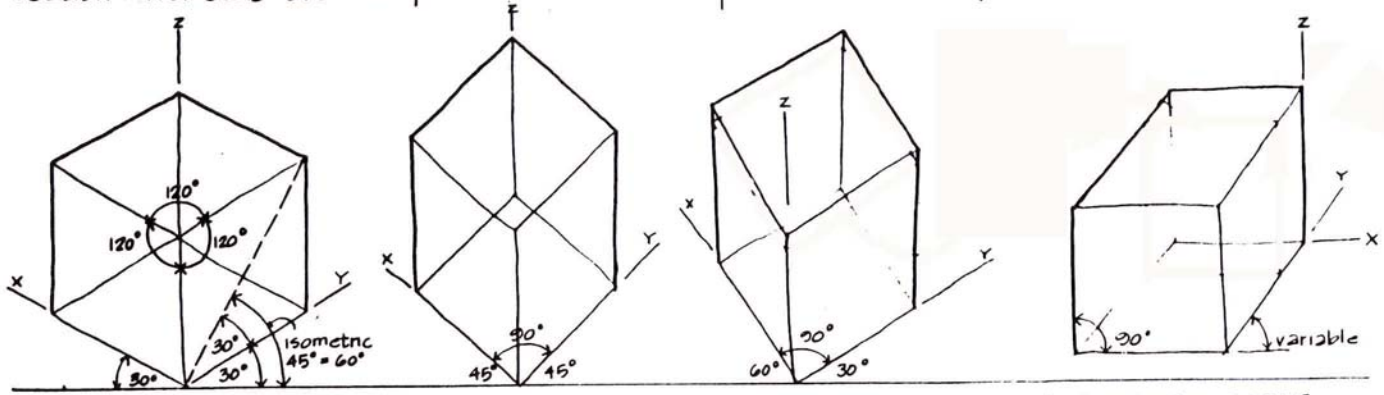
first year: assignment seven

Assembly of a Volume, part A

Issued	Friday, September 28, 2007 @ 4.00 p.m.
Objective	With this assignment you will develop your ability to record the assembly of a three-dimensional object using paraline drawing techniques. Through the use of the paraline drawing you are to tell the story of folding a box or carton.
Method / Process	Chose a cardboard box or paper-board carton which satisfies the criteria listed below. Carefully unfold the box or container so you are able to understand the object as an unfolded pattern (plan). Then determine the scale that best represents your box or carton which will allow you to draw it accurately. Should it to be drawn at actual size, or -4x, -2x, +2x, +3x, etc? Develop a series of freehand paraline drawings showing each step of how the container transforms through folding into the box or carton. Arrange these freehand drawings to best show the process of the assembly as part of the composition. On a sheet or sheets of vellum, construct (drafted) the same series of paraline drawings showing the transformation from the plan pattern (completely unfolded) to final box or carton (completely folded).
Cardboard Box or Paper Carton Suggestions	1. Do not select a box or carton which has a separate lid. 2. Boxes, paper-board milk or juice cartons are acceptable as well as paper-board chinese take-out containers 3. You are to select a carton or box which, when folded, creates a total enclosure 4. In the unfolded pattern, use the dashed line convention to represent the folded parts of the pattern 5. For examples of paraline drawings used in model making, visit:http://www.revell.com/Instruction-Plans.instructions.0.html 6. Read all the included hand-outs on paraline drawing before starting this assignment 7. Test each type of paraline drawing type to find the one that best suits the act of folding your item
Project & Presentation Requirements	Wood pencils Tracing paper (12” x 12” sheets) Vellum sheet(s) 23” x 29” Lead holder and leads to create construction lines and lines which represent the contour (light) and edges (dark) of your container or box
Due	Monday, October 1, 2007 @ 1.30 p.m. (sketches and constructed drawing on vellum)

TYPES OF PARALINE DRAWINGS

There are a number of paraline drawings, which are named after the method of projection that is used to develop them. Two of the most common in architectural drawing are discussed in this section: isometric and oblique (in terms of both plan and elevation).



ISOMETRIC

- all three visible surfaces have equal emphasis
- relatively inflexible
- orthographic plans and elevations can never be used in an isometric drawing

PLAN OBLIQUES

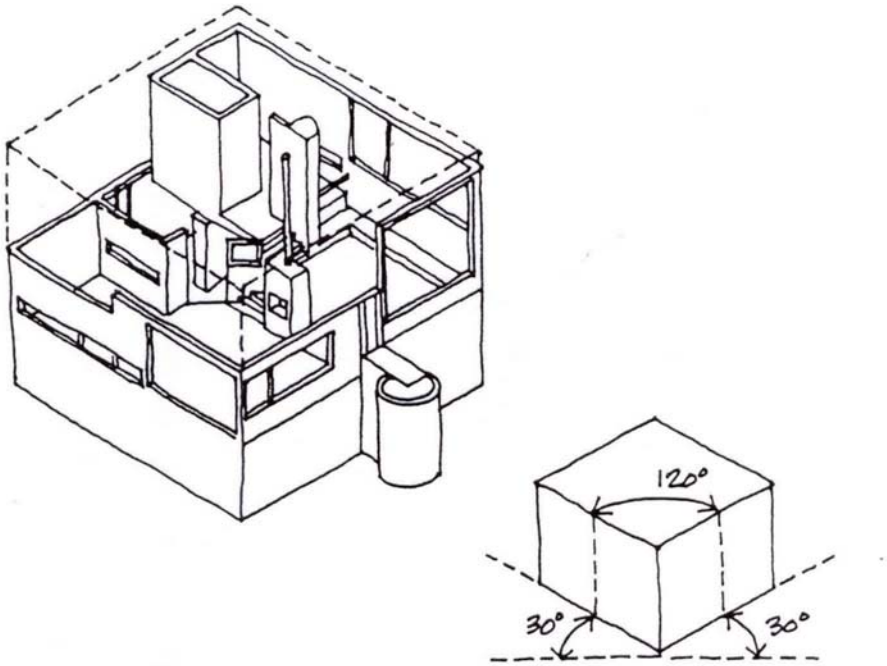
- a 45°-45° oblique has a higher angle of view than an isometric, and horizontal planes receive more emphasis
- a 30°-60° oblique also has a high angle of view with one vertical plane receiving more emphasis than the other
- in plan obliques, orthographic plan views can be utilized- this is advantageous in showing the true form of horizontal planes and in depicting circular forms in plan

ELEVATION OBLIQUE

- a vertical plane remains parallel to the drawing surface, showing itself in true size (to scale), shape, and proportion - this face of the building should be the length of the building, the most significant face, or the most complex

In the above drawings: ① all vertical lines remain vertical
② all parallel lines remain parallel
③ all lines parallel to X·Y·Z axes can be drawn to scale

For more information see: Architectural Graphics by Francis Ching



5-40 Isometric, Simon House by Barbara and Julian Neski.

Paraline Drawings

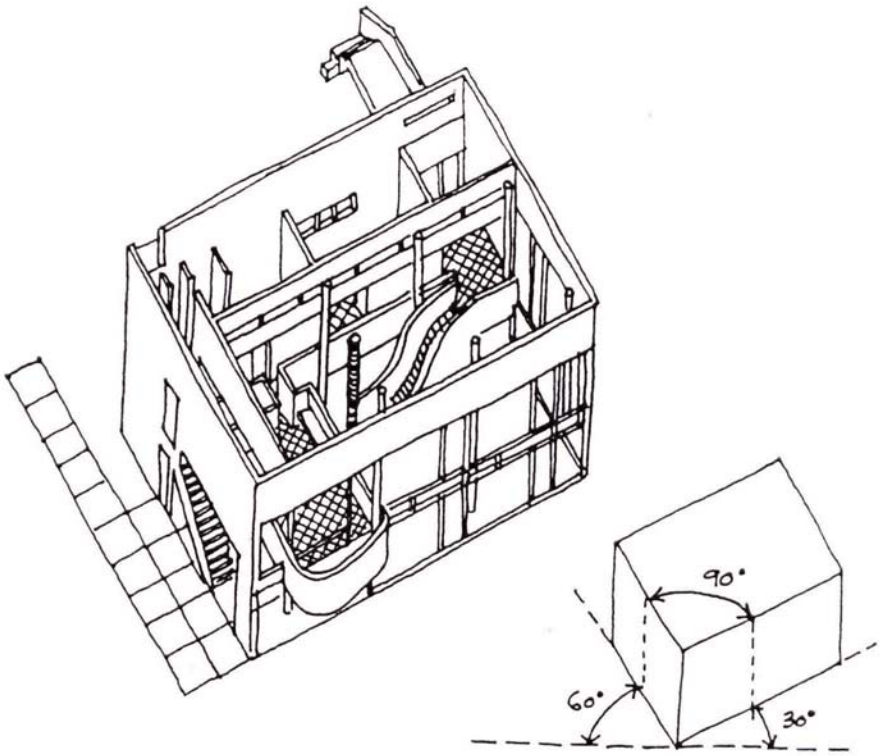
These are drawings which are the basic alternate convention to perspective projection for representing three-dimensional space or objects. In paraline projections, all lines which are parallel in space are shown parallel in the drawing. There are three basic types of paraline projections: the plan oblique (commonly referred to as an axonometric); the elevation oblique; and the isometric.

A plan oblique projection is essentially a plan view from which walls or other elements are extended vertically to create the sensation of three-dimensional space and to illustrate information about the vertical surfaces. This convention places the plan on an angle, generally somewhere around 30 or 60 degrees from the horizontal. Vertical lines are then drawn from various points on the plan to describe the walls. All the measurements of pieces in the plan oblique are at the same scale making them easier to construct than perspectives which we will discuss later.

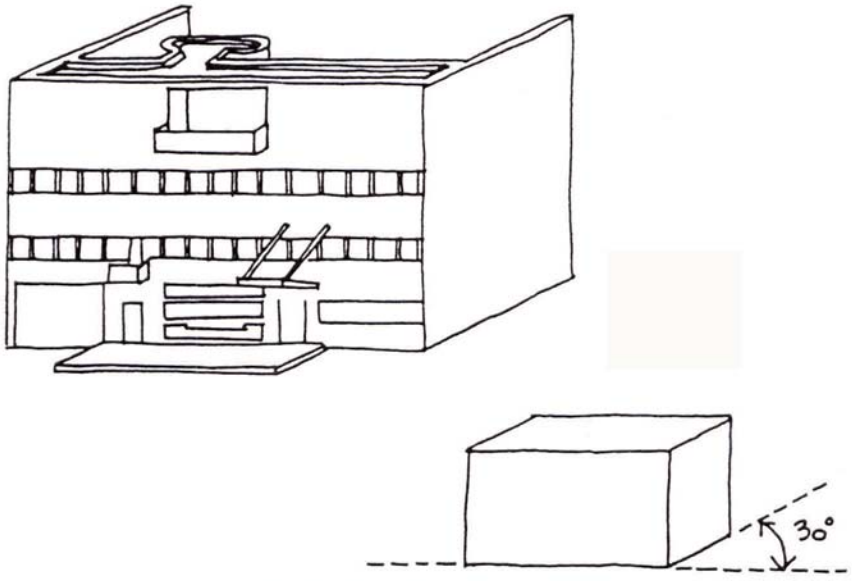
The elevation oblique is constructed in the same manner as the plan oblique except that an elevation of a wall or vertical surface is drawn first and then the horizontal surfaces and other vertical surfaces are projected at an angle from the elevation. People who are used to drawing perspectives of buildings will often have difficulty in sketching oblique projections particularly in keeping the angled lines parallel. One way to overcome this is to draw the true plan or elevation views first, concentrating on keeping lines perpendicular to each other and then sketch in the parallel projection lines. Gridded paper is handy for this purpose. By simply using a convention of one space over for every two up, it is possible to quickly draw parallel lines and achieve minimal distortion of scale for both plan and elevation lines.

Isometric projections essentially illustrate all surfaces in the three dimensions with equal distortion. The construction grid for isometrics consists of the vertical line, a line 60 degrees to the right of the vertical and a line of 60 degrees to the left of the vertical. Of the paraline drawings the isometric most closely approaches the realistic impression of perspective drawings.

For more information see: Visual Notes for Architect and Designers by Norman Crowe and Paul Laseau



5-38 Plan oblique, Shamberg House by Richard Meier.



5-39 Elevation oblique, Villa Stein by Le Corbusier.

For more information see: Visual Notes for Architect and Designers by Norman Crowe and Paul Laseau