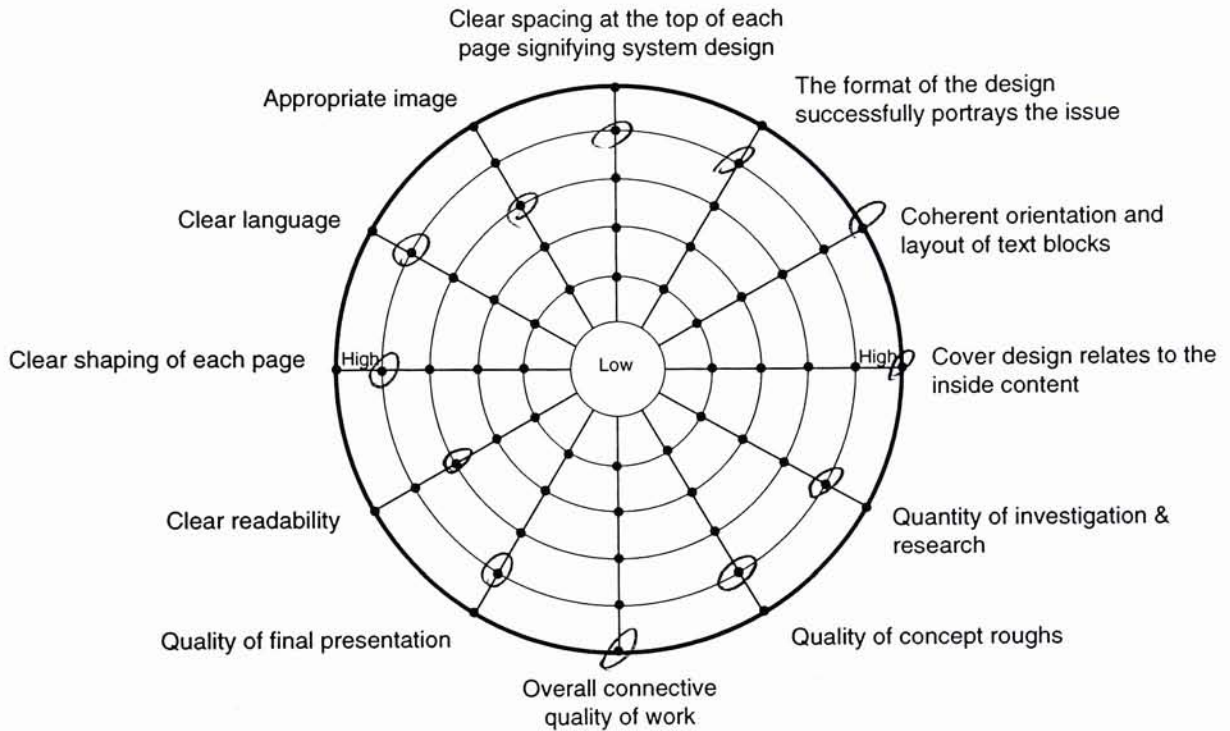

Additional Comments:

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Your comments are appreciated.

Please return this form to the tray on the pedestal.
Thank You.

Project Evaluation

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Clear spacing at the top of each
page signifying system design

Appropriate image

The format of the design
successfully portrays the issue

Clear language

Coherent orientation and
layout of text blocks

Clear shaping of each page

High   Low   High

Cover design relates to the
inside content

Clear readability

Quantity of investigation &
research

Quality of final presentation

Quality of concept roughs

Overall connective
quality of work

The information presented could help designers to make more effective design.

High   Low

The poster and book cover provide a level of visual interest which encourages the viewer to consider the interplay of the four diagrams.

High   Low

The book and poster create effective examples of using space.

High   Low

The use of image within the design makes the design visually effective.

High   Low

Would you buy this book if it was published?

High   Low

Additional Comments:

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Your comments are appreciated.

Please return this form to the tray on the pedestal.
Thank You.

Project Evaluation

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Clear spacing at the top of each page signifying system design

Proper image

The format of the design successful portray an issue

Clear language

Coherent orientatatin and layout of text blocks

Clear shaping of each page — High   Low   High

Cover design relates to the inside content

Clear readability

Quantity of investigation & research

Quality of final presentation

Quality of concept roughs

Overall connective quality of work

The information presented is beneficial for designers in making more effective works

High   Low

The book and poster creates an effective example of using space.

High   Low

The poster and book cover visually appealing provide a level of visual interest which encourages the viewer to consider the interplay of four diagram

High   Low

The use of image within the design make the design visually effective

High   Low

Will you buy this book if it is really published

High   Low
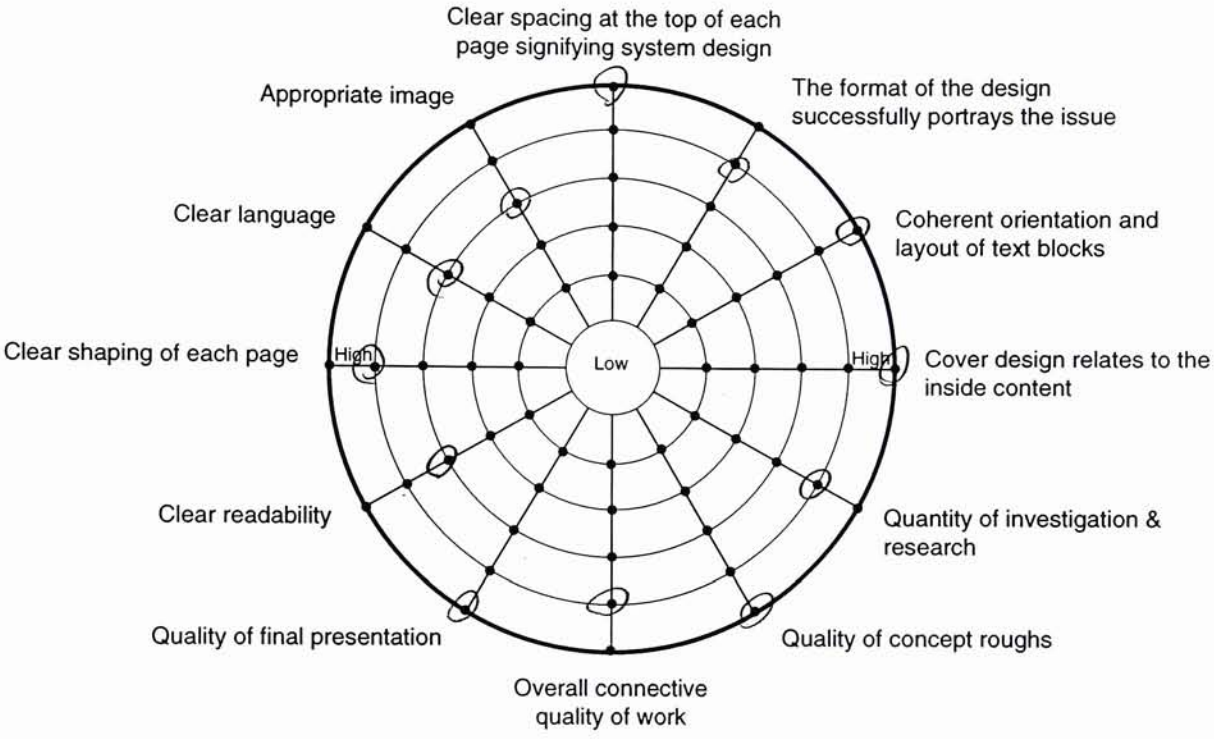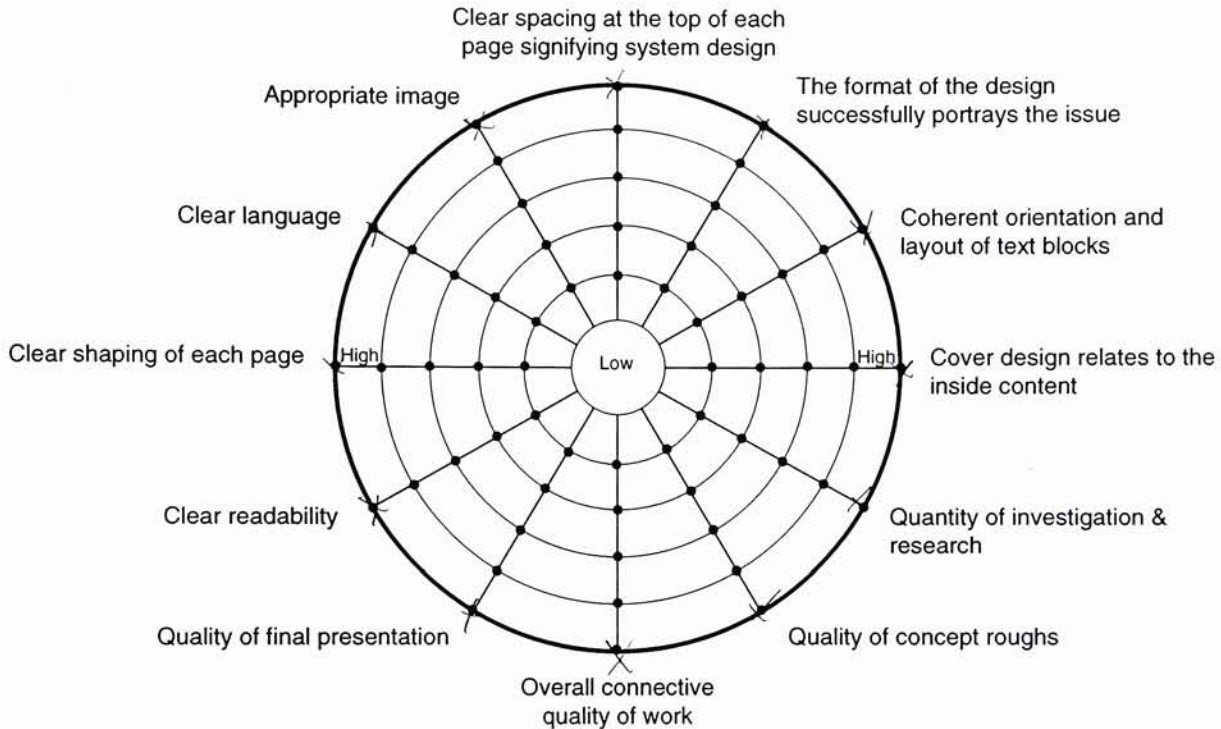

Addition Comments:

**Information included on this form will be used to evaluate and modify the thesis.
Your comments are appreciated.**

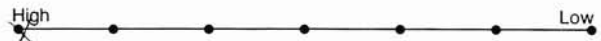**Please return this form to the tray**

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Ya-Li Hsu

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Clear spacing at the top of each
page signifying system design

Appropriate image

The format of the design
successfully portrays the issue

Clear language

Coherent orientation and
layout of text blocks

Clear shaping of each page   High   Low   High   Cover design relates to the
inside content

Clear readability

Quantity of investigation &
research

Quality of final presentation

Quality of concept roughs

Overall connective
quality of work

The information presented could help designers to make more effective design.

High ———•———•———•———•———• Low

The poster and book cover provide a level of visual interest which encourages the viewer to consider the interplay of the four diagrams.

High ———•———•———•———•———• Low

The book and poster create effective examples of using space.

High ———•———•———•———•———• Low

The use of image within the design makes the design visually effective.

High ———•———•———•———•———• Low

Would you buy this book if it was published?

High ———•———•———•———•———• Low

Additional Comments:

Information included on this form will be used to evaluate and modify the thesis.
Your comments are appreciated.

Please return this form to the tray on the pedestal.
Thank You.

Project Evaluation

Ya-Li Hsu

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Clear spacing at the top of each page signifying system design

The format of the design successfully portrays the issue

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Clear language

Cover design relates to the inside content

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Quantity of investigation & research

Clear readability

Quality of concept roughs

Quality of final presentation

Overall connective quality of work

The information presented could help designers to make more effective design.

The poster and book cover provide a level of visual interest which encourages the viewer to consider the interplay of the four diagrams.

The book and poster create effective examples of using space.
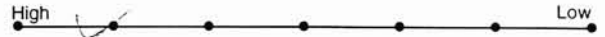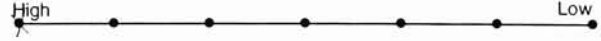
The use of image within the design makes the design visually effective.
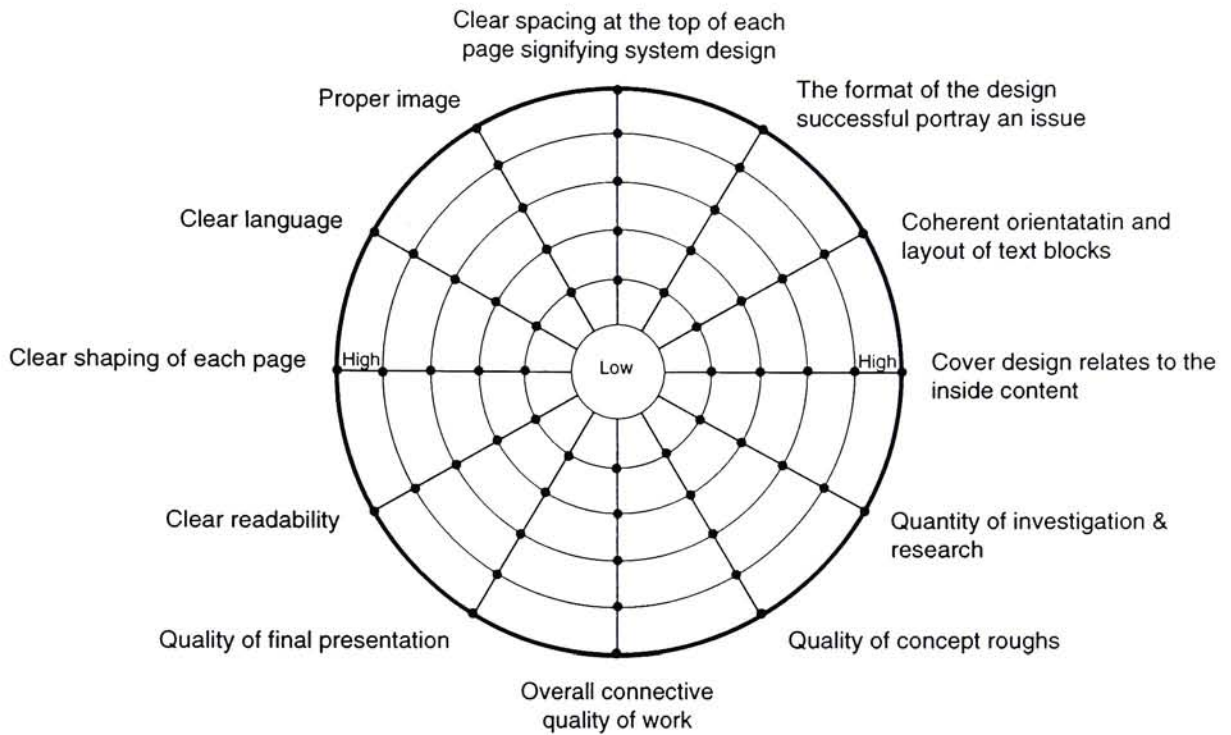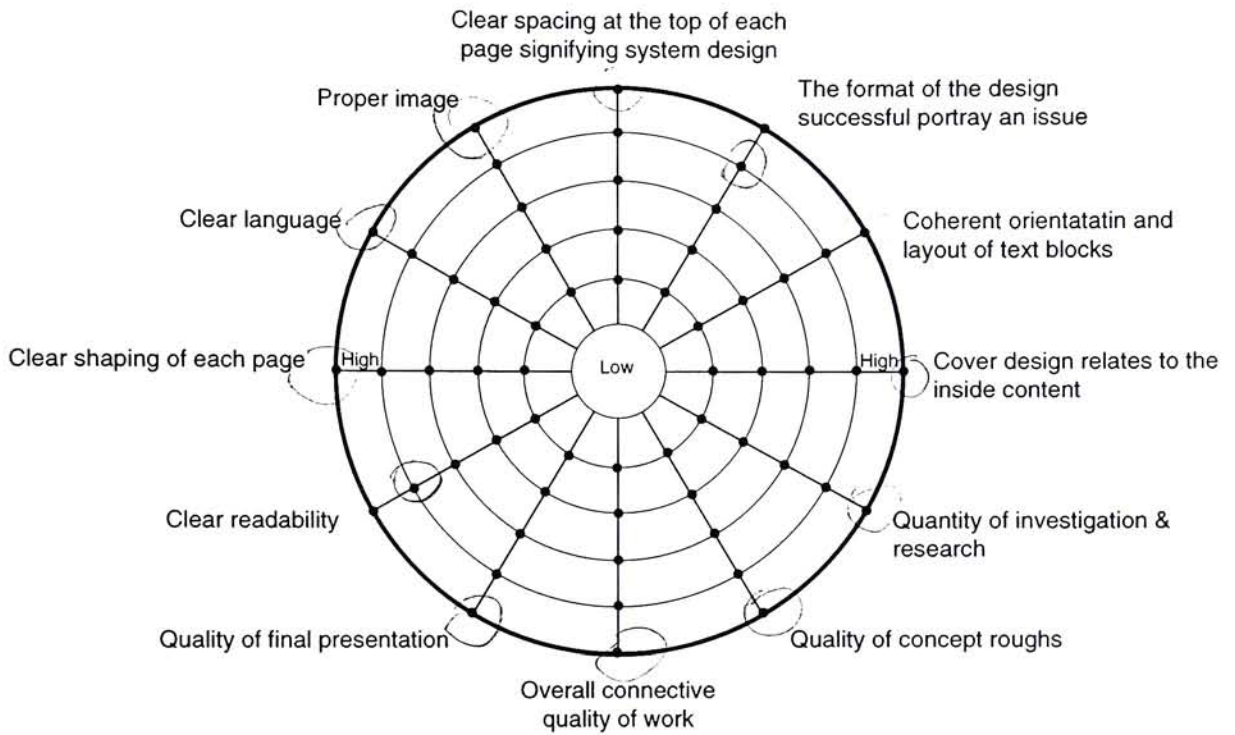
Would you buy this book if it was published?

Additional Comments:

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Thank You.

Project Evaluation

Ya-Li Hsu

Thesis Statement: Space is a common denominator of a visual composition, but many people still treat it only as background. I intend to study space as a signifier and show that it can be as dramatic as the subject. My thesis is an investigation of some theoretical views of space. It is presented in the guide book and poster which focus on a historical perspective, using Western and Eastern theories with examples of their relation to design principles. This investigation is supported by relevant information in the sections of the guide book.

Clear spacing at the top of each page signifying system design

Appropriate image

The format of the design successfully portrays the issue

Clear language

Coherent orientation and layout of text blocks

Clear shaping of each page — High — Low — High — Cover design relates to the inside content

Clear readability

Quantity of investigation & research

Quality of final presentation

Quality of concept roughs

Overall connective quality of work

The information presented could help designers to make more effective design.

High ——————————————— Low

The poster and book cover provide a level of visual interest which encourages the viewer to consider the interplay of the four diagrams.

High ——————————————— Low

The book and poster create effective examples of using space.

High ——————————————— Low

The use of image within the design makes the design visually effective.

High ——————————————— Low

Would you buy this book if it was published?

High ——————————————— Low
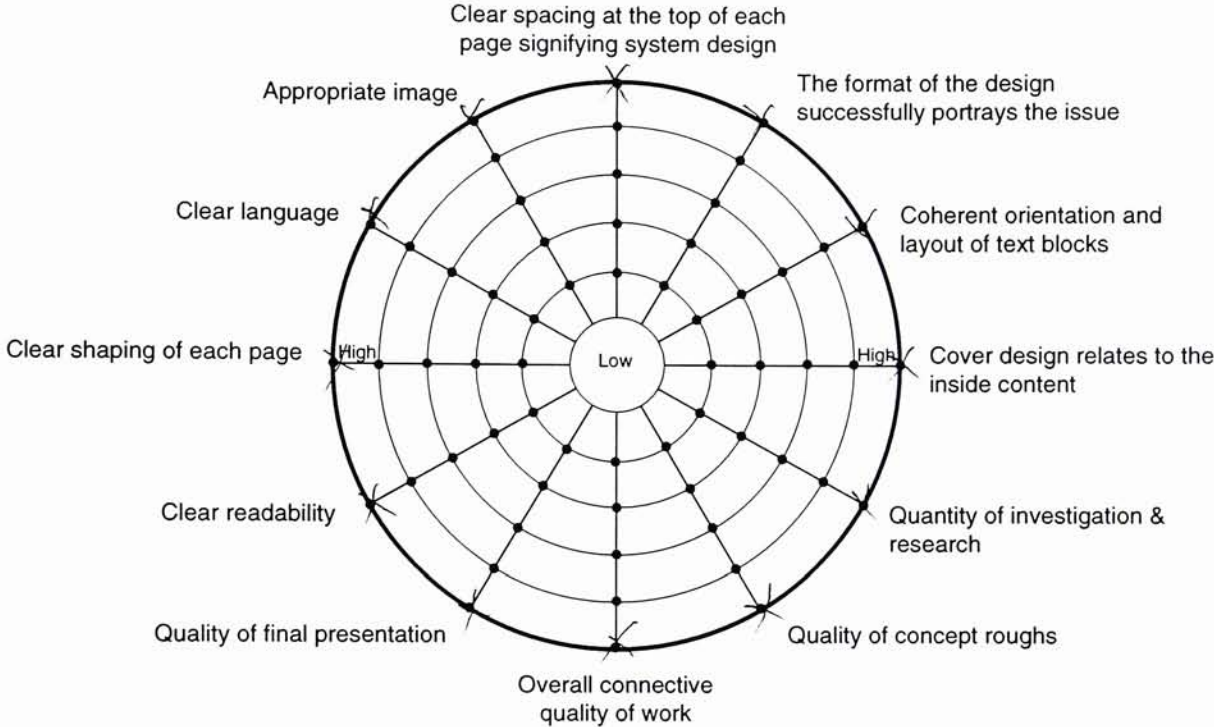
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four diagrams.   High — Low

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The use of image within the design makes the design visually
effective.   High — Low

Would you buy this book if it was published?   High — Low

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Radar chart with axes labeled (clockwise from top):
- Clear spacing at the top of each page signifying system design
- The format of the design successful portray an issue
- Coherent orientatatin and layout of text blocks
- Cover design relates to the inside content
- Quantity of investigation & research
- Quality of concept roughs
- Overall connective quality of work
- Quality of final presentation
- Clear readability
- Clear shaping of each page
- Clear language
- Proper image

(Center labeled "Low", outer edges labeled "High")

	High — — — — — Low
The information presented is beneficial for designers in making more effective works	High · · · · · Low
The book and poster creates an effective example of using space.	High · · · · · Low
The poster and book cover visually appealing provide a level of visual interest which encourages the viewer to consider the interplay of four diagram	High · · · · · Low
The use of image within the design make the design visually effective	High · · · · · Low
Will you buy this book if it is really published	High · · · · · Low

Addition Comments:

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Appendix 9 Final Guide Book

The Spatial Experience

To
My parents
and
Wen-Ping Chuang

The Spatial Experience

A information guide book about space in visual communication

Ya-Li Hsu

Contents

This guide book is an investigation of some theoretical views of space. Each topic unit focuses on a historical perspective, using Western and Eastern theories with examples of relation to design principles. The guide book can yield both insights and inspiration. The investigation is supported by relevant information in the units that come before and after.

The audience for this guide book would be graphic design students and others in related disciplines (architecture, industrial design, photography, etc.). This guide can inform and educate them about space to enhance the integrity of their work.

"White space is nothing. White space is the absence of content. Yet white space in the ultimate value in graphic design."
Keith Robertson

Space is a common denominator of a visual composition, but many people still treat it only as background. They arrange the subjects within the space without knowing the interaction between figure and ground. Artists and graphic designers should know space and organization methods, otherwise the outcome will be disorganized. What designers need is a clear understanding of issues of space, the history of designed space, and methods by which they can work more effectively with spatial consideration in their work.

In this electronic age, graphic design tools have changed dramatically and will continue to do so, with great momentum. The computer may help to solve some of these design problems. But a computer has no understanding of what a concept is, nor can it make a decision without being given a command. Design is a process of ordering visual elements, so studying the visual experience will greatly help us deal with design problems. Visual experience is one of complex interrelationship. Unlike mathematics or chemistry, there exists more than a single way of interpreting the visual language. However, in order to discuss visual form it will be necessary to recognize the potential of the various elements and their interactions. The number of elements and the terms used to identify them vary considerably among artists and teachers. Basic visual experiences can be categorized into Space, Color, and Time. The visual arts are referred to as spatial arts because visual elements are organized in space and time. Color is an aspect of light. Color affects our emotions directly, modifying our thoughts, mood, actions, and even our health. Effective use of color can highlight the elements which the designer chooses. Time is the period between events or during which something exists, happens, or acts. Space and time are both continuous elements in the visual arts, which we experience simultaneously.

In this guide book, emphasis is placed on space. There are numerous ways of defining space, which depend on your field of expertise. From the mathematician's point of view, physical space is defined as classical Euclidean geometry or the Newtonian universe of mathematical equations. From the physicist's point of view, space is defined as a force created when each elemental charge creates a disturbance in the space around it, so that any opposing charge present will be felt as a force. The most physically apparent organization

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Visual Experiences

Space	Color	Time
Shape	Hue	Movement
Form	Chroma	Flicker
Size	Value	Sparkle
Position		Glitter
Interval		Fluctuation
Transparency		
Number		
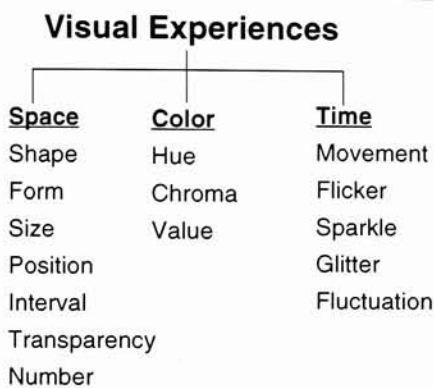
"Architecture is a sculpture with both an outside and inside."
Rudolf Arnheim

of space can be found in architecture. There space is defined as living space. Although different fields have different interpretations of space, there are also common points of view: Space cannot exist alone, it must interrelate and interact with something; and the function of space is to reach a balance. The further I penetrate into the definitions of space the more microscopic the world, because I intend to study space as a *signifier* and show it can be as dramatic as the subject. I will concentrate my interpretation on four key viewpoints (Western View, Eastern View, Perceptual Psychology's View, and Designer's View) which I think are most relevant for designers.

Western View, from a historical perspective, looks at specific art movements as breakthroughs in the limitations of the concept of two-dimensional space. It is important to understand the historical perspective in order to understand why graphic design treats space in certain ways (i.e. Cubism was multi-dimensional).

Eastern View: ever since American contact with the East in the late 1960's, the wisdom of ancient eastern philosophy was found to be very useful in all fields of human life. The Yin Yang Doctrine is very simple but its influence has been extensive. Lao-tzu's theory also deals mainly with intangible content as the means of a composition. The principle of Lao-tzu is seen in the use of negative means (intangible content) to achieve a positive end (what is expected.)

Perceptual Psychology's View: Gestalt is basic to the way humans group information. Understanding how people perceive and respond to the various spatial aspects within an environment is important for designers. Without this understanding, the process of communicating or creating forms is difficult. To help achieve this awareness it is essential to learn some of the perceptual concepts of spatial cues as they relate to the perception of depth and form.

Designer's View: principles should be established to assist in the creative form generation process. This can be achieved by using visual organizational principles to structure the relationship among the visual elements of form, the compositional elements, and the desired message.

This guide book is basically a collection of information from the views as discussed above. However, it requires analytical thinking to arrive at an understanding of the possibility of using that information in dealing with the spatial experience.

Perceptual Psychology's View

Western View

Eastern View

Designer's View
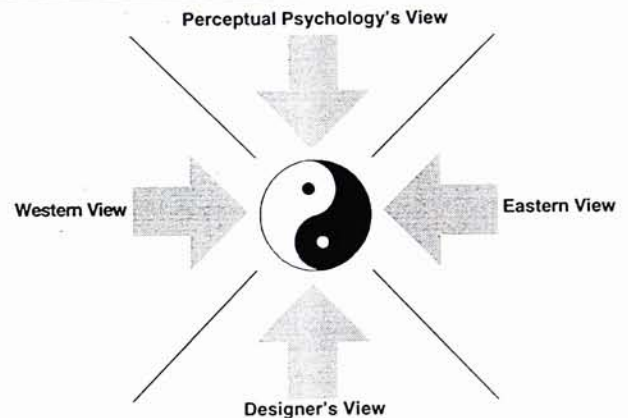
1 Western View

Diagram of Western View

	Stone Age	·Cave Painting ·Paleolithic period-realism ·Neolithic period-pictographic	**10.000 BC**
	Roman	·Implication of three-dimensional depth in painting	**400 AD**
	Renaissance	·Increasingly took account of scientific perspective and moved toward realism	**1400 AD**
	Post-impressionism	·Paul Cezanne invented a new method of defining space called color modeling.	**1890 AD**
	Expressionism	·Wassily Kandinsky took a bold step beyond Fauvism in his Expressionist paintings, which evolved from abstraction into nonrepresentation.	
	Art Nouveau	·Art Nouveau offered an ambiguous space invaded by interactive, complex, flame-like curves as well as a more rectilinear approach to spatial organization of geometric forms.	
	Early Modernism	·Frank Lloyd Wright saw space as the essence of design. ·Peter Behrens used a grid system in his graphic design. ·J. L. Mathieu Lauweriks was fascinated by geometric form.	**1907 AD**
	Cubism	·Picasso pioneered the development of Cubist painting which featured a multiplicity of viewpoints. ·Jan Gris used the golden section proportions and a modular composition	
	Futurism	·Attempting to represent time, these painters and sculptors showed multiples of moving parts in many positions simultaneously.	
	Dada	·Dada artists claim to have invented Photomontage. ·John Heartfield	**1917 AD**
	Surrealism	·An unreal dreamscape ·Joan Miro	
	Constructivism	·Devoted to the conscious organization of all forms of energy, potential and kinetic, into enduring and memorable identities and things. ·El Lissitzky	
	de Stijl	·Based on the rectangle and the use of black, white, gray, and the primary colors. ·Piet Mondrian	
	Bauhaus	·Dynamic composition with space ·Piet Zwart	

"The world emerging from this perceptual exploration is not immediately given. Some of its aspects build up fast, some slowly, and all of them are subject to continued confirmation, reappraisal, change, completion, correction, deepening of understanding."

Rudolf Arnheim

Stone Age
(10,000 BC)

- The beginnings of visual art might be found in cave paintings produced toward the end of the Paleolithic period, about thirty thousand years ago. The paintings of animals at Lascaux show an impressive regard for realism. (de la Croix 1991, 28)
- The art of the Neolithic or New Stone Age mirrored the different lifestyle that arose between 10,000 and 8000 B.C., when agricultural communities began to provide people with more stable lives. The naturalism of Paleolithic art characterized by the cave paintings at Lascaux gave way to abstract patterning, often based on geometric form. In sculptured fertility figures, as well as in painted images, abstraction was favored over realism. Abstract animal and plant motifs were painted on clay vessels, sometimes with highly stylized pictographic characteristics. These picture-writing forms anticipated the later development of alphabets. (Meggs 1992, 6)

Roman
(400 AD)

- The term perspective refers to the illusion of three-dimensional objects in space created on a two-dimensional surface through the use of certain methods of representation. Stages of its progress can be seen throughout the history of ancient art up to the times of the ancient Romans. During the Middle Ages interest in implying three-dimensional depth in painting declined; artists were more motivated by the spiritual and decorative aspects of two-dimensional forms than by a concern with realism. (Jones 1992, 13)

Renaissance
(1400 AD)

- Strictly this art is of the period from ca. 1400 to ca. 1520, but sometimes can be traced back to the time of Giotto, ca. 1300. During the 14th century, Italian art, especially painting, increasingly took account of scientific perspective and moved toward realism. (de la Croix 1991, 10)

Post-Impressionism
(1890 AD)

- Paul Cezanne adapted the impressionist technique to a study of space relationship. He invented a new method of defining space called color modeling. This involved making color work independently as a perspective method, which Cezanne offered as an alternative to the the Renaissance approach of linear perspective. The basic idea involved manipulating warm and cool colors, creating a spatial system of juxtaposition where some color forms advanced while others receded. (Meggs 1992, 238)

1
Hall of Bulls, Lascaux, c. 13,000 B.C. Dordogne, France.

2
Leonardo da Vinci, *The Last Supper*, c. 1495-1498. fresco. Santa Maria delle Grazie, Milan (Perspective lines are dashed, lines indicating proportions are solid white or black.)
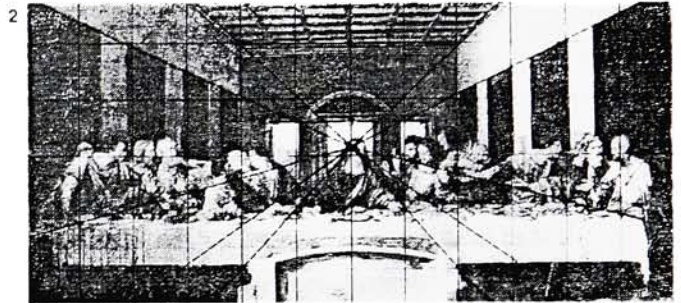
3
Paul Cezanne, *Boy in a Red Vest*, 1893-1895 National Gallery of Art, Washington, D. C. (collection of Mr. and Mrs. Paul Mellon.)

4
Wallsily Kandinsky, *Improvisation 28* (second version,) 1912. Solomon R. Guggenheim Museum, New York.

Expressionism
(1890 AD)

- The major figure in Der Blaue Reiter movement in Munich was the Russian artist Wassily Kandinsky (1866-1944). He took a bold step beyond Fauvism in his Expressionist paintings, which evolved from abstraction into nonrepresentation. He felt that line and color by themselves could communicate strong emotional feeling without any reference to subject matter. (Meggs 1992, 270)

Art Nouveau
(1890 AD)

- Art Nouveau offered an ambiguous space invaded by interactive, complex, flame-like curves as well as a more rectilinear approach to spatial organization of Geometric forms. (Heller 1988, 41)
- Charles Rennie Mackintosh, Margaret and Frances Macdonald, and J. Herbert McNair, all called the Glasgow Four, demonstrated the rising verticality and integration of flowing curves with rectangular structure by applying the geometric spatial division and lyrical organic forms. The work of the Glasgow Four was similar in appearance and character of that of the Vienna Secession. (Meggs 1992, 220)
- The journal of the Vienna Secession, *Ver Sacrum*, featured an unprecedented use of white space in its page layout. Sleek-coated stock, and unusual production methods gave an aura of quality and ensured a visual design unity. (Meggs 1992, 224)

Early Modernism
(1907 AD)

- Frank Lloyd Wright saw space as the essence of design, and had a profound influence upon all areas of twentieth-century design. He looked to Japanese architecture and design for a model of harmonious proportion and visual poetry; in pre-Columbian architecture and art, he found lively ornament restrained by a mathematical repetition of horizontal and vertical spatial division. Wright's repetition of rectangular zones and use of asymmetrical spatial organization were adopted by other designers. He incorporated white and black space as an element in his designs to establish and work within parameters, and combined varied materials into a unified whole. At the turn of the century, he was operating at the forefront of the emerging modern movement. (Meggs 1992, 218)
- Peter Behrens used a grid system that was used to structure space in his graphic design. Behrens was a noted architect, some of whose students went on to form the Bauhaus.
- J. L. Mathieu LauWeriks was fascinated by geometric form and had developed an approach to teaching design based

THE SCOTTISH
MUSICAL REVIEW
PUBLISHED & THE 1ˢᵗ ᴇᴀᴄʜ MONTH
PRICE TWO PENCE

THE GLASGOW
INSTITVTE
OF THE FINE ARTS
OPEN FEBRVARY TIL May

THE HOUSE BEAUTIFUL
BY
WILLIAM C GANNET

JUNI

S ✚ 7 14 21 28
M 1 8 15 22 29
D 2 9 10 23 30
M 3 10 17 24 ✚
D 4 11 18 25 ✚
F 5 12 19 26 ✚
S 6 13 20 27 ✚

MITTEILUNGEN
DER BERLINER
ELEKTRICITAETS-
WERKE

JAHRGANG 4   JULI 1908   NUMMER i

1
Mackintosh designed this radical poster for the
magine *The Scottish Musical Review* in 1896

2
J. Herbert MacNair and Margaret and Frances
Mackonald, *Glasgow Institutre of the Fine Arts*
1895 Poster Library of Congress, Washington
D.C. Poster Collection.

3
Frank Lloyd Wright, title page for *The House
Beautiful*, 1896-1897. An underlying geometric
structure imposed a strong order upon the
intricacy of Wright's textrual designs

4
Peter Behrens, front and back covers for
Mitteilungen Der Berliner Elektricitaets-Werke
(*Berlin Electric-Works Magazine*,) 1908. Each
issue used a different geometric pattern on the
front cover, and the graphic theme was echoed by
the back-cover calendar design. The front cover is
back and lavender, the back black and ochre

5
These diagrams illustrate Dutch architect J. L. M.
Lauweriks's compositional theory elaborating grid
systems from a square circumscribed around a
circle

on geometric composition. His grids began with a square circumscribed around a circle; numerous permutations then could be made by subdividing and duplicating this basic structure. The geometric patterns thus developed could be used to determine proportions, dimensions, and spatial divisions in the design of everything. (Meggs 1992, 231)

Cubism
(1907 AD)

- The first phase of Cubism, about 1906, had rejected the traditional single point view of objects in order to explore their structure, both internal and external. Influenced by Cezanne, early Cubists such as Picasso and Braque recognized a continuity of space and found that initially this required a rejection of the continuity associated with Art Nouveau. The penetration of total space required fragmentation of the object and its environment and the adoption of superimposed multiviews, translucency and transparency. Cubist painting was a new approach to handling space and expressing human emotions. (Meggs 1992, 238)
- Multiplicity of viewpoints and the spatial illusions of perspective give way to an ambiguous shifting of two-dimensional planes in the next phase of cubism. (Meggs 1992, 239)
- By innovating an approach to visual composition, Cubism changed the course of painting and graphic design. Its formal language became a catalyst for experiments that pushed art and design toward geometric abstraction and new approaches to pictorial space. (Meggs 1992, 238)
- Picasso was one of the greatest artists of the twentieth century. He explored a broad range of styles, at times working in more than one at the same time. Early in the century, after evolving out of his Blue and Rose Periods, Picasso pioneered the development of Cubist painting. He continued to work in and out of the Cubist mode throughout his career. (Meggs 1992, 239)
- Juan Gris used the golden section proportions and a modular composition grid. He was to have a profound influence upon the development of geometric art and design. (Meggs 1992, 238)

Futurism
(1907 AD)

- Chiefly an Italian literary and artistic movement, Futurism stressed the dynamism of motion and encouraged young Italian artists to reject the art of the academies and museums. The first "Manifesto of Futurist Painters," was proclaimed by Carlo Carra, Giacomo Balla, Gino Severini, and L. Russolo. Attempting to represent time and motion, these
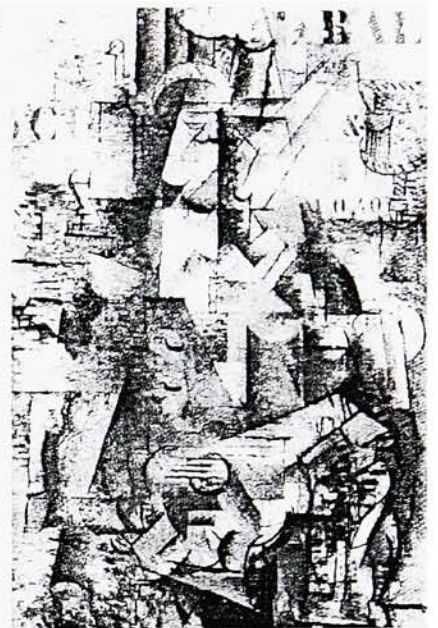
1
Pablo Picasso, *Les Demoiselles d'Avignon*, (begun May, reworked July 1907.) Collection, The Museum of Modern Art, New York (acquired through the Lillie P. Bliss Bequest.)

2
Georges Braque, *The Portuguese*, 1911. Kunstmuseum, Basel, Switzerland (Emanuel Hoffmann-Stiftung.)

3
Juan Gris, *Portrait of Picasso*, 1912. Cubist planes move forward and backward in shallow space by tonal modulation, while the horizontal, vertical, and diagonal geometry of a grid imposes order.

4
Carlo Carrà, *parole in libertà* ("free-wordcomposition",) 1914. The Futurist poets believed that the use of different sizes, weight, and styles of type allowed them to weld painting and poetry because the intrinsic bearty of letterforms, manipulated creatively, transformed the printed page into a work of visual art.

painters and sculptors showed multiples of moving parts in many positions simultaneously. While Futurism was not directly associated with Fascism until after World War I, evidence of right-wing political ideas and the glorification of war can be found in Boccioni's *States Of Mind* of 1910-1911. (Meggs 1992, 241)

Dada
(1917 AD)

- Negative, destructive and perpetual exhibitionists who were concerned with shock, protest, and nonsense, Dada artists claim to have invented Photomontage, the technique of manipulating found photographic images to create jarring juxtaposition and chance association. (Meggs 1992, 246)

Surrealism
(1971 AD)

- Surrealism was inspired by the Freudian exploration of dreams and was launched in 1922 by Andre Breton into the intellectual ferment caused by Dadaism. The world of dreams, with its irrational juxtaposition of images, challenged the constructivist endeavor to build a new, modern geometry. (Meggs 1992, 250)
- Professing a poetic faith in man and his spirit, the world of intuition, dreams, and the unconscious realm was a way of thinking and knowing, a way of feeling, and a way of life. (Meggs 1992, 253)
- Space, color, perspective and figures are rendered in careful naturalism, but the image is an unreal dreamscape. (Meggs, 1992, 253)
- Surrealism's impact on graphic design has been diverse. It provided a poetic example of the liberation of the human spirit. It pioneered new techniques and demonstrated how fantasy and intuition would be expressed in visual terms. (Meggs 1992, 253)
- The Spanish painter Joan Miro (1893-1983) represented the abstract side of Surrealism. His paintings relied on flatly colored nongeometric, organic shapes. These shapes are sometimes referred to as biomorphic, meaning that they resemble biological organisms. His art was based on automatism. This term means "automatic action" and it refers to a painting process whereby the Abstract Surrealists entered a trancelike state, allowing the subconscious to take control of actions while engaged in the act of painting. (Meggs 1992, 253)

Constructivism
(1917 AD)

- Constructivism was devoted to the conscious organization of all forms of energy, potential and kinetic, into enduring and memorable identities and things. (Heller 1988, 98)
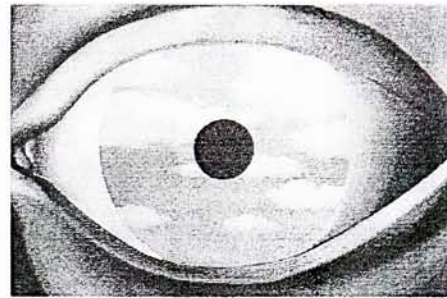
1
Hannah Hoch, *Da--dandy*, 1919. collage and photomontage. Images and materials are recycled, with both accidental chance juxtapositions and planned decisions controbuting to the creative process.

2
Rene Magritte, *The False Mirror*, 1928. The spectator is unable to reconcile the contradiction of image and space; thus, the poetry of the ambiguous haunts the observer long after seeing the painting.

3
Joan Miro, *Figure*, 1946. Sammlung Marian von Castelberg

4
El Lissitzky. *Beat the White with the Red Wedge*, 1920. Poster. Courtesy Szymon Bojko.
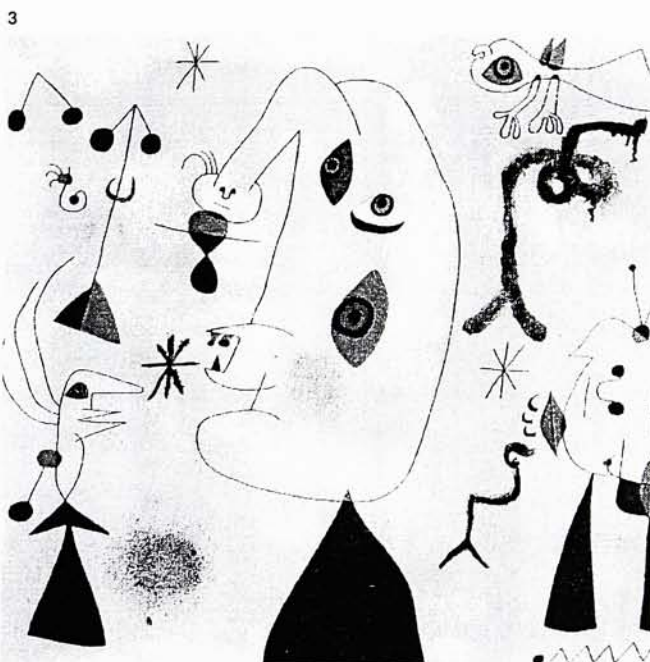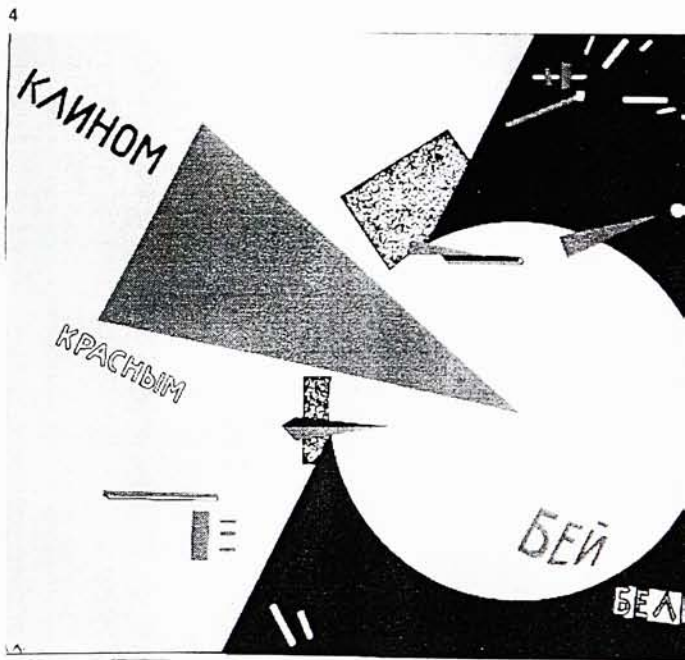
- Constructivists rejected a social or political role, believing the sole aim of art to be realizing perceptions of the world by inventive forms in space and time. (Meggs 1992, 270)
- The Constructivist El Lissitzky used the mathematical and structural properties of architecture as a basis for his art. He often constructed his designs on a dynamic axis with asymmetrical balance. He imposed the modular structure and mathematic order of a grid upon his design. (Meggs 1992, 276)

de Stijl
(1917 AD)

- All de Stijl design was based on the rectangle and the use of black, white, gray, and the primary colors. (Heller 1988, 125)
- Working in an abstract geometric style, de Stijl practitioners sought universal laws of equilibrium and harmony for art, which could then be a prototype for a new social order. (Meggs 1992, 297)
- de Stijl artists sought an expression of the mathematical structure of the universe and universal harmony of nature and brought order to the design by dividing the space into rectangles. (Meggs 1992, 284)
- Mondrian used a pure, geometric abstraction composed of horizontal and vertical lines and produced a body of paintings of incomparable spirit and form made up of primary colors (red, yellow, and blue) with neutrals (black, gray, and white), straight horizontal and vertical lines, and flat planes limited to rectangles and squares. (Meggs 1992, 280)

Bauhaus
(1917 AD)

- The architectural school of Walter Gropius, founded in Germany, 1919, it promoted a synthesis of painting, sculpture and architecture and the adaptation of science and technology to architecture. (Diamond 1992, 30)
- A communications hierarchy developed from careful analysis of content. Type and image are organized in a functional progression of size and weight from the most important information to supporting details. (Meggs 1992, 295)
- Dynamic composition with strong horizontals and verticals characterize Herbert Bayer's Bauhaus period. (Meggs 1992, 323)
- Piet Zwart designed the space as a "field of tension" brought alive by rhythmic composition, vigorous contrasts of size and weight, and a dynamic interplay between black form and white page. (Meggs 1992, 305)
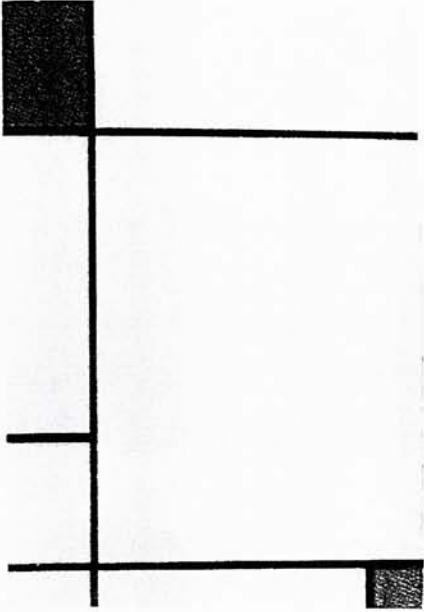
1
Piet Mondrian, *Composition in Red, Yellow, and Blue*, 1931. The search for universal harmony become the subject, and the concrete presence of painted form on convas became the vehicle for expressing a new plastic reality.
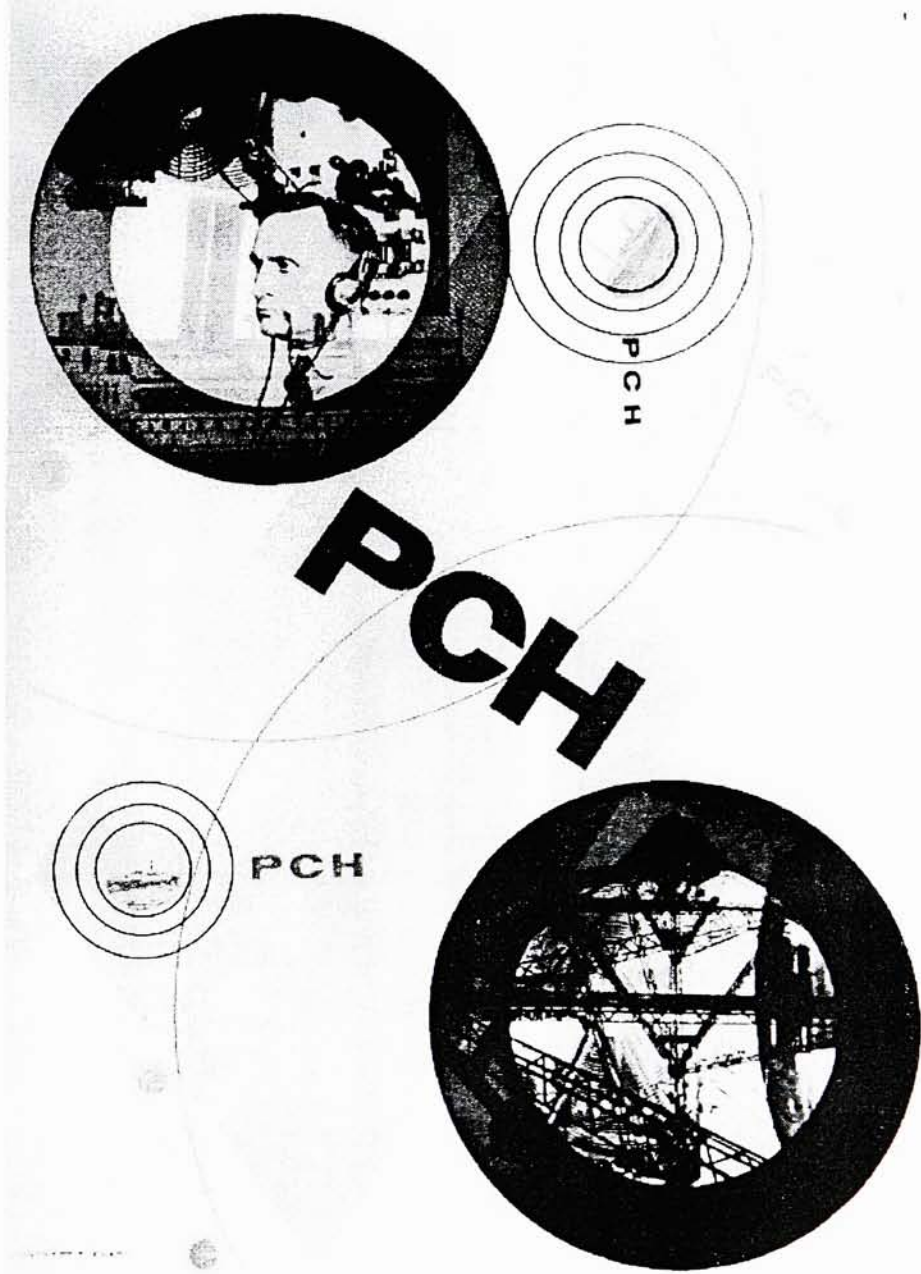
2
Piet Zwart, *PCH*, 1928. Brochure for Broadcasting Station Scheveningen announcing ship-to-shore communication. Courtesy Ex Librisn, New York.

2   **Eastern View**

Diagram of Eastern View

The Golden Mean

Confucius

Confucianism

I-Ching

Yin

Yang

Chuang-tzu

Chuang-tzu

Chinese Buddhism

Zen Sect

Taoism

Lao-tzu

Tao Teh Ching
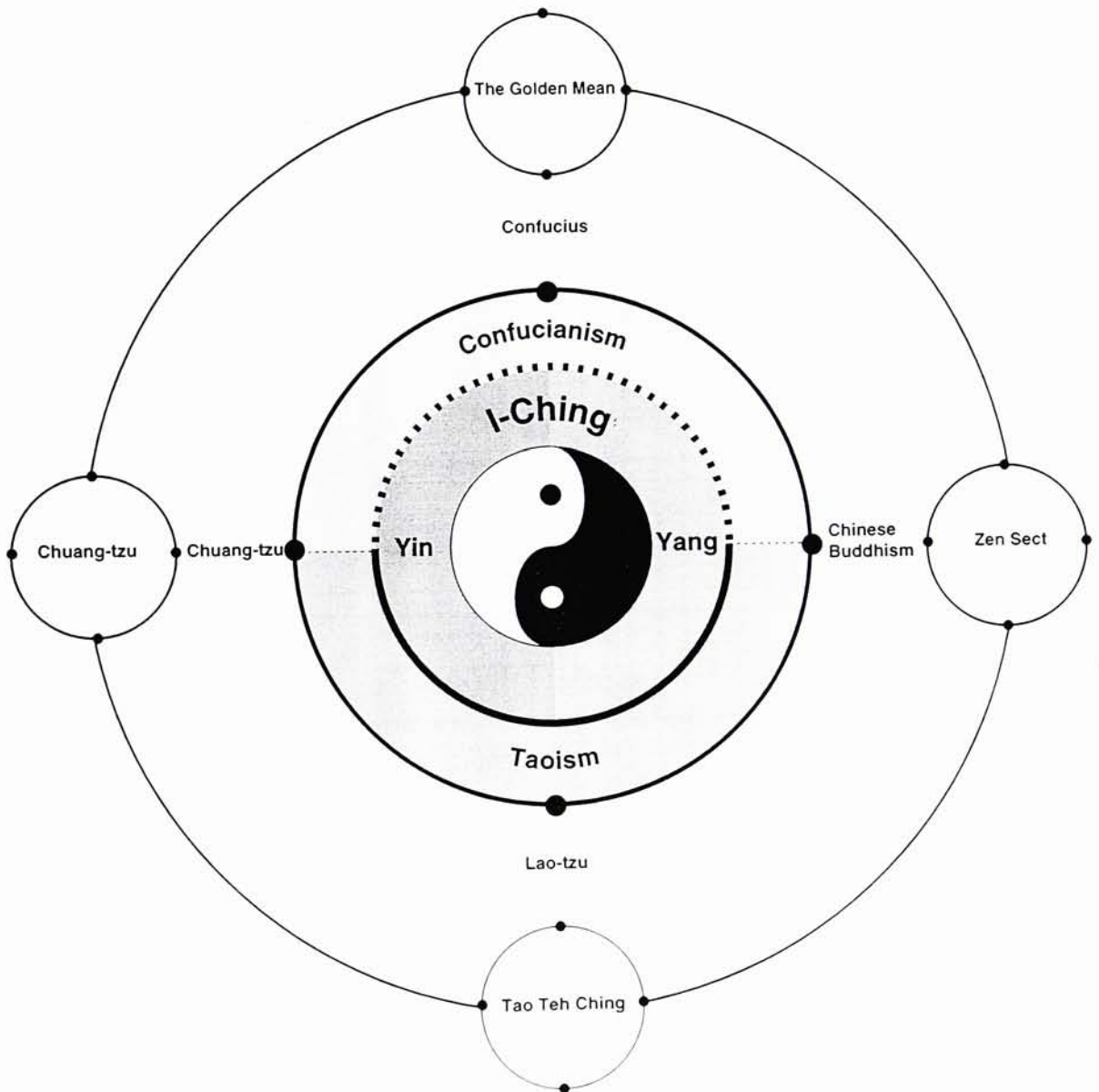
I-Ching
(1050 BC)

- The Asian philosophical concept of change is most profoundly expressed in the *I-Ching* or *Book of Changes*, written in about 500 B. C. It reiterates Buddhist and Taoist notions and was a pervasive tool among artists. The I-Ching, characterized by the character "I," is usually simplified in translation as "change." "Ching"is the unchangeable. The message is one of flux, randomness and openness to all possibilities. More elaborate definitions are found in the character combination of the sun and moon (Yin and Yang). The most literal meaning of "I" is easy, simple, understated. The emphasis in this book is to view life as simple. (Gelburd 1990, 10)

- The *I-Ching* is an oracle book as well as a philosophy. It contains 64 hexagrams made up of six broken or solid lines, with texts and commentaries. These lines symbolize the forces of action and change. The broken lines represent Yin (negative, passive, weak, docile); the solid lines Yang (positive, active, strong). The underlying concept is that the two forces are always interacting and producing changes. The one constant in life is that there will always be change. Through simplified forms we can reveal life's constant change. (Williams 1976, 150)

"Form is void and void is form.
There is no separation, the void is
a positive, generative field. Time
is the mind of space and space is
the body of time."
Richard Pousette-Dart

Confucianism

- The ethical system taught by Confucius, emphasizes ancestor worship, devotion to family and friends, and the maintenance of justice and peace. (Neufeldt 1988, 293)

**Confucian
Tradition**
(600 BC)

- The Confucian tradition defined artistic excellence through the mastery of poetry, music, calligraphy and painting. Thus no claim to artistry could be successful without a studied knowledge and highly developed ability in each of these areas. It was thought that only by such means could an individual grasp the interrelation of things and ultimately approach an understanding of universal harmony and order. (Williams 1976, 84)

Taoism

- A Chinese religion and philosophy based on the doctrines of Lao-tzu and the advocation of simplicity, selflessness, and other similar characteristics. (Neufeldt 1988, 1368)

Lao-tzu
(600 BC)

- Lao-tzu is fairly well known in the west today. Regarding reality as what we think it is instead of as what it is, Lao-tzu develops every variation of his thinking according to a relative viewpoint, the theme most brilliantly presented by his

䷀	䷹	䷝	䷲	䷸	䷜	䷳	䷁
乾	兌	離	震	巽	坎	艮	坤
Ch'ien	**Tui**	**Li**	**Chen**	**Sun**	**Kan**	**Ken**	**K'un**
Heaven; the sky.	Water collected as in a marsh or lake.	Fire, as in lightning; the sun.	Thunder.	The wind; wood.	Water, as in rain, clouds, springs, streams, and defiles; the moon.	Hills, or mountains.	The earth.
Untiring strength; power.	Pleasure; complacent satisfaction.	Brightness; elegance.	Moving, exciting power.	Flexibility; penetration.	Peril; difficulty.	Resting; the act of arresting.	Capaciousness; submission.
Horse	Goat	Pheasant	Dragon	Fowl	Swine	Dog	Ox
S.	S.E.	E.	N.E.	S.W.	W.	N.W.	N.

1

1
The table of the Eight Diagrams of Fu Hsi shows their names, the objects they represent, their attributes or virtues, their appropriate animals, and the points of the compass to which they refer.

2
Design containing the eight trigrams of the I-Ching and, in the center, the Yin-Yang symbol.

3
This Chinese character for the word *tan* (Sunrise) is designed within an imaginary grid. The nine-division square, invented by anonymous writer of the T'ang dynasty, has been employed as the most useful, because it prevents rigid symmetry and helps to achieve balanced asymmetry. At the same time it makes the writer aware of negative and positive spaces. Each part of the character touches one of the nine squares, thus achieving harmony between the two elements and the whole.

follower Chuang-tzu: "Limited by space, a frog in a well cannot understand what is an ocean; Limited by time, an insect in summer cannot understand what is ice." (Chang 1956, 4)

- In Lao-tzu's text, intangible content is called the "formless form" or the "intangible phenomenon." As vague as it seems, to grasp its reality, one need only think of a female image in a man's mind or vice verse. Similarly, one pole is self-sufficient and has its intangible opposite. The meaning as well as the vitality of "things" in biological, physical, and psychological aspects exist in the combining of a pair of obvious opposite beings, each not having the attributes of the other and each needing the other. (Chang 1956, 6)

- The basic idea of Lao-tzu's thinking is that once the point of tangible fulfillment is reached, the potential of growing is exhausted. This general point is most powerfully expressed in terms of the constituency of physical space: "Moulding clay into a vessel, we find the utility in its hollowness; Cutting doors and windows for a house, we find the utility in its empty space. Therefore the being of things is profitable, the non-being of things is serviceable." This statement in relation to architecture suggests that the immaterial, that which is likely to be overlooked, is the most useful. Void, conventionally regarded as negative, is actually more important because it is always capable of being filled by a solid. (Chang 1956, 7)

- Following the line of Lao-tzu's thinking, a void and a solid must be organically related. In this case, the positive end expected is the rectangular formation of the reference points of objects existing in physical space. Immediate perception received at a certain distance is something incomplete and has its intangible content. "Greatness means vanishing; Vanishing means distance; Distance means return of greatness." In Lao-tzu's thinking, gain and loss are always in balance. What is vanishing in space implies the increase of distance. Inversely, what is decreasing in size has the potential of becoming great. The potential of becoming great is proportional to somethings distance from us. The farther it is, the greater its potential to grow. (Chang 1956, 18)

- "The way to acquire positive is to contain negative." The full meaning of existence is beyond the power of any manifestation. What appears tangible, graphic or natural, is only a means to suggest that which is lacking in appearance and existing in man's intangible understanding and aesthetic feeling. (Chang 1956, 13)

1
Chu Ta, *Fish* of the Ch'ing dynasty, Ch'ing
dynasty (1644 to 1911.)

2
Wen Cheng-ming. Poem, Ming dynasty (1470-
1559.) The poem, filled with Taoist symbolism and
references to earlier poetry of the Han and T'ang
dynasties, was probably written for a Taoist
temple.

2

The Vacant has substance;
being is contained in non-being.
Blank space is sky;
it is water;
it is one of the most important elements in the spirit of Chinese painting.

"To see an object in space means to see it in context"
Rudolf Arnheim

"The interval invites participation, it creates riddles that involve one."
Edmund Carpenter

"Forms appear out of consciousness. In western art the picture is generally conceived as seen in a frame or through a window. But the oriental image really exists only in our mind and heart and is thence projected or reflected onto space."
Morris Graves

- Lao-tzu's idea of formation is heavily concerned with emptiness or non-existence. To him who regards nothing as persistent, what is essentially important in things is the possibility of becoming something, not the opportunity of remaining as something confronting deterioration. Consequently, meaningful incompletion is taken as the most desirable state of a tangible being. (Chang 1956, 26)

- "The greatest perfection seems imperfect, And yet its use is in exhaustible. The greatest fullness seems empty, And yet its use is endless." (Wu 1961, 65)

- "The finest has no shape." What exists in physical space could not even have temporary being without our conceptual interpretation, and what exists in our mind would have no meaning without reference to physical formation. (Chang 1956, 25)

- "Long and short will manifest each other; High and low will attract each other." Lao-tzu's idea of the relationship of things concerns the growth and change between them. This is apparent in surface quality or brightness contrast, which, as has been mentioned, has no definite being itself. It becomes a certain thing at a certain moment only by being in contrast with another thing existing either in immediate coexistence or experienced association. (Chang 1956, 31)

- "The way to weaken is to strengthen." Usually, change or interest in graphic composition depends much on the intermittent change between uniform shapes and empty spacing to give rhythm. (Chang 1956, 44)

- Throughout Lao-tzu's text we see his emphasis on the non-being because, to him, no definite being can survive change unchanged. What he is looking for is not the remaining state of things, not to be one way or the other, but to be adjustable between two extremes and thus always be in the state of intangible balance. For him, the quality of lively form is neither definitely symmetrical nor definitely asymmetrical. (Wu 1961, 33)

- "Things are the manifestation of being. Being comes from non-being." Lao-tzu never strays from his idea of insufficiency in individual things. Again and again, he tries to emphasize the organic relationship between things, not the things themselves. Obviously, in relation to our mind, the being of one thing is always made possible by the non-being of another thing. Within the dimension of time, independent ideas cannot exist concurrently unless they are generalized and become a synthetic abstraction. The meaning of a

1

Lion. A symmetrical paper cutout from Chinese with fine interplay between the negative spaces. A good example of instinctive Notan.

2

Chinese folk embroidery. A beautiful integration of birds, flowers, animals, Yin and Yang symbol and the spaces surrounding them.

3, 4, 5

Chinese folk leather cutout. The negative spaces are monotonously uniform in size and shape.
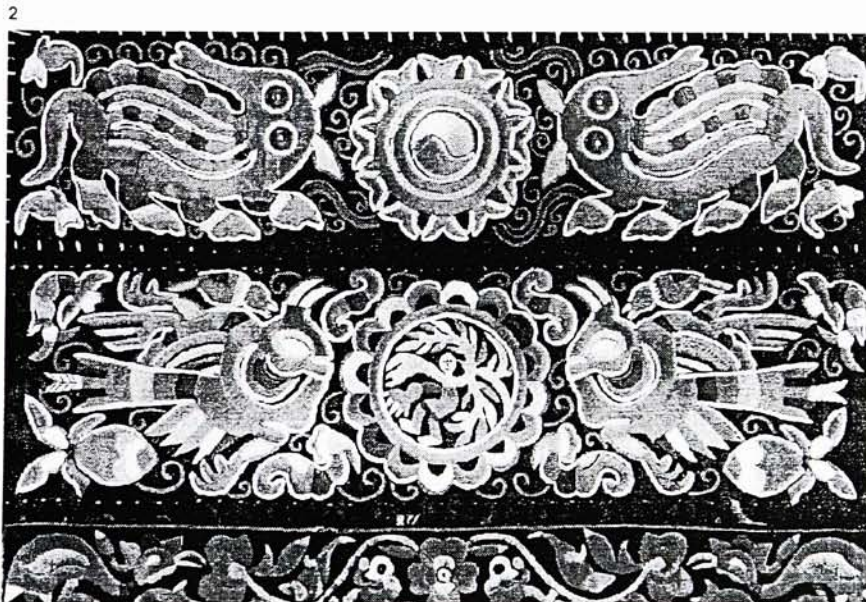
> "Let us forget things and consider only relations."
> **Gearges Braque**

> "A note of music gains significance from the silence on either side."
> **Ann Morrow Luidbery**

> "Form and void are equal, one is no more important than the other, voids are fields of energy."
> **Jane Teller**

> "Whoever listens to the dream hears silence."
> **Georges Braque**

whole and a part will concurrently exist in our mind only when we think about the relationship between them instead of about the things themselves. (Chang 1956, 6)

- "Being isolated only by the range of vision and audition, Neighboring elements achieve their unity by individuality." The most concrete and constructive point suggested by Lao-tzu in his book is his idea of social unity. Quite different from most concepts, his method of achieving unity depends on deliberate isolation. (Chang 1956, 65)

- "Thirty spokes converge upon a single hub;
  It is on the hole in the center that the use of the cart hinges.
  We make a vessel from a lump of clay;
  It is the empty space within the vessel that makes it useful.
  We make doors and windows for a room;
  But it is these empty space that make the room livable.
  Thus, while the tangible has advantages,
  It is the intangible that makes it useful." (Wu 1966, 15)

- "When all in the world understand beautys to be beautiful, then ugliness exists; when all understand goodness to be good, then evil exists." The mystic transcends this realm of intellectual concepts, and in transcending it he becomes aware of the relativity and polar relationship of all opposites. He realizes that good and bad, pleasure and pain, life and death, are not absolute experiences belonging to different categories, but are merely two sides of the same reality; extreme parts of a single whole. The awareness that all opposites are polar, and thus a unity, is seen as one of the highest aims of man in the spiritual traditions of the East. (Yu 1988, 19)

- The leaving of blank space is an art within Chinese painting. Although these spaces have not been touched by brush or ink, they are not be considered a "hole," or unfinished portions of the painting. They are rather, integral and important parts of the painting as a whole. It could be said that the practice of leaving blank space is the translation of Lao-tzu's philosophy of "non-action which leaves nothing unacted" into the field of esthetics. In other words, the leaving of blank space within a painting does not indicate a lack of representation; on the contrary, it has an active and positive role to play within the composition. Call it "non-action," yet it "leave nothing unacted"; this "non-being" incudes the unlimited possibilities of "being." (Chuang 1989, 50)

Tao Teh Ching
- Tao Teh Ching captured the essence of Taoism the void and the balance of opposites. It denotes the natural state of
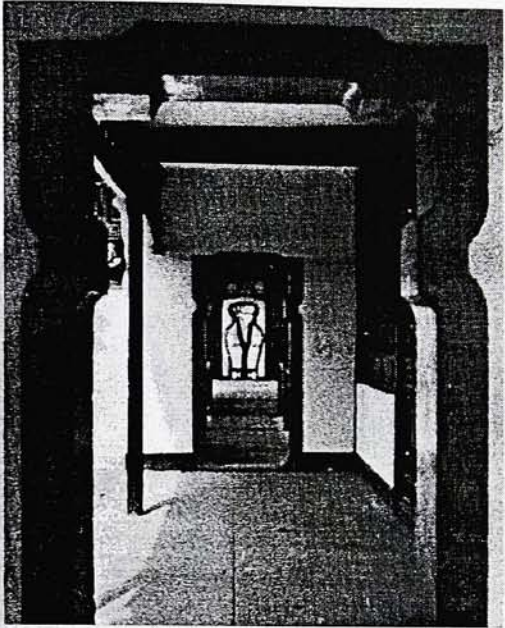
1
Three doors in a recently restored garden, Nanking. The line-up of doorways leads the eye through to the lake and garden beyond. The vase shape at the end is a visual pun: the Chinese word for 'vase', *p'ing*, sounds just like the word for 'peace'.

2
Round window with flower pattern, Suchow.

3
Leng Mei, *Ladies in a garden pavilion playing chess*, (18th century.) The door is petal-shaped, emphasising feminine grace. Nation Palace Museum, Taiwan.

viewing, simplicity, purity, and infinite potentiality. (Yu 1988, 10)

Chuang-tzu

- The central theme of the Chuang-tzu may be summed up in a single word: freedom. Essentially, all the philosophers of ancient China addressed themselves to this same problem: how is man to live in a world dominated by chaos, suffering, and absurdity? Chuang-tzu's answer to the question is: free yourself from the world. (Lo 1987, 12)

- "Non-action does not mean doing nothing and keeping silent. Let everything be allowed to do what it naturally does, so that its nature will be satisfied." (Capra 1975, 117)

- The men of old, while the chaotic condition was yet undeveloped, shared the placid tranquillity which belonged to the whole world. At that time the Yin and Yang were harmonious and still; their resting and movement proceeded without any disturbance; the four seasons had their definite times; not a single thing received any injury, and no living being came to a premature end. Men might be possessed of the faculty of knowledge, but they had no occasion for its use. This was what is called the state of perfect unity. At this time, there was no action on the part of anyone---but a constant manifestation of spontaneity. (Capra 1975, 117)

- The sayings, "Shall we not follow and honor the right and have nothing to do with the wrong?" and "Shall we not follow and honor those who secure good government and have nothing to do with those who produce disorder?" show a want of acquaintance with the principles of Heaven and Earth and with the different qualities of things. It is like following and honoring Heaven and taking no account of Earth; it is like following and honoring the yin and taking no account of the yang. It is clear that such a course cannot be pursued. (Chuang 1964, 17)

- "The 'this' is also 'that'. The 'that' is also 'this'..... That the 'that' and the 'this' cease to be opposites is the very essence of Tao. Only this essence, and axis, as it were, is the centre of the circle responding to the endless changes." (Lo 1987, 218)

Zen

- The Zen mind can never be wiped clean, for it always reflects, though it possesses nothing. In the Buddhist temples, the stupa outside represents the center of the universe. The interaction between form and space is important for Zen. (Cahill 1978, 79)

1
Sun pattern handkerchief from China. Batik.

2
Mandala

Man I Must Remake Himself

Within the Eternity of His Own Body

3
Festival design. The central motif is the whirling swastika sometimes called the "wheel of heaven." Around it are the four cardinal points of direction which in turn symbolize the four elements of air, fire, earth, and water.

4
Chinese gate gods. Drawing. The gate gods Ch'in ch'iung and Yuchih Chingte were T'ang dynasty (618-907) generals whom the emperor T'ai Tsung, fallen ill and frightened by ghostly howls and wails, ordered to stand guard outside his sickroom They are popularly called White Face and Black Face.

Zen Painting

(906 AD)

- "Zen Buddhist painting was characterized by its abbreviated, abstract forms. It was felt by Zen painters that spiritual enlightenment could best be achieved through a spontaneous and intuitive response to nature, rather than through a carefully studied one. Mu Chi's *Six Persimmons* illustrates this approach in its extremely simple treatment of its subject, capturing its essence without descriptive detail." (Jones 1992, 217)
- The Zen artist conveys a stronger sense of swiftness and vigor, working chiefly in simple washes and broad, scratch strokes made with a straw brush. Drawing in line is reduced to minimal indications: trunks of trees, roofs of houses, a few fishermen in boats. It is the wonder of the painting that a convincing impression of light and shade, mist and space, is created with these simple means. The Zen painter's awareness of a single reality underlying the seemingly disjunct phenomena of nature is communicated with the same immediacy as the truths of the Zen doctrine, which cannot be conveyed by translating them into the intellectual concepts of ordinary discourse and expecting the listener to translate them back into something like the original impulse. The Zen artist typically defines his subject only at a few key points, leaving the rest ambiguous, suggestive rather than descriptive. The viewer completes the image, as the Zen novice pieces out by intuition the cryptic utterances of the master. (Sulivan 1984, 196)

Yin & Yang

- "Yin-Yang refers to the complementary nature of pairs of dualities; in western language these opposites could be man/woman, active/passive, day/night, black/white, up/down. In Asian thought these dualities collapse and lead to cooperation rather the competition." (Gelburd 1990, 12)
- The concept of Yin -Yang is operative in the new subject/object relationship. Pondering Yin-Yang leads to a reconsideration of the relationship between matter and spirit or essential nature. Matter is seen as the visible carrier of the spirit. Matter is conceived of in an Einsteinian relativistic state. Therefore, the subject of the object of the work of art is essence or "-ness"..the life quality, the Chinese "chi." Within a world view made up of assimilated Far Eastern conceptions subject, object, and working method become "spontaneity." (Gelburd 1990, 32)

1
Mu Ch'i, *Six Persimmons*, c. 1269. Ink on paper. 14¹/₄ x 17⁵/₁₆"

2
Liang K'ai, *Li Po Chanting a Poem*, Commission for the Protection of Cultural Properties, Tokyo.

2

3

Perceptual Psychology's View

Diagram of Perceptual Psychology's View

Impossible Figure

Depth Perception

Proximity

Figure Ground

Constancy

Closure

Gestalt

Continuity

Illusory Space

Zeigarnik Effect

Similarity

Anamorphosis

Ambiguous Figure

Perception

- "Perception is a decision--making process involving the act of classifying. In order to perceive something in a meaningful way, a person must be able to relate it to an existing category within his memory bank." (Zakia 1980, 62)

- "The human visual apparatus functions on the basis of coordinated binocular, or 'stereoscopic' vision. The eyes look in the same direction at any given time, and the brain combines the two resulting two-dimensional images, which differ because the eyes are differently located, into a single spatial impression. Space perception derives from the fact that the eyes, being on the average 65mm (approximately 2 $^9/_{16}$ inches) apart, record an image from two different perspectives. because of the relatively small base, as the distance between the pupils is called, spatially well differentiated depth perception ranges from approximately 25 cm to 50m (10 inches to 160 feet). All spatial impressions beyond this range are based on estimates founded on past experience. Our visual environment is made up of what we want to see in it, not what it actually contains." (Weber 1980, 10)

- In the eighteenth century, Bishop Berkeley's "New Theory of Vision" posed questions about how ideas are formed or how the sense for space, distance, size and the solidity of objects is formed. Berkeley's theoretical concept the "Muscle Movement Theory of Visual Space," is presented by Julian Hochberg in Perception (1964): "The most influential theory of space perception in Western thought has been that distance is not a direct visual sensation at all. Instead the empiricist theory maintains, when the retinal image of some objects brings to mind the memories of the grasping or walking motions that have been made in the past in order to reach that object, those memories provide the ideal of 'distance'." (Wallschlaeger 1992, 306)

- "A more recent theoretical approach to space perception was presented by Kurt Koffka in 1935. Gestaltist Koffka explained space perception as a whole pattern composed of interacting forces rather than separate parts or characteristics. Similarly, in 1950 James J. Gibson theorized that retinal stimulation from the environment is not point-to-point stimulation but is the result of relational patterns and grouping of images on the retinal surface." (Wallschlaeger 1992, 307)

Gestalt

- In Gestalt psychology the integrated structures or patterns that make up all experience have specific properties which

1

Range of head and eye movement in the vertical

2

Visual field in horizontal plane

3

Visual field in vertical plane

can neither be derived from the elements of the whole nor considered simply as the sum of these elements.

- "The Gestalt movement began in Germany in the 1920s. Gestalt theory is concerned with issues in visual perception, memory and association, thinking and learning, social psychology, and the psychology art. The Gestalt theory regarding figure perception evolved from the study of perceptual organization problems and generated a series of experiments and demonstration involving perceptual phenomena. The primary aim of the Gestalt psychologists' research was to analyze and define the way humans perceive. The emphasis of the research dealt with the configural aspects of perception in order to understand how and why configurations of form are perceived differently parts. The tendency to perceive shapes and forms is verified by studies of Gestalt psychologists Max Wertheimer, Wolfgang Köhler, and Kurt Koffka." (Wallschlaeger 1992, 337)

- "The Gestalt constitutes a clearly recognizable entity, which is structured, self-contained and distinct. The entity is different from the sum of its individual elements." (Weber 1980, 16)

- "To work with gestalt principles in visual imagery is to deal with basic human response, a natural visual activity of the human organism." (Berryman 1990, 8)

- "The Gestalt laws are important to conceptualize, for if a designer knows how a person most probably organizes or groups visual elements when looking at images, he can then arrange the elements to favor or disfavor certain groupings." (Zakia 1979, 32)

- "Gestalt theory teaches us that, by classifying and grouping, our visual perception system constantly strives to simplify the recognition and understanding of our surroundings, so that we can more easily orient ourselves in them." (Weber 1980, 147)

- "Gestalt visual principles have long been used to analyze images. Most fine arts have been considered from other viewpoints with rather mystical 'esthetic' judgments. Gestalt principles give us the opportunity to evaluate the end effectiveness of visual imagery. Designers should thoroughly learn Gestalt perceptual psychology and experiment with its exciting forms." (Berryman1990, 8)

Figure-Ground
- "In 1914, the Danish psychologist, Rubin, studied visual perception in terms of two basic components, figure and ground. Long before that, artists were making playful appli-

"To make something simple is difficult."
    Richard D. Zakia

1
Jeffrey Keyton, *Choose or Lose*, Flyer. The flag as a whole is different from the sum of the visual elements.

2
"Escher in Italy," copperplate etching, 1987, reveals a hidden portrait of the Dutch master M.C. Escher, who lived in Italy for many years.

3
Runyan Hinsche Assoc for Central Admixture Pharmaceutical Services. This logo shows the entity is different from the sum of its individual elements.

4
M Plus M Incorporated for Okinawa Aquarium.

5
The first thing you saw was a pair of 'X's, since this would require the fewest interruption. Harder to see are the 'W,' 'M,' and 'V,' since they require more interruptions.

cations of this perceptual experience. Discriminating figure from ground involves the process of selective attention. That which attracts your attention emerges as figure and that which does not remains as ground. At different times, what is seen as figure may change. This depends on what in the visual field has the greatest organizational strength due to association from memory." (Zakia 1980, 134)

- "The most significant insight of Gestalt theory is its distinction between figure and ground. From the first moment we look at a scene or a picture, we instinctively select one object to serve as figure, with the rest of the scene becoming the background. The time required for this selection is only 1/100 of a second. This initial phase of perception thus defines the difference between the figure (which seems more important to us) and the background (which seems less important)." (Weber 1980, 16)

- The differentiation between figure and ground is subject to the following factors:
"1. Even though the figure and ground are in the same physical plane, the figure often appears nearer to the observer.
2. Figure and ground cannot be seen simultaneously, but can be seen sequentially.
3. Figure usually occupies an area smaller than does ground.
4. Figure is seen as having contour; ground is not.
5. Figure is seen as having shape or form quality; ground is not." (Zakia 1979, 19)

- "Whenever we look at something, that which we see as an object is called figure and is always seen against some background. The first step in perception is distinguishing figure from ground. Sometimes it is easy to see figure against ground. Sometimes it is not." (Zakia 1979, 19)

Ambiguous Figure

- "It is impossible to perceive both figure and ground simultaneously; they can only be seen alternately. How can this phenomenon be explained? Gestalt psychologists are of the opinion that our visual perception system identifies objects on the basis of their contours. But a contour line can delineate both the area or figure to its left as well as the one to its right. Since in this case both solutions are possible, and both appear logical and simple, the figure-ground relationship reverses itself. An ambiguous figure-ground relationship exists when ever several perceptual possibilities have equal certain attraction, they lack impact." (Weber 1980, 21)

2

3

4

5

6

1
The contour is common to both figure and ground.

2
M. C. Escher, *Fish and Scales*, July 1959. Woodcut.

3
Rickabaugh Graphics for The Beckett Paper Co., a subsidiary of the International Paper Company. Its's an interesting use of positive and negative shapes.

4
Knape & Knape for Texas Commission on Alcohol and Drug Abuse. The negative shape cut out of the five hands creates a cute star shape.

5
Logo of Grandper' and Whaley, a design company. The contour line between hand and eye can delineate both figures.

6
Logo of Grafik & design Christian Stecher.

7
A halftone screen in which small dot areas, whether black or white, are seen as figure.

7
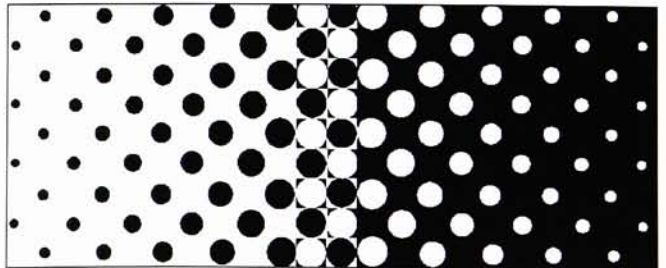
- "Ambiguous figures are images created in such a way that they can represent two different figures or a single figure. These figures are sometimes referred to as fluctuating, reversible, or equivocal figures. Figures within the ambiguous image share the same contour line. That is, the contour line is functioning for both figures and tends to confuse the perception of what is actually being enclosed as the dominant figure. Since ambiguous figures and their contours function for more than one figure, the eye and brain have difficulty assigning the contour to one figure over another; therefore fluctuation takes place between the two figures." (Wallschlaeger 1992, 349)

Impossible Figure

- "Impossible figure conveys two sets of contradictory spatial cues that cause the brain to make conflicting spatial interpretations. The perceptions are contradictory because they are based on what are seen as impossible connections between the linear members of a single form and what is know to be possible from learned perceptions. An understanding of these figures can help determine inaccuracies in other forms or drawing, and can be used to design visual puns or riddles." (Wallschlaeger 1992, 354)

THES PACEB ETWE ENWO RDI SIMP ORT ANT

The space between word
is important

Proximity

- "Apply the Gestalt law of proximity to the arrangements of things you design and you can encourage people to see the relationships you want them to see. For the most part they will be unaware of how you arranged the visual elements since spatial and temporal proximity are a natural way for us to group things. When things are experienced as grouped, we see the whole and not the individual elements that make up the whole." (Zakia 1979, 39)
- "The closer two or more visual elements are, the greater is the probability that they will be seen as a group or pattern." (Zakia 1979,32)

Closure

- "The figure law of closure is related to visual continuity; that is, a shape with a broken or discontinuous contour is perceived as a whole figure. The law is based on the inclination of the viewer to perceive an incomplete figure as complete. In other words, if a viewer sees an incomplete square, the law of closure asserts that there is a pattern in the brain that completes the square." (Wallschlaeger 1992, 341)
- "Nearly complete familiar lines and shapes are more readily seen as complete (closed) than incomplete." (Zakia 1979, 66)
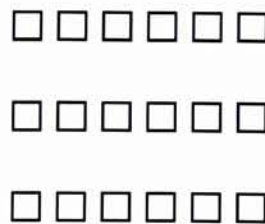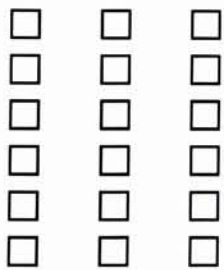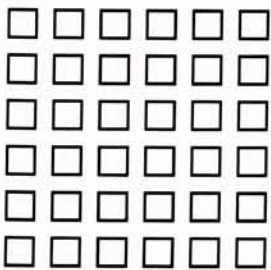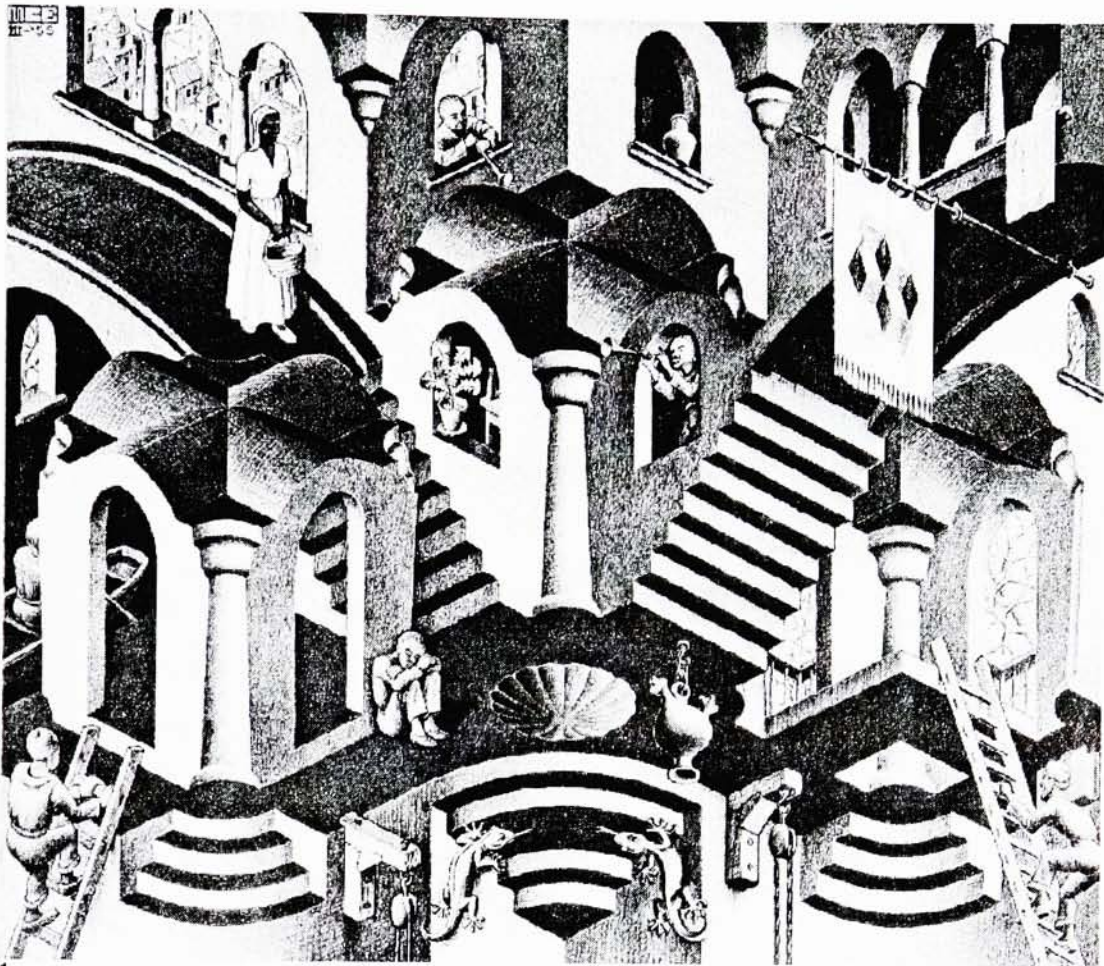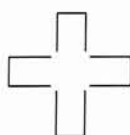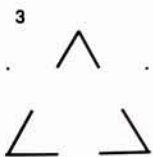
1
M. C. Escher, *Convex and Concave*,
March 1955. Lithograph.

2
Organization of visual elements
according to the law of proximity.

3
Organization of visual elements
according to the law of closure.

4
Continuity

- "The Gestalt principle of closure states that nearly complete familiar lines and shapes tend to be perceived and remembered as being more nearly complete." (Zakia 1980, 166)
- "Visual shapes and forms may be open or closed, incomplete or complete. If the visual elements of an open or incomplete stimulus are properly positioned and oriented, there is a perceptual tendency to group these elements into a more stable form." (Zakia 1980, 166)
- "The concept of closure is important to every human experience. If the viewer is not allowed to complete things, he can become frustrated and lose interest. On the other hand, it has been shown that completed and incomplete tasks are retained differently in memory. The incomplete tasks tend to set up a tension that facilitates memory for them. Once the task is completed, the tension is released and the tendency to remember it is lessened. In psychology, this is called the Zeigarnik Effect." (Zakia 1980, 166)

Similarity
- "Parts of a picture that are located closely together or that resemble each other tend to be perceived as a unified figure. How did this come about? The closer individual picture elements are located to each other, the more readily they will be grouped into a figure." (Weber 1980, 21)
- "Visual elements that are similar (in shape, size, color, etc.) tend to be seen as related. When we see things that are related we naturally group them and therefore see them as patterns." (Zakia 1979, 47)

Continuity
- "Visual elements that require the fewest number of interruptions will be grouped to form continuous straight or curved lines." (Zakia 1979, 59)
- "One of the Gestalt laws of organization, which predicts that the visual elements requiring the fewest number of interruptions will most likely be grouped to form continuous straight or curved lines." (Zakia 1980, 168)
- "Organization in perception leads the eye to continue along and beyond a straight line or curve." (Berryman 1990, 9)

Zeigarnik Effect
- "The tendency for some people to remember more effectively a task which is interrupted and not completed, than one which is completed." (Zakia 1980, 310)

1
Bob Barrie, Consumer Magazine for Jim Bean Brands Co.Organization of visual elements according to the law of continuity.
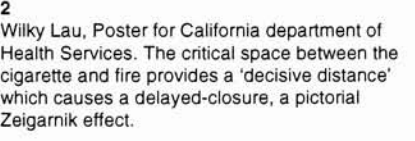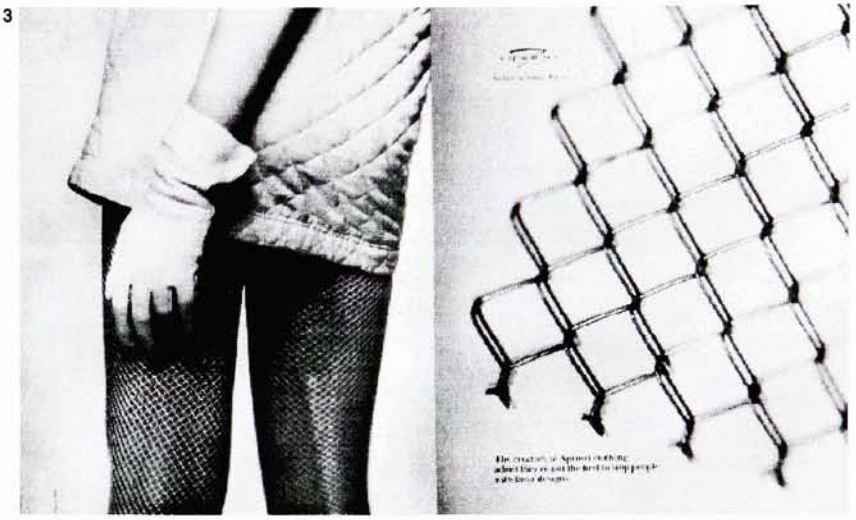
2
Wilky Lau, Poster for California department of Health Services. The critical space between the cigarette and fire provides a 'decisive distance' which causes a delayed-closure, a pictorial Zeigarnik effect.
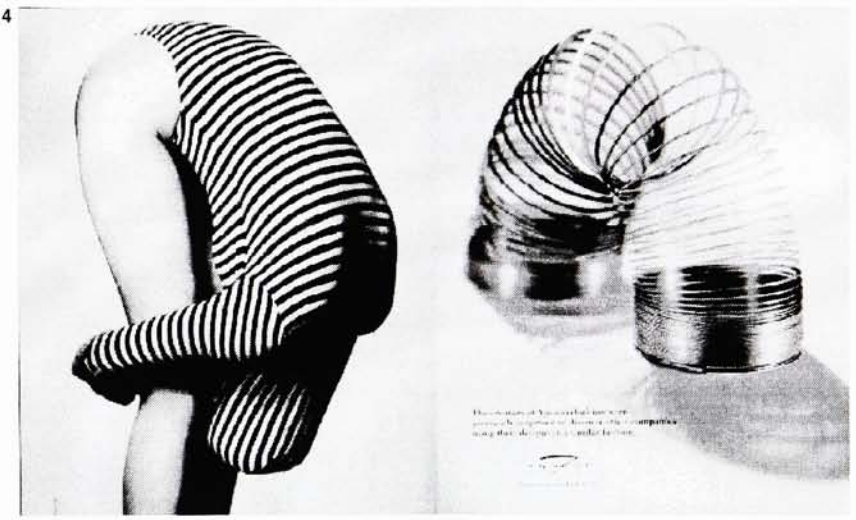
3, 4, 5
Ellen Steinberg, Consumer Magazine Campaign. Organization of visual elements according to the law of similarity.

Depth Perception & Constancy	▪ "Generally, basic visual studies concentrate on the two-dimensional depth cues that relate to the creation of depth on the picture plane. In contrast, researchers in the area of perception psychology study depth perception because it is descriptive of the viewer's visual experience of space, depth, and distance within the environment. An oversimplified explanation of the concept of constancy is that past experiences of the viewer will influence what is perceived, since viewers often tend to see what they expect to see rather than what is actually there." (Wallschlaeger 1992, 307)
Illusory Space	▪ "Forms are considered flat when they have no apparent thickness. Flat forms in illusory space are like forms made of thin sheets of paper, metal, or other materials. Their frontal views are the fullest, occupying the largest area. Their oblique views are narrowed, and occupy less area. The following are some common ways flat forms can be used in illusory space:
	a) Overlapping: When one form overlaps another, it is seen as being in front of or above the other. The flat forms may have no appreciable thickness at all, but if overlapping occurs, one of the two forms must have some diversion from the picture plane, however slight the diversion may be.
	b) Change in size: Increase in size of a form suggests that it is getting nearer, whereas decrease in its size suggests that it is farther away. The greater the range of change in size present in the design, the deeper is the illusion of spatial depth.
	c) Change in color: On a white back-ground, darker colors stand out much more than lighter colors, thus appearing closer to our eyes. On a very dark background, the reverse is true. If both warm and cool colors are present in a design, generally the warm colors appear to advance whereas the cool ones recede.
	d) Change in texture: Coarser textures normally appear closer to our eyes than finer textures.
	e) Change in view: A form is in full frontal view when it is parallel to the picture plane. If it is not parallel to the picture plane, we can only see it from a slanting angle. Change in view is a result of spatial rotation, creating illusory space though not a very deep one.
	f) Curving or bending: Flat forms can be curved or bent to suggest illusory space. Curving or bending changes their absolute frontality and reflects their diversion from the picture plane.

2

The Spatial Experience
Ya-Li Hsu

The Western View

Designer's View

Perceptual View

1
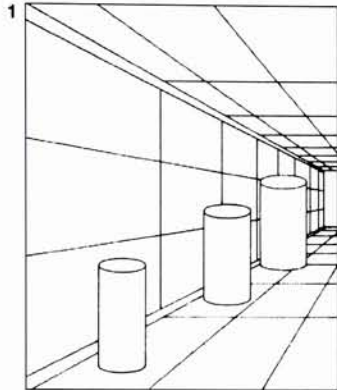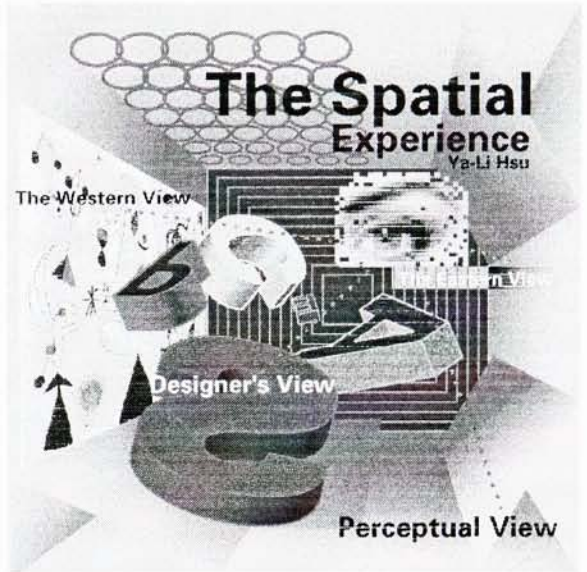
3 a

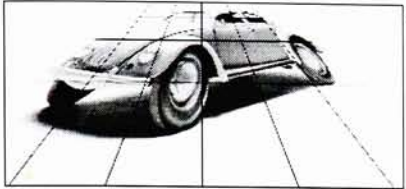**b**

c

d

e

f

g

1, 2
Depth perception & Constancy

3
Illusory Space

49

g) Addition of shadow: The addition of a shadow to a form emphasizes the physical existence of the form. The shadow may be cast in front of or behind the form, linked to or detached from it." (Wong 1993, 129)
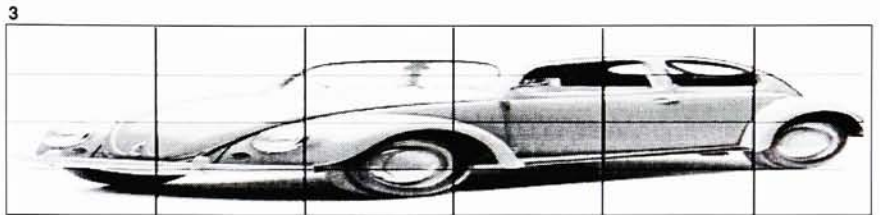
Anamorphosis
- "An image having different vertical and horizontal scales of reproduction." (Zakia 1980, 232)
- "Anamorphic images are most commonly associated with wide-screen motion pictures, whereby a wide angle of view of the original scene is squeezed onto normal width film and then unsqueezed in projection. This produces a high aspect ratio image that fills a wide screen. Occasionally the squeezed (anamorphic) image is found to be attractive as an end product with the unnatural width to height proportions of familiar objects. A few artists (e.g., El Greco) and sculptors (e.g., Giacometti) have produced effective works incorportions unusual horizontal and vertical proportions. Also, automobile advertising went through a period in which it was common practice to stretch the images to make the automobiles appear long and low." (Zakia 1980, 232)
- "Optical magnification in one direction or along only one axis. Anamorphic drawings or paintings are distorted images that may be viewed undistorted from a particular angle of view of with the use of a special instrument." (Myers 1989, 73)
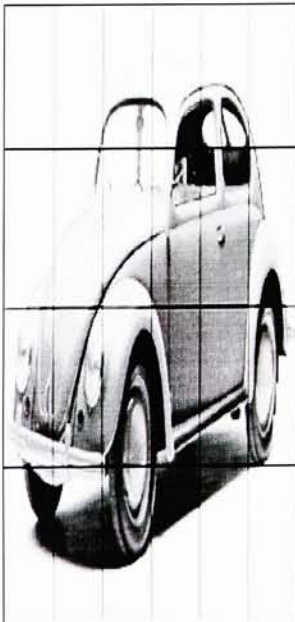
1
original image
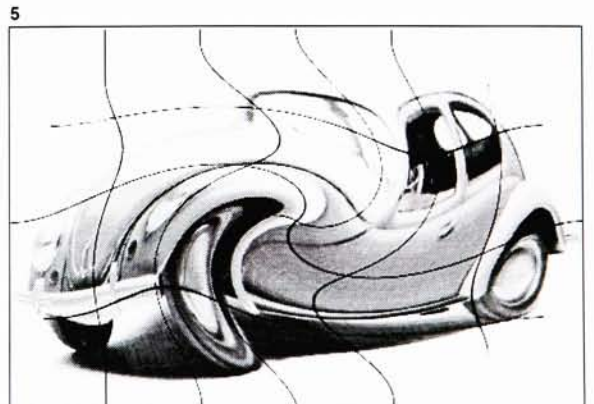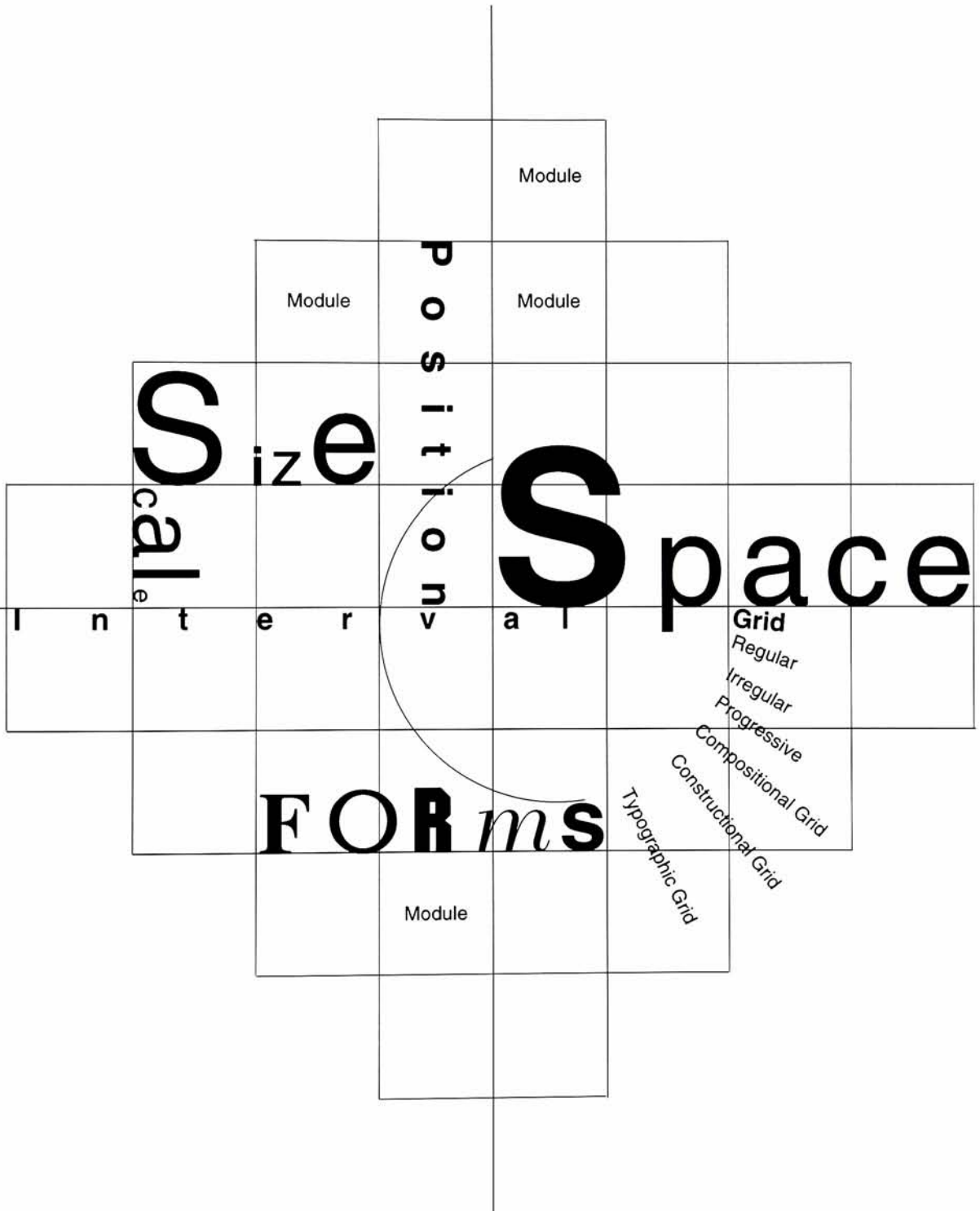
2, 3, 4, 5
Anamorphosis images
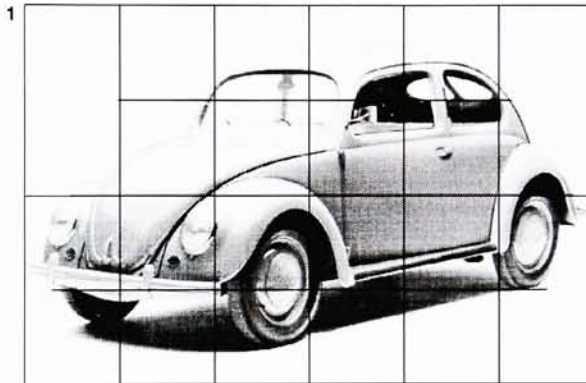
4

Designer's View

Diagram of Designer View

Module

Module

Module

Size

Position

Scale

I n t e r v a l

Space

Grid
Regular
Irregular
Progressive
Compositional Grid
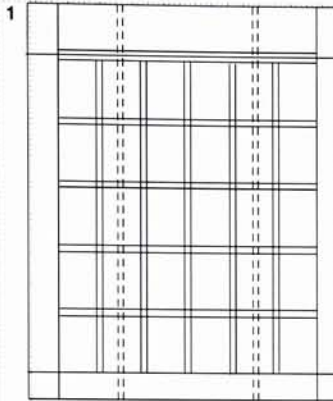Constructional Grid
Typographic Grid

FO**R**ms

Module

Space

- "Great design creates space. That is to say, elements can be used in such a way that space is occupied, consumed--or they can be used in a way that generates new space in a given environment." (Hiebert 1992, 27)

- "Space used as an integral part of design goes beyond formula because it must be conceived as an essential complement to the idea of the text or image--where space is as effective as the type or picture elements in creating the total image. Space then is not background; it is a participant defining proximities and repelling or attracting actions." (Hiebert 1992, 27)

- "We can look at two-dimensional space as stage within which characters move. They need space for their separate identities, and the control of space describes the tension and harmony among these characters. Seeing the elements as characters creates a societal analogy making the abstraction easier to understand." (Hiebert 1992, 27)

- "Space is defined by visual elements placed in the space. It helps to be aware of how the space is designed if these elements are defined in abstract terms. The most elementary language for two-dimensional image construction defines forms as dots and lines. But most imagery is inherently more complex than the language of pure dots and lines permits. The Russian painter and theoretician Wassily Kandinsky in his quest to find a systematic base for visual arts that would correspond to that for music, attempted to show that complex forms were variations on these elements. Their separate character and interrelation, he thought, was the underlying basis for graphic painting and design." (Hiebert 1992, 27)
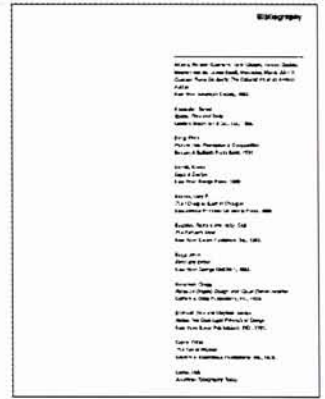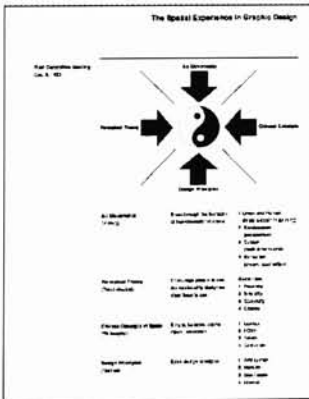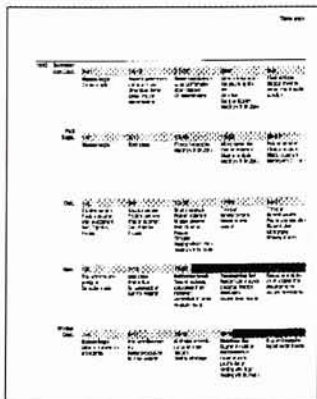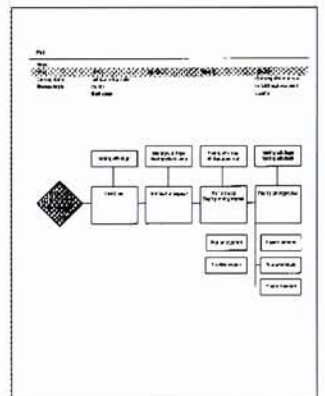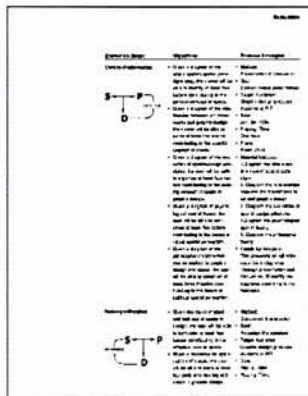
Grid

- "The grid is a measuring guide used to help ensure consistency in planning a visual message. A grid shows the type and image area dimensions, trim, and margins and is used to define constant dimensions of space. By arranging the compositional elements (images and type) within a grid, the visual message can be presented in a logical manner." Besides, an understanding of grids and proportion can be helpful in dividing space and organizing visual elements within a format. (Wallschlaeger 1992, 397)

- "The modular grid system should not be regarded merely as a convenience of for completely filling in a bunch of rectangles in a predetermined order, nor as a limitation of the designer to choice of only one or two alternate positions,
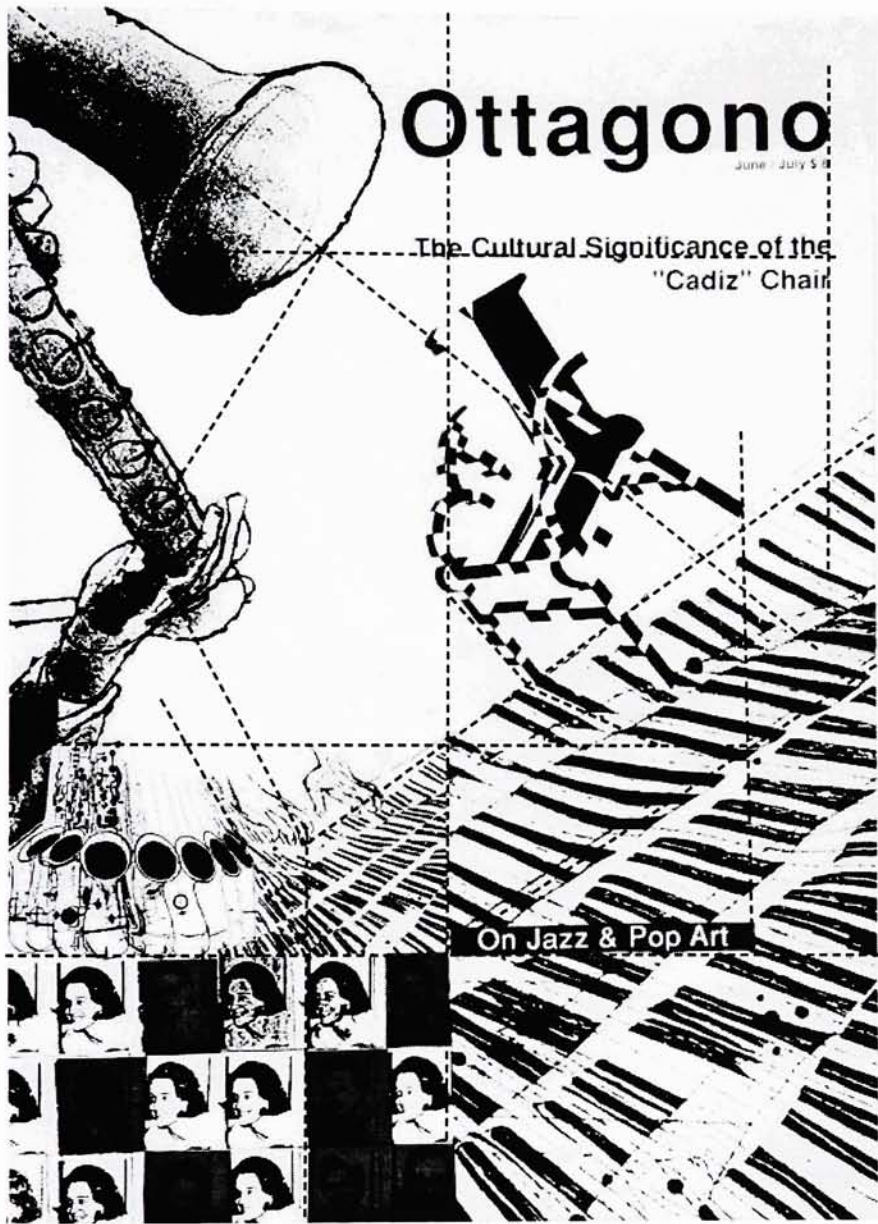
1
The modular grid

2
Actual page

1

2

rather, it is a measure which indicates many positions as well as many shapes and sizes which the elements may assume. By providing multiple choices while simultaneously serving as a built-in control, the grid enable the designer to create dynamic relationships by means of contrast, variation, scale, rhythm, repetition, sequence, and juxtaposition." (Paul Rand)

- A structural system or framework for organizing elements in a format, a grid can be conceptual or physical. It can be built upon typographic, compositional or constructional bases. It can be regular, irregular or progressive in rhythm.
- A grid (the subdivision of a space into columns, margins and spaces) establishes a framework for spacing and proportions of type and pictures in a piece. It determines the constant dimensions of space and it make work easier to give the surface or space a rational organization.
- The principles in adopting any grid for creative use can be summarized as follows: 1) "Let the grid account for the elements that are legitimately repetitive." 2) "Let it free the designer to play a game of arrangement in a spatial context." 3) "Let it be useful for bringing together disparate elements that do not easily fit together." (Hiebert 1992, 20)
- "Grids, which divide space into units through the coordinates of their vertical and horizontal lines, are an ideal solution and valuable tool in the application of a design to a diversity of objects." (Hurlburt 1981, 109)
- A suitable grid in visual design makes it easier 1) "To construct the argument objectively with the means of visual communication." 2) "To construct the text and illustrative material systematically and logically." 3) "To organize the text and illustrations in a compact arrangement with its own rhythm." 4) "To put together the visual material so that it is readily intelligible and structured with a high degree to tension." (Muller-Brockman 1981, 12)
- "Who invented the grid system and when is not known with any certainty. After the war it was used by designers like Bill, Newburg, Lohse, Vivarelli and Muller-Brockmann for prospectuses, brochures, books and exhibitions. The international periodical 'Neue Grafik,' founded in 1958 by Lohse, Muller-Brockmann, Newburg and Vivarelli, gave information about the aims and the achievements of the 'Swiss School.' It presented modern graphic design, commentaries on areas allied to graphic design and influencing it, and also the intellectual and artistic background of modern graphic design." (Muller-Brockmann 1971, 281)

Ottagono

June / July 5 a

The Cultural Significance of the
"Cadiz" Chair

On Jazz & Pop Art

1
Constructional Grid

2
Compositional Grid

Ottagono

The International Style

The Historic Significance of the "Cadiz" Chair

- "Grid systems are valuable for building 'family resemblance' into a series of visual pieces. Corporations which produce hundreds or even thousands of different products must deal effectively with unified methods of cataloguing and promoting them through brochures, sales sheets and advertising. IBM and Westinghouse, under the graphic guidance of Paul Rand, have long used grid systems to bring order to their thousands of printed pieces developed each year. He influenced the American conception of design. His graphic creations are marked by a high ethical sense of responsibility. Swiss and German graphic designers with their de Stijl / Bauhaus roots are exponents of grid design. The Japanese, with their Tatami mat modular building system, have long been grid sensitive. Most newspapers throughout the world have used grid like systems to speed layout and give a consistent appearance." (Berryman 1979, 38)
- Max Bill (b. 1908) was a Swiss architect, painter and sculptor as well as graphic, exhibition and industrial designer. In attempting to apply a purist aesthetic and impose a strict visual discipline on disparate design elements, Bill often employed modular grids and mathematical progressions in his works. (Livingston, 1992, 28)
- This group of graphic designers, artists and architects has had significant impact on functional grid theory. 1. Otl Aicher 2. Frank Ariss 3. Max Bill 4. Willy Fleckhaus 5. Jay Hambidge 6. Allen Hurlburt 7. Le Corbusier 8. Josep Muller-Brockmann 9. Paul Rand 10. Massimo Vignelli 11. Kenneth J. Hiebert. (Berryman 1990, 43)

Module
- "A standard or unit of measurement; the size of some one part taken as a unit of measure by which the proportions of a composition are regulated; repetitive units of space of mass." (Berryman 1979, 38)
- Refers to a spatial unit in any organizational method. A module may be regular or progressive.
- During the 1940s French artist and architect Le Corbusier developed "the modular," an important example of relating a system of proportion to architectural forms as a means for controlling the repetition of similar shapes.
- Massimo Vignelli is a leading exponent of modular systems in graphic and industrial design.

Interval
- "1) a space between two things; gap; distance; 2) a period of time between two points of time events, etc. intervening period;
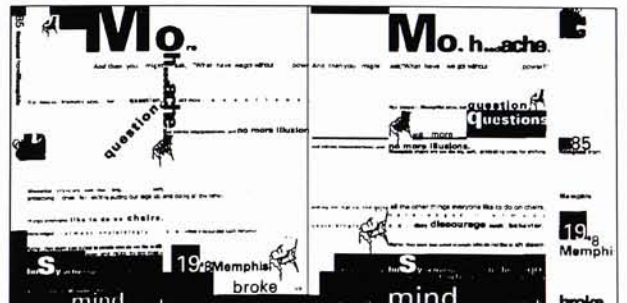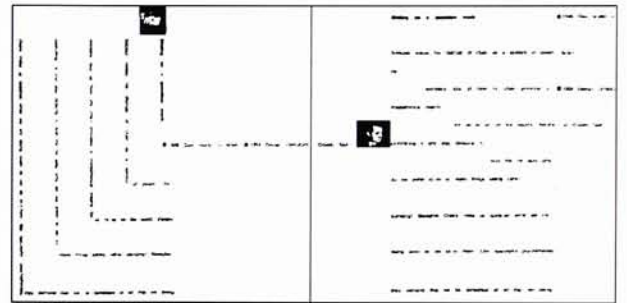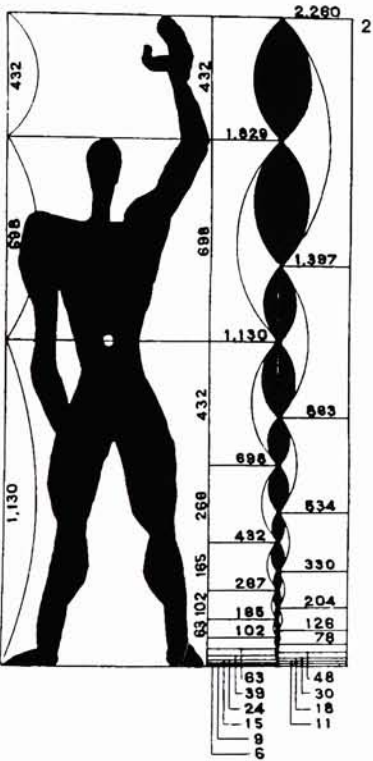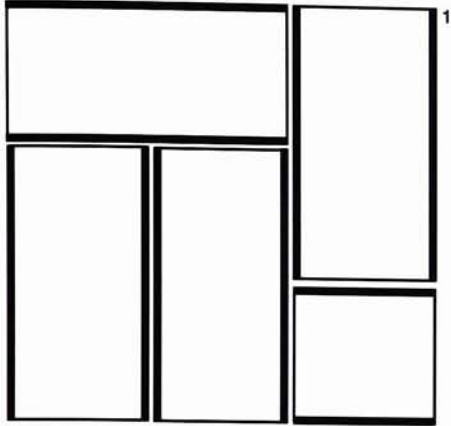
1
The Tatami, a straw mat approximately 3 by 6 feet and 2
inches thick, is the module or standard from which the plan of
the house grows.

2
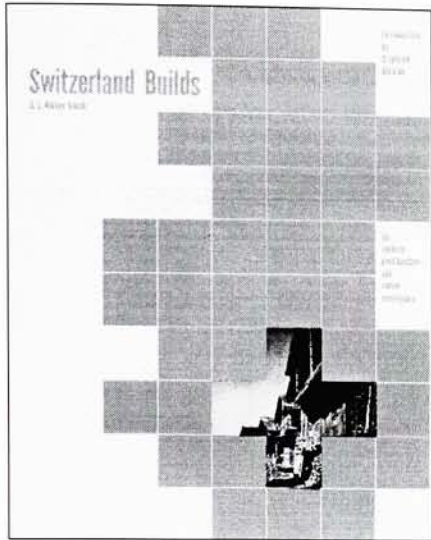Jean Petit, *Le Corbusier*, Architecte du Bonheur, Paris 1955.
Force Vives.

3
Typographic Experiment

3) the extent of difference between two qualities, conditions, etc.; 4) interval between two given numbers and including one, both, or neither end point; 5) Music the difference in pitch between two tones." (*Webster's Dictionary*)

- Rhythm and intervals control the form and the space between them in such a way that we get the most coherence with optimum amount of signal and the least amount of noise, (i.e. progressive interval.) We can develop intervals in several ways--intuitively, geometrically through a proportional grid, and regularly. Progressive, regular, and irregular intervals can also develop hybrids to control the form. Communication with intervals can be expressed as dots, type, photos, etc.

- Structure, rhythm, concept (thinking) communication using simple form to express ideas. Can layer level of interval to add complexity. Intervals use speed and frequency to communicate on a basic level.

- The sequence of intervals is important to the end communication. Example, it can be used to imply motion and can work in 2D as well as 3D.

- "The term interval refers to the spacing between elements. It includes not only space across a flat, two-dimensional surface, but also distances across three-dimensional space (a relationship between movement and time). When an element, like a line, is repeated as a pattern of equally spaced division across a surface, the result is called a periodic pattern. Periodic means recurring at regular intervals. A grid is two periodic patterns overlaid on one another, often at right angles (90 degree), like a checkerboard." (Myers 1989, 54)

- "There are several kinds of interval: 1) The simple repetitive sequence (each interval is the same) 2) Alternation (two differing intervals repeated one after the other) 3) Progression (interval grows larger or smaller in even steps, or interval grows larger or smaller based mathematical formulas)" (Myers 1989, 54)

- "Armin Hofmann (b. 1920), Swiss graphic designer and educator, evolved a design philosophy based on the elemental graphic-form language of point, line, and plane, replacing traditional pictorial ideas with a modernist aesthetic. He seeks a dynamic harmony where all the parts of design are unified. He sees the relationship of contrasting elements as the means to breathe life into visual design. These contrasts include light to dark, curved lines to straight line, form to counterform and syngamic to static, with resolution achieved when the creator brings
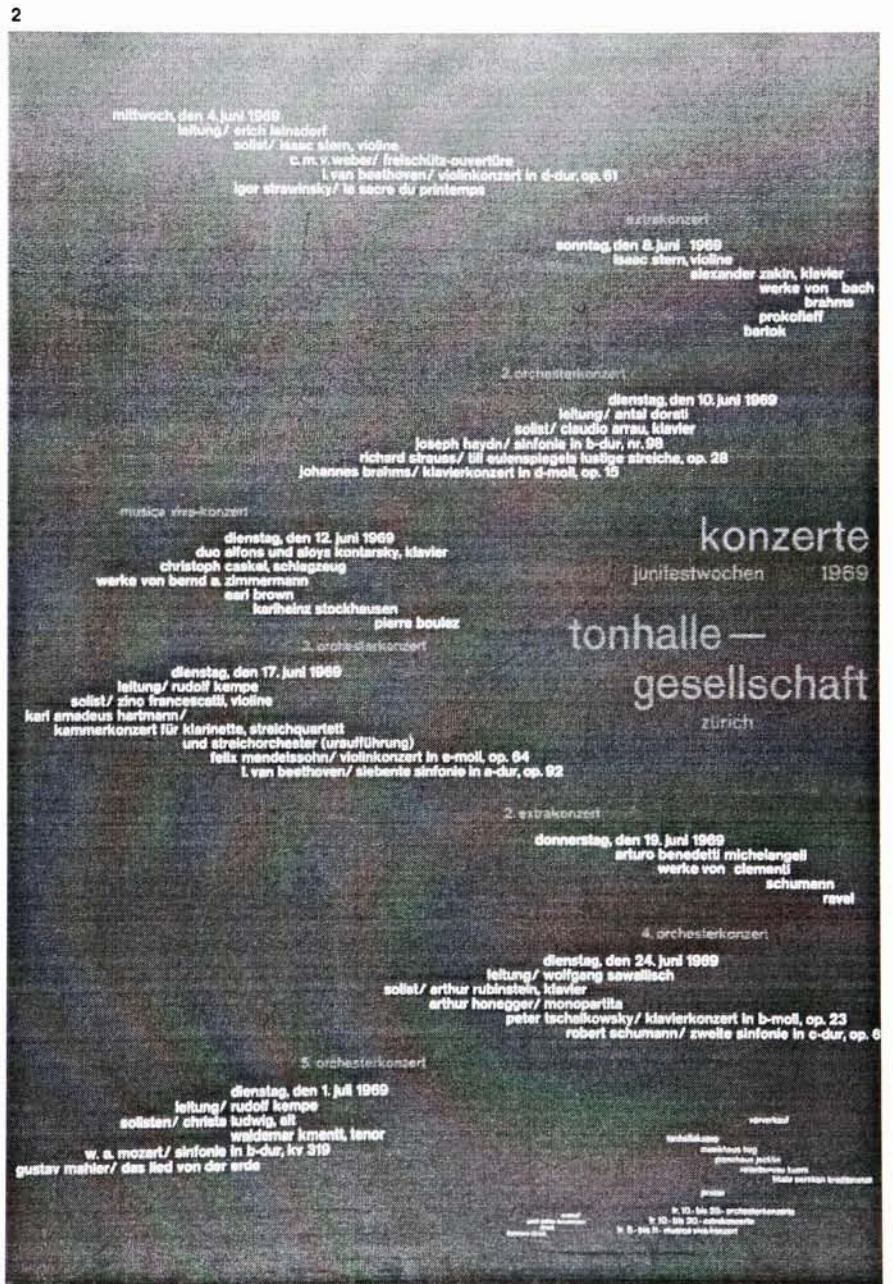
1
Paul Rand, *Albert Bonnier*, 1950. Jacket design.

2
Armin Hofmann. *Konzerte Tonhalle-gesellschaft*, 1969. Concert poster. Courtesy the designer.

the total into an absolute harmony." (Meggs 1992, 339)

Scale/Size

- Scale refers to designating or comparing relationships of a form in a particular context.
- "Among the factors to which the problem of scale is intimately related are: 1) The relation of space to volume in quantitative sense. 2) The relation of the sizes of parts to the whole picture. 3) The relation of sizes through association. Only through an understanding, integration, and control of each of these factors can we master the problem on scale." (Graham 1970, 351)
- "Visual unity in a composition results not only from the selection and arrangement of visual information, but also from its emphasis within the format. The size and shape of the format relative to the size and shape of the element or elements affect the compositional unity." (Wallschlaeger 1992, 403)
- "Scale refers to the size and dimension of figures and forms relative to a specific unit of measure. Scale can be determined in two ways: through actual measurement or through visual estimates based on comparison." (Wallschlaeger 1992, 215)
- Scale is a learned and applied relationship. Also scale is used to specify or illustrate details based on the relative sizes of objects.
- To make a layout functional, attractive and organized, size plays an important role. It is important to select type sizes and images that are easy for the intended viewer to see and read from the intended viewing distance. (Siebert 1992, 20)
- "With size you can: 1) Show which element is most important by making it the biggest. 2) Make elements come forward or recede on the page. 3) Giver the reader a sense of scale. 4) Make all elements easy to see. 5) Get a piece noticed. 6) Contrast two elements to add interest. 7) Break up space in an interesting way. 8) Make elements fit together properly in the piece. 9) Establish a consistent look throughout a brochure or newsletter." (Siebert 1992, 21)
- "The size of an element within the graphic space and its size relationship to other elements in the design are significant perceptual and communicative factors. An important consideration in the development of scale relationships is establishment of a visual hierarchy, which means a group of visual elements arranged according to emphasis. Other factors influencing visual hierarchy include value, color, position,

1
Muller-Brockmann's poster *Schutzt das Kind* (protect that Child) for the Swiss Automobile Club, 1955.

2
Ya-Li, *TV exposes children to violence*, 1993. Billboard.

and proximity. Elements become focal points in the design. Attention to their relative position in the visual hierarchy enables the designer to guide the viewer's eye as it scans the space. Competition for ascendency in the visual hierarchy can create a dynamic tension between elements." (Meggs 1992, 108)

- An approach to organizing graphic space is to transform it into a dynamic field of tension. This effect is achieved by creating taut relationships between the elements of the design and between the elements and the edges of the rectangle. Often, diagonal movements and running off the page are used to create this spatial dynamic. Extreme contrasts of size and scale can play an important role in creating this tension. (Meggs 1992, 94)

- The Dutch designer Piet Zwart (b. 1885-1977) created a synthesis from two apparently contradictory influences: the Dada movement's playful vitality and de Stijl's functionalism and formal clarity. He designed the space as a "field of tension" brought alive by rhythmic composition, vigorous contrasts of size and weight, and a dynamic interplay between black formant white page. (Meggs 1992, 94)

- The "New Dutch Graphics" poster by Cheryl A. Brzezinski uses a variety of complex graphic techniques and relationships to transform the space into a dynamic field of tension. Her work provides the viewer with a complex, multilayered experience. (Meggs 1992, 94)

- Ernst Keller taught graphics for more than three decades at the School of Arts and Crafts in Zurich. His gifts were most evident in his posters. He conceived his designs in broad areas with a pronounced sense of visual tension and a compulsive artistic logic. Both colour and form were the expression of the subject and reduced to the minimum. He drew letters in his own hand and seldom made use of print. (Muller-Brockmann 1971, 265)

Forms

- Forms stand for the spatial nature of the external and internal world, of the objects and interspaces that make up the micro-and macrocosmos. It consists in configuration, however definite or indefinite it may be. And in Size, which may in turn consist of Zero, one, two or three dimensions: of point, line, plane, solid--the objects of all geometry. (Gerstner 1986, 26)

- "Form is generally seen as occupying space, but it can also be seen as blank space surrounded by occupied space.
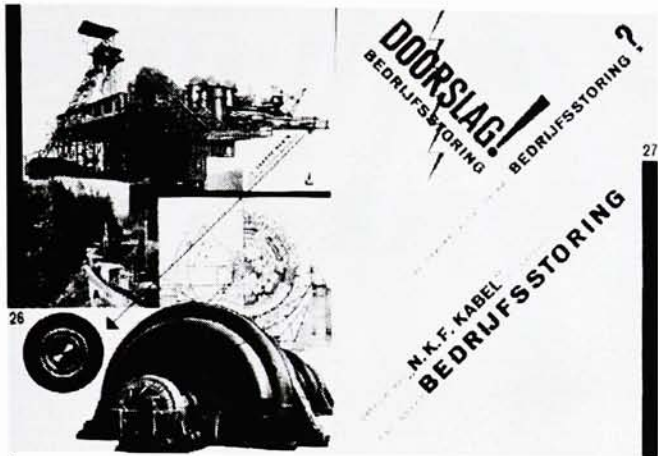
1
Piet Zwart, In pages 26 and 27 from his 1928 catalog for the NKF cableworks, four photographs and a cross-section diagram are combined on the left-hand page with dynamic scale and spatial contrasts. A red arrow slashing across the page runs from the cable on a large industrial crane to a cross-sectional photograph of the cable. This arrow echoes the diagonal movement of type on the right-hand page, where a dynamic composition of red and black type moving at angles and open white spaces provides a lively contrast to the complexity of the montage page.

2
Cheryl A. Brzezinski, "*New Dutch Graphics*" poster uses a variety of complex graphic techniques and relationships to transform the space into a dynamic field of tension.

3
Ernst Keller, exhibition poster, 1931. Dynamic diagonals and a constructed geometric image effectively express modern architecture.
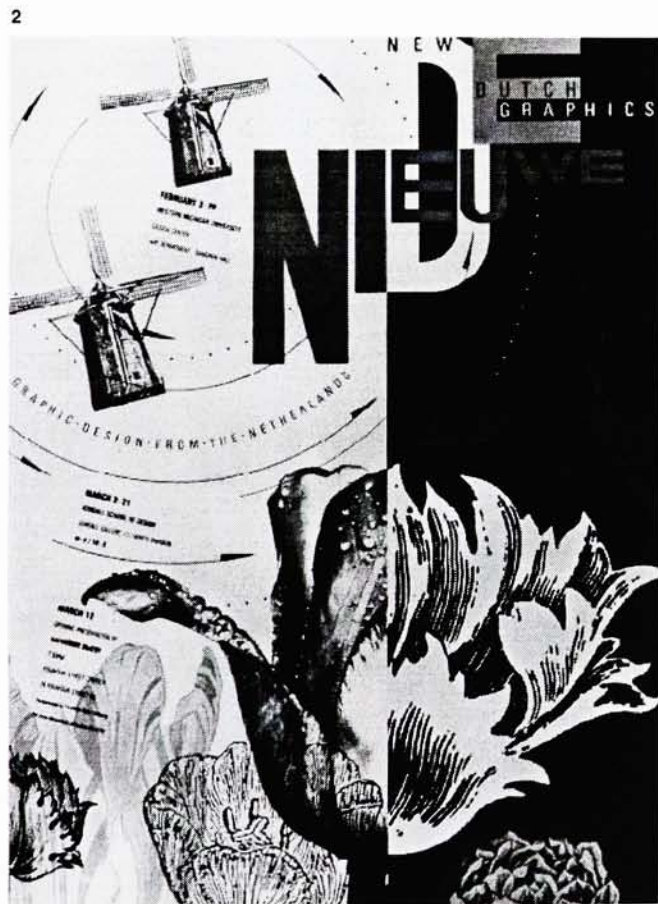
When it is perceived as occupying space, we call it 'positive' form. When it is perceived as blank space surrounded by occupied space, we call it 'negative' form. In black-and-white design, we tend to regard black as occupied and white as unoccupied. Thus, a black form is recognized as positive and a white form as negative. But such attributions are not always true. Especially when forms interpenetrate or inter-sect one another, what is positive and what is negative are no longer easily distinguishable." (Wong 1993, 47)

- "Form, whether positive or negative, is commonly referred to as the 'figure,' which is on a 'ground.' Here 'ground' denotes the area surrounding the form or the 'figure.' In ambiguous cases, the figure-ground relationship may be reversible." (Wong 1993, 47)

- "Space is flat when all the forms seem to lie on the picture plane and be parallel to it. The forms themselves should be flat too, and appear equidistant from the eye, none nearer and none farther. It is possible, however, that we can feel the space surrounding the forms to be very deep, leaving all the forms floating on the picture plan." (Wong 1993, 127)

- "In a flat space situation, forms can meet one another by touching, interpenetration, union, subtraction, intersection, coinciding, or just be in detachment, but they can never meet by overlapping. Overlapping suggests that one form is nearer to our eyes than another, thus rendering the space illusory to some extent. Variations in shape, size, color, and texture may also destroy the flatness of space, but this does not always happen." (Wong 1993, 127)

- "Space is illusory when all the forms seem not to lie on or be parallel to the picture plane. Some forms may appear to advance, some to recede, some to present their frontal views. The forms themselves may be flat or three-dimen-sional. The design area opens up like a window or a stage where the forms are displayed in varying depths and/or at different angles." (Wong 1993, 127)

- "Repetition is repeating identical or similar forms in a consis-tent spatial relationship and creating an overall pattern of equal weight. Contrast occurs when unlike elements are introduced into the repetitive sequence. Rhythm is repeat-ing similar elements with a variety of forms or spatial inter-vals and creating variety in repetition. It possesses the ebb and flow of recurring elements in space." (Meggs 1992, 97)

- Between 1925 and 1939 French poster art was given a fresh impetus, most notably by A. M. Cassandre. The impact of

1
IKKO Tanaka, poster for the annual Music Today concert at the Seibu Theatre. Bright colors and play with the figure and ground contribute to the success of this poster.
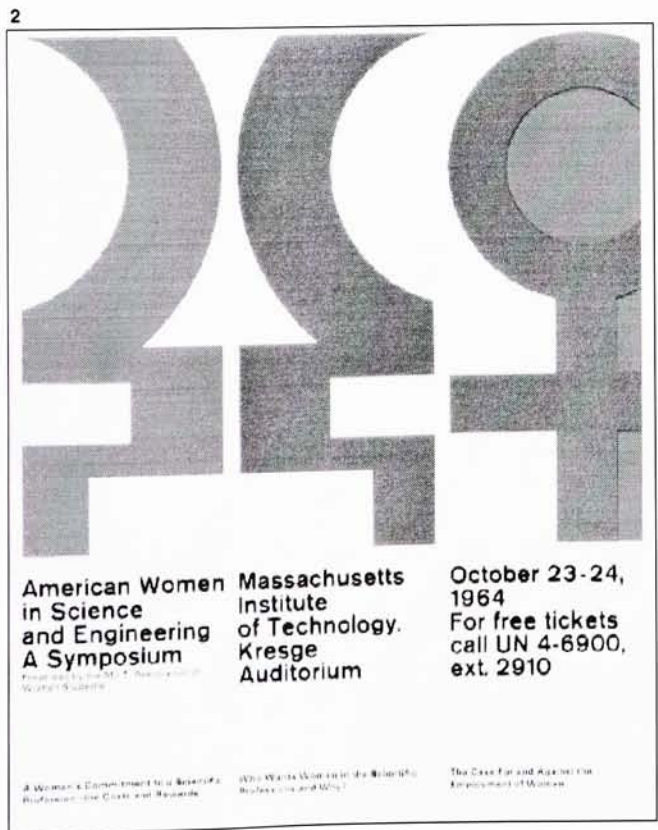
2
Jacqueline S. casey, *American Women in Science and Engineering*, 1964. Poster.

3
A. M. Cassandre, *railway poster*, 1927. This poster, in addition to being a magnificent abstract design, conveys an intangible aspect of travel--the unknown experience and hope of a destination far in the future--for the "North star" night train from Paris to Amsterdam.

American Women in Science and Engineering A Symposium

Massachusetts Institute of Technology. Kresge Auditorium

October 23-24, 1964 For free tickets call UN 4-6900, ext. 2910

his works are due to their simplicity, to their economy of colour and line, and to their superb stylized forms. Cassandre accentuated broad surfaces and two dimensionality in his designs. However varied the problems confronting him, he found solutions that were clear, definite and telling; his works were ideas reconceived in visual terms, designs everyone could understand, wholly artistic in color and form. (Muller-Brockmann 1971, 265)
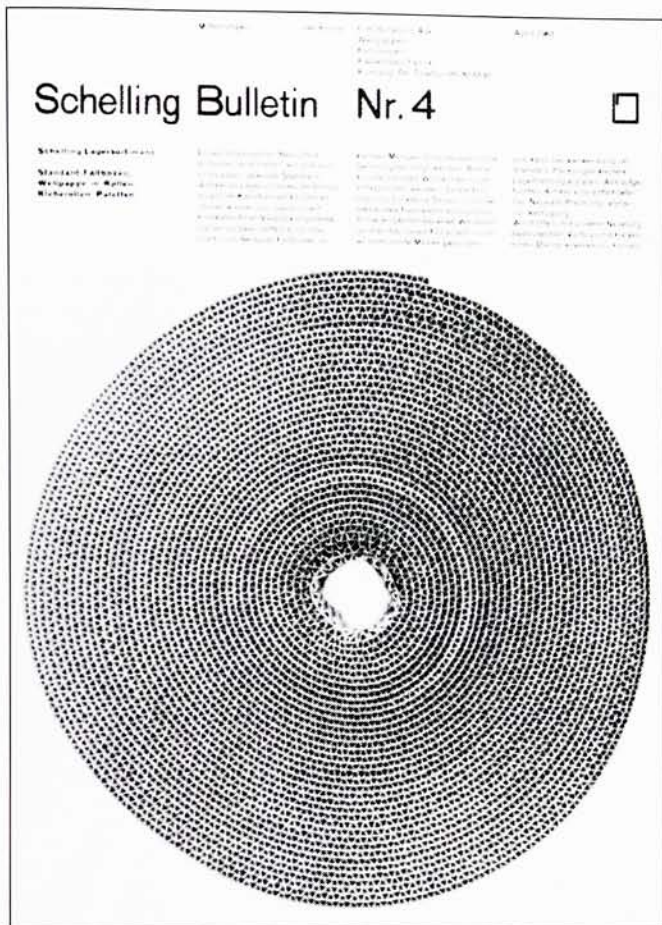
- Siegfried Odermatt (b. 1926) and Rosmarie Tissi (b. 1937) have always used strong playful element in their works. They can used a one-color typographic design to achieve the visual impact and power of full-color graphics through the strength of the concept and the manipulation of visual form, space, shape, and tone. They found a logical and effective way to solve a design problem. (Meggs 1992, 344)

Position

- When a layout is designed, a word or a group of words must be placed in certain amount of space. In order to do this, it is necessary to know how to form words and to space letters. The relationship among the different categories of spaces, from letter to word to line to paragraph spacing; the line length; the degree of raggedness; and the paragraph signal.

- Legibility is the net result of the interaction among all facets. In pragmatic problem-solving situations, the aspect that tends to to be most neglected is space. "Getting regrounded in the good, simple, normative base is essential: 1) Letter spacing that is neither crowded nor loose. 2) Word spacing that keeps a strong sense of line without running words together. 3) Line spacing which is greater than word spacing. Line length should be based on legibility. Raggedness should be controlled within a range which, while activating the page, does not distract from reading. Word spacing should not be allowed to fluctuate in ragged settings, since evenness of spacing is a prime advantage for legibility. Justified text must have a wide enough measure--50-60 characters minimum-to permit a consistent gray value and minimum fluctuation from the legibility norms." (Hiebert 1992, 28)

- "With space you can 1) Give the eye a visual rest. (Leave plenty of white space on a spread otherwise filled with copy.) 2) Create ties between elements. (Put less space between elements to make them look related.) 3) Form positive and negative shapes. 4) Give a layout a three-dimensional qual-

"we perceive in pattern, and we remember in pattern. Only in this way are we able to incorporate our society's way of viewing and testing the universe."
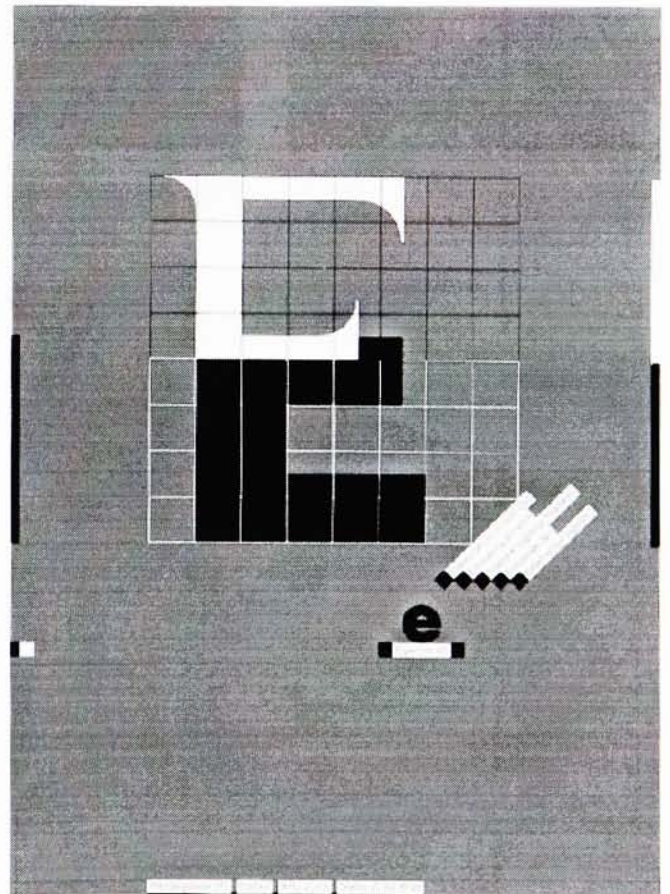**Ray Birdwhistell**

1
Siegfried Odermatt, cover for Schelling Bulletin, No. 4, 1963. This folder for a paperboard and packaging manufacturer shows Odermatt's unexpected photographic view of an ordinary object.

2
Rosmarie Tissi, *Englersatz*, poster for a typesetting company, 1983. Courtesy the designer.

2

ity. (An element that is overlapped by another looks as if it's farther back.) 5) Highlight an element. (Put a lot of empty space around something important.) 6) Make a layout easy to follow. (Put ample margins around a piece.) 7) Create tension between two elements. (Place two photos so they are almost touching each other.) 8) Make a page dynamic. (Have unequal spacing between elements.) 9) Make type as legible as possible. (Allow comfortable spacing between letters, words and lines of type.)" (Siebert 1992, 19)

- Allen Hurburt (b. 1910-83) was an American art director renowned for publication design during the 1950s and 60s. After the war he worked for National Broadcasting Company, New York, and from 1951 for Paul Rand at the Weintaub Advertising Agency. In 1953 he joined *Look* magazine in New York, establishing a reputation over the next fifteen years for innovative layout, typography and photography. He later moved to London, His interest in design education is reflected in his writings and books, including *Publication Design* (1971), *Layout: The design of the Printed Page* (1977) and *The Grid* (1978). (Livingston 1992, 103)

- Weingart Wolfgang (b. 1941) was a self-taught graphic designer, typographer and influential teacher who pioneered Post-Modernism. His intuitive, expressive typographic "experiments," appearing on poster and cover designs, utilized wide wordspacing and letterspacing, step rules, reversed type weight, and diagonal or random placement of letterforms. During the mid-1970s he began exploring the graphic imagery made possible with Photolithography, incorporating Collage, enlarging and overlapping Halftone dote patterns and experimenting with the design elements to create uniquely dynamic solution. Weingart taught numerous American students in Basel including April Greiman and Daniel Friedman and was a regular visiting lecturer at many US design schools. His work has had a profound influence on American graphic design, providing a dynamic alternative to the predictability of corporate design solution based on systematic Swiss design principles. (Livingston 1992, 202)

- Neville Brody (b. 1957) is a British art director, graphic designer and typographer. His Post-Modernism, in the aftermath of punk, challenged most of the conventions in editorial design. He designed and manipulated many images and varieties of typeface into new, often illegible, shapes and proportions. One of the new generation of designers to embrace the creative potential of Apple Macintosh, he has also

1
Wolfgang Weingart, *18 Didacta Eurodidan.* 1979.
Poster. Courtesy Reinhold Brown Gallery, New
York.

2
Neville Brody, editorial page from *The Face* No.
53, September, 1984. Circular, horizontal, vertical,
and diagonal elements are carefully constructed
into an expressive graphic statement. The roman
e reverses from the slanted rectangle.
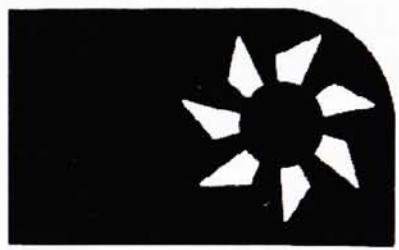
HOLIDAYS IN HⱻLL

You've trekked across the Himalayas, taken a train to Peking,
gone topless at St. Tropez. You've been everywhere, seen
everything and done it all twice. You're bored, jaded, blasé
but still restless. You want more than just a cheap holiday in
someone else's misery. Next year, try Soweto. Your pass will be
valid until ten pm, after which you're on your own. Or Beirut,
where you can sunbathe as the rockets fly overhead. Or how
about Rio, or the Bronx, or even Amsterdam — all places that
guarantee an extra frisson. We tell you how to get there, and
how to die there.

By Pierre Hurel/AWAKS

designed four new fonts for Linotype. (Livingston 1992, 35)

Electronic Space

- During the 1980s, rapid development of electronic and computer technology began to change the process and appearance of design space. Design was revolutionized by microchip technology, in particular by Apple Macintosh computers and graphics software packages. The moniter became the designer's canvas, a very special canvas, which could manipulate images, photographs, sounds and other kinds of digital imagery. Space became electronic in a new virtual, multimedia world. (Meggs 1992, 434)

- Courtesy of the computer, the graphic designer can now enact on the page all the specialties that were once delivered by individuals. The designer is now able to create his or her own typeface, design the illustrations and layout, and get the text and the images printed immediately. CD-Rom technology is even bringing to reality the concept of the electronic book, replacing the current technology of the printed book.

- Virtual Reality is the illusion of space and eventually sensation of space and matter in the realm of time, the 4th dimension. The central component of Virtual Reality is a computer-based image generation system capable of producing real-time stereoscopic computer graphics. The human participant is in the loop of real-time simulation, immersed in a world which can be autonomous and dynamically responsive to actions of the participant. It replaces your reality of space with one that is computer-generated.

- The information superhighway will give access to cyberspace breaking down barriers of distance, boundaries, and eventually even language. It exists today in the form of Home Shopping network, interactive TV, on-line Bulletin Boards, and will continue to grow in scope and content. Cyberspace will change our notions of traditional space, symbolism, meaning, self and culture.

- Perhaps the most impressive graphic designer at the beginning of the 1990s is April Greiman (b. 1948). Her work with the computer has led her to evolve a new kind of illusory space in two-dimensional graphics, creating the illusion of looking into a glass globe rather than at a flat page. We can find examples in her published book *Hybrid Imagery*. She has combined Swiss order with the flexibility and inventiveness that micro-computers and their software can provide. She exemplifies how fluid influences and ideas can be in

"Designing is a very organic process. You use your whole body, not just your hands or your head. The whole idea is one system."

April Greiman

1

1
In Japan you can visit a virtual reality kitchen showroom Once the details of your room have been entered, the headset creates a digital model. Then, using a dataglove, you pick units and slot them into place. (the view is shown on the TV just for this photograph)

2

2
The viewing field provided by Kaiser Electro-Optics' new headmounted display, called the VIM, is one of the largest available at 30 degrees vertical by 100 degree horizontal.
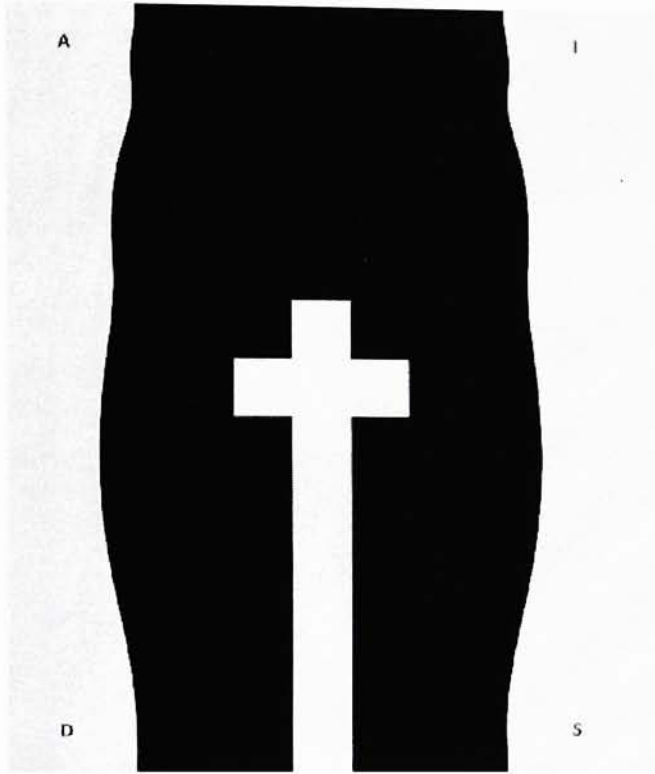
3
April Greiman and Jayme Odgers, Poster for California Institute of the Arts, 1979. The printed surface is redefined as a continuum of time and space.

3

A I

D S

1

graphic design, for her work combines original vision with collaging techniques, element of concrete poetry, the surreal, and the echoes of Tschichold's New Typography. (Dormer 1993,113)

- Greiman is not alone in her novel creation of three-dimensional space. As ever, there are precedents and parallel innovators: people like McRay Magleby, Keith Bright, Ken Cato -- these are the computer generation.

1
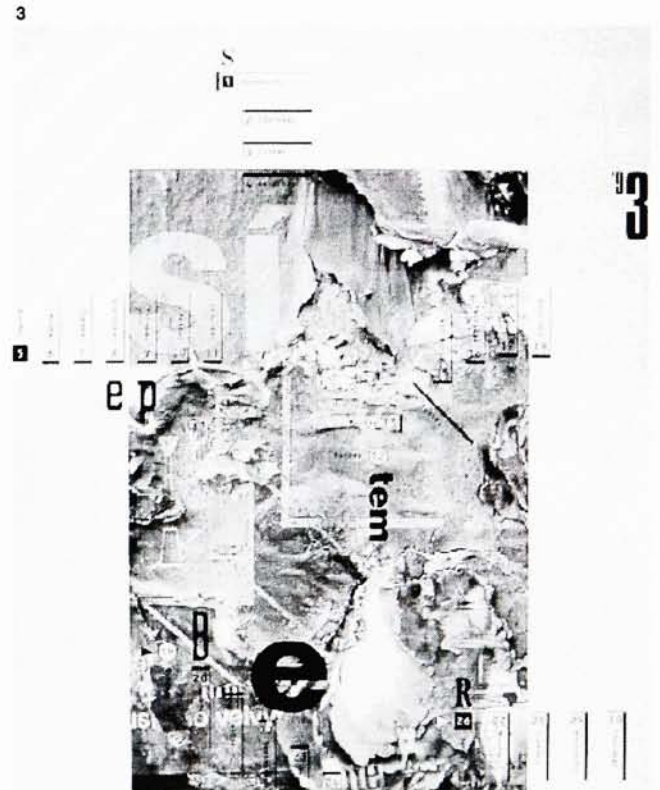McRay Mageby, *AIDS*, Poster for Brigham Young University. Software: Quark.

2
Art Director: Keith Bright, designer: Raymond Wood, *Wok Fast*, Logo for Speedway Cafe. Software: FreeHand.

3
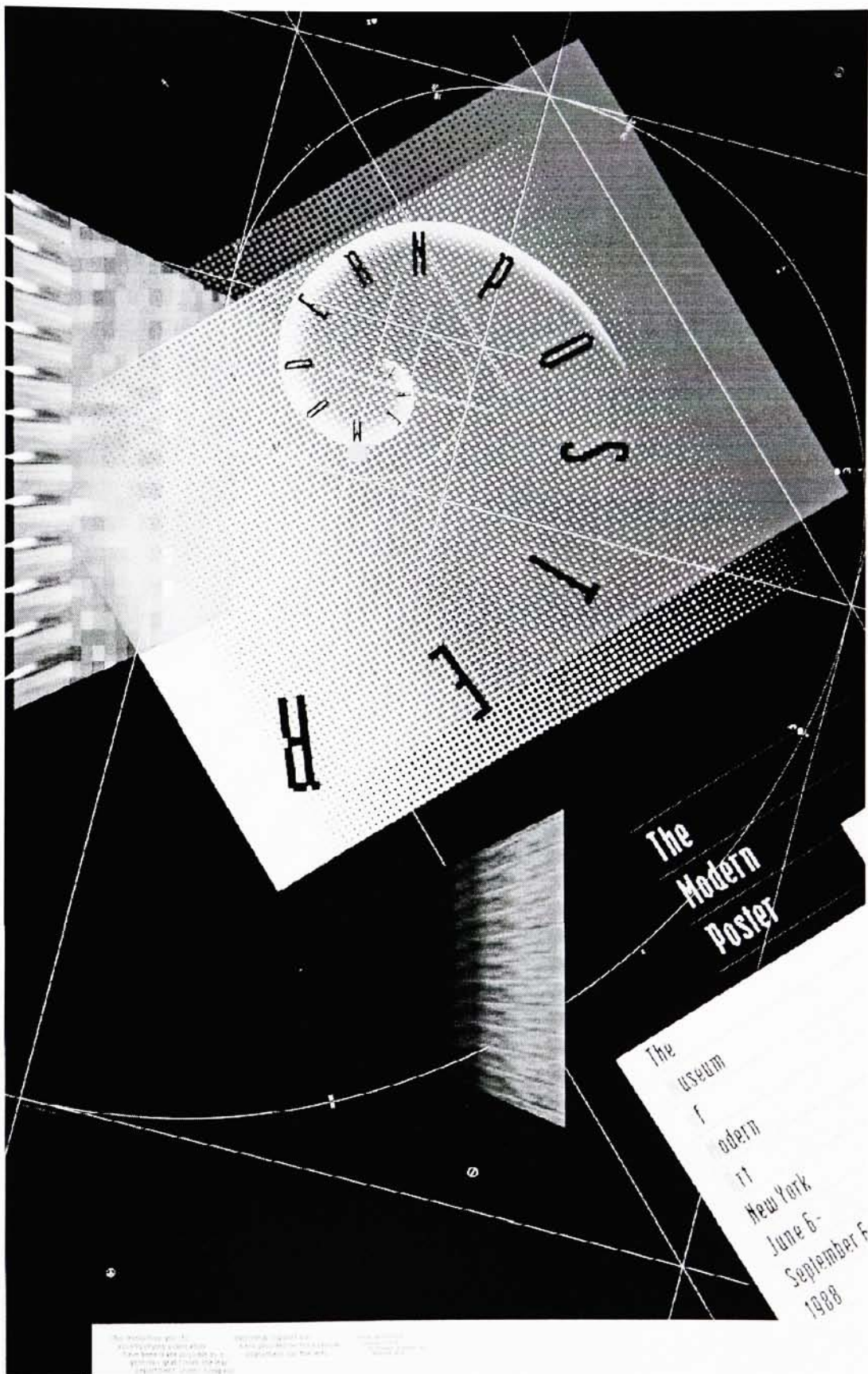Cato Design Inc. Pty. Limited, *Eurasia Press*, Promoational Calendar for Eurasia Press.

3

2

April Greiman, *The Modern Poster*, a poster for the MOMA exhibition, 1988.

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Perceptual Quotes for Photographers
New York: Light Impressions Corporatin, 1980.

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Taiwan: San-Min Publications, Inc., 1988.

Abstract art:	Art with a basis in visual reality, but without natural representation as its primary concern. Forms observed in the natural world may be simplified or altered selectively to suit the artist's concepts. The term is sometimes also used to describe nonrepresentational works which make no reference to objects or forms in the outside world.
Aesthetic:	Of or pertaining to the sense of the beautiful and the accepted notions of what constitutes good taste artistically.
Ambiguity:	Doubt or uncertainty in meaning. Ambiguous: capable of being understood in two or more possible senses; equivocal.
Anamorphosis:	Optical magnification ordinarily in one direction or along only one axis. Anamorphic drawings or paintings are distorted images that may be viewed undistorted from a particular angle of view or with the use of a special instrument.
Art Nouveau:	A late nineteenth-century style characterized by curvilinear, organically based ornamental forms.
Balance:	A design concept in which elements are equally or symmetrically positioned.
Confucius:	Chinese philosopher and teacher.
Contrast:	A differentiation between design elements to set them apart from other copy in a layout.
Color:	A property of light, not of bodies or pigments. As sensed by photoreceptors in the eye, our perception of color results from a certain bundle of wavelengths of electromagnetic energy bombarding the retina. Color has three "dimensions" or characteristics.
Cubism:	A twentieth-century art movement in formulist abstraction developed by Picasso and Barque beginning about 1908. Analytical Cubism was an early stage (from 1909-1912) in which subjects were observed from different angles, shattered, and reconstructed as geometric shapes. Synthetic Cubism soon followed. During this stage collage was introduced and geometric shapes were manipulated into abstract subjects which were not based on the artist's direct observation.

Dada:	The Dada movement originated in Zurich (Switzerland), and in New York during World War I. Dada was a mode of fantasy art based on the concept of absurdity and nonsense. It pared the way for the later Surrealist movement.
de Stijl:	The de Stijl movement developed in neutral Holland during World War I. It was a formulist trend in nonrepresentation which grew out of Cubism. Mondrian was the best known painter in the movement.
Form:	The shape or structure of a thing as opposed to its matter or substance. In the arts, the term is used broadly as a synonym for design or patternmaking; and it includes all aspects of composition, organization, and structure.
Grid:	A pattern of lines commonly at 90° to one another like a checkerboard. Grids, however, may employ diagonal lines, circles and arcs, or arbitrary or freely chosen configurations. Grids are categorized as regular when they consist of geometric arrays of lines and as arbitrary if they consist of random or irregular lines.
Interval:	1) a space between two things; gap; distance. 2) a period of time between two points of time, events, etc. 3) the extent of difference between two qualities, conditions, etc. 4) music the difference in pitch between two tones.
Kinetic:	Moving; pertaining to motion; produced by motion.
Margin:	The area or space around a group of design elements.
Modular:	The Modular is a system based on a mathematical key. Taking account of the human scale, it is a method of achieving harmony and order in a given work.
Notan:	Notan is a Japanese word meaning dark-light.
Perspective:	A method of representing three-dimensional objects in space on a two-dimensional surface. Some perspective methods are simple, such as vertical stacking, overlapping, and diminishing size of objects represented in a picture. Atmospheric perspective involves a use of paler color and loss of clarity in distant forms in a picture. Linear perspective was developed during the Renaissance to provide a

more regulated spatial scheme in art. One-point and two-point perspective methods involve the use of vanishing points set on the horizon line (which conforms to the eye level of the viewer).

Physical: 1) of material (contrasted with moral and spiritual) thing. 2) of the body; bodily. 3) of the laws of nature. 4) of the natural features of the world.

Physical Space: Physical space is measured with straight edges, rules, and transits, following the rules of Euclidean geometry.

Picture Plane: The flat surface on which artists draw or paint as bounded by the edges of the material (the canvas, board, or frame) or by a line that circumscribes the area in which the artist composes a design or picture, length by width.
a repetition of design elements to create an artistic effect.

Rhythm: Repetition of any visual component--interval, shape, color, or motif (figure)--in a regulated patternmaking process. Shapes or motifs may be repeated in their entirety, fractionalized, compressed or expanded, and so on, throughout a work.

Shape: The overall outline or contour of any perceived unit, figure or ground, particularly when related to a two-dimensional surface. Shape is a preferred term in this text as it is more specific.

Surrealism: An art movement that originated in 1924 as an outgrowth of Dada. It was influenced by the writings of Freud and strove to rely on the subconscious and the world of dreams as the basis of artistic expression.

Semiotics: A theory of how meaning is created through signs and symbols in our lives, is both strategy for looking, as well as a model for expressing meaning -- especially that which is less obvious or more deeply represented in culture.

Symbol: A subject which alludes to a meaning beyond its obvious appearance.

T'ai-Chi: T'ai-Chi is the concept that all of life is composed of, and has been set in motion by, the constant interplay of two vital

energies:Yin, the passive, and Yang, the active principle. "T'ai-Chi is the mother of Yin and Yang (everything female and male)," which has given rise to everything under the sun.

Tension: The interaction of figures that tends to draw them together ("magnetic attraction") visually--a factor in Gestalt proximity. In general, the closer the figures, the greater the tension; the tension up to the point where figures are perceived to have no relationship at all. Tension sets up stress points within a work of art that increase a sense of movement, direction, and dynamism.

Unity: The quality of any work of art that pulls it together and forms one whole as opposed to a random association of parts.

Visual Space: The physical space that is experienced through our eyes.

White Space: Unused open space in or around a design.

Zen Painting: Zen Buddhist painting was characterized by its abbreviated, abstract forms. It was felt by Zen painters that spiritual enlightenment could best be achieved through a sponta-neous and intuitive response to nature, rather than a care-fully studied one.