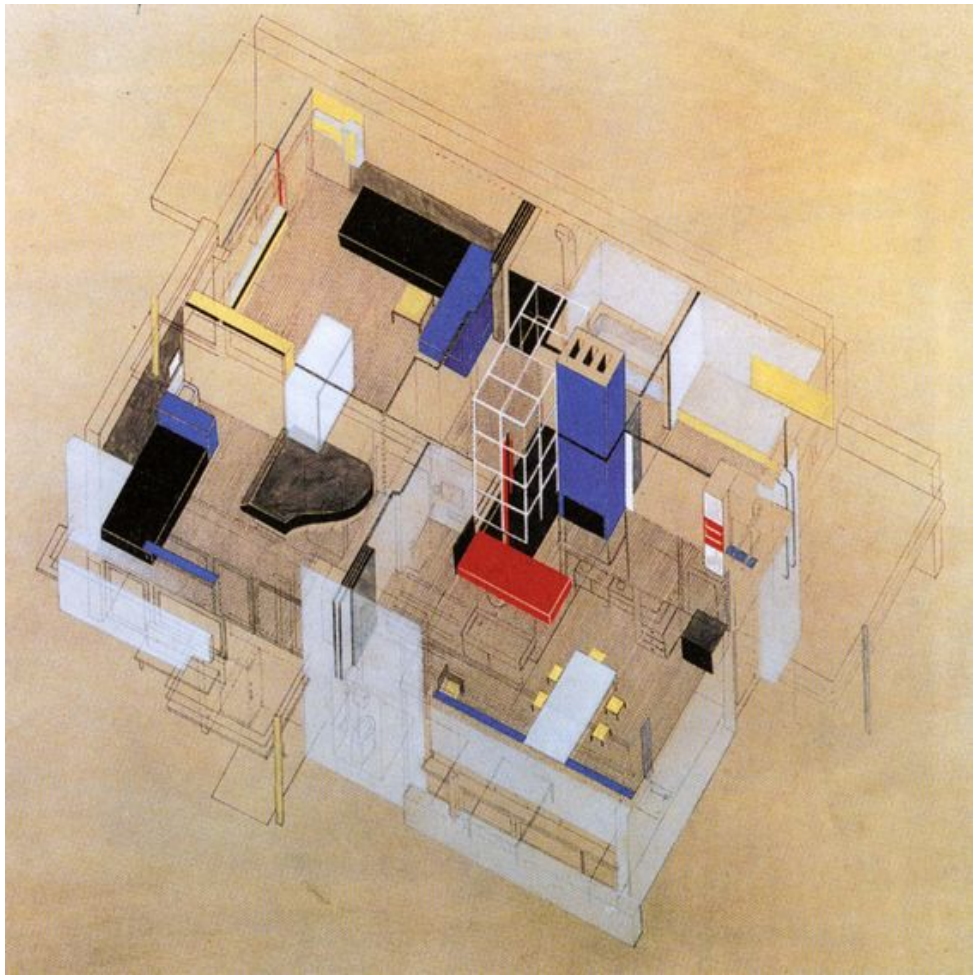
OBLIQUE PROJECTIONS



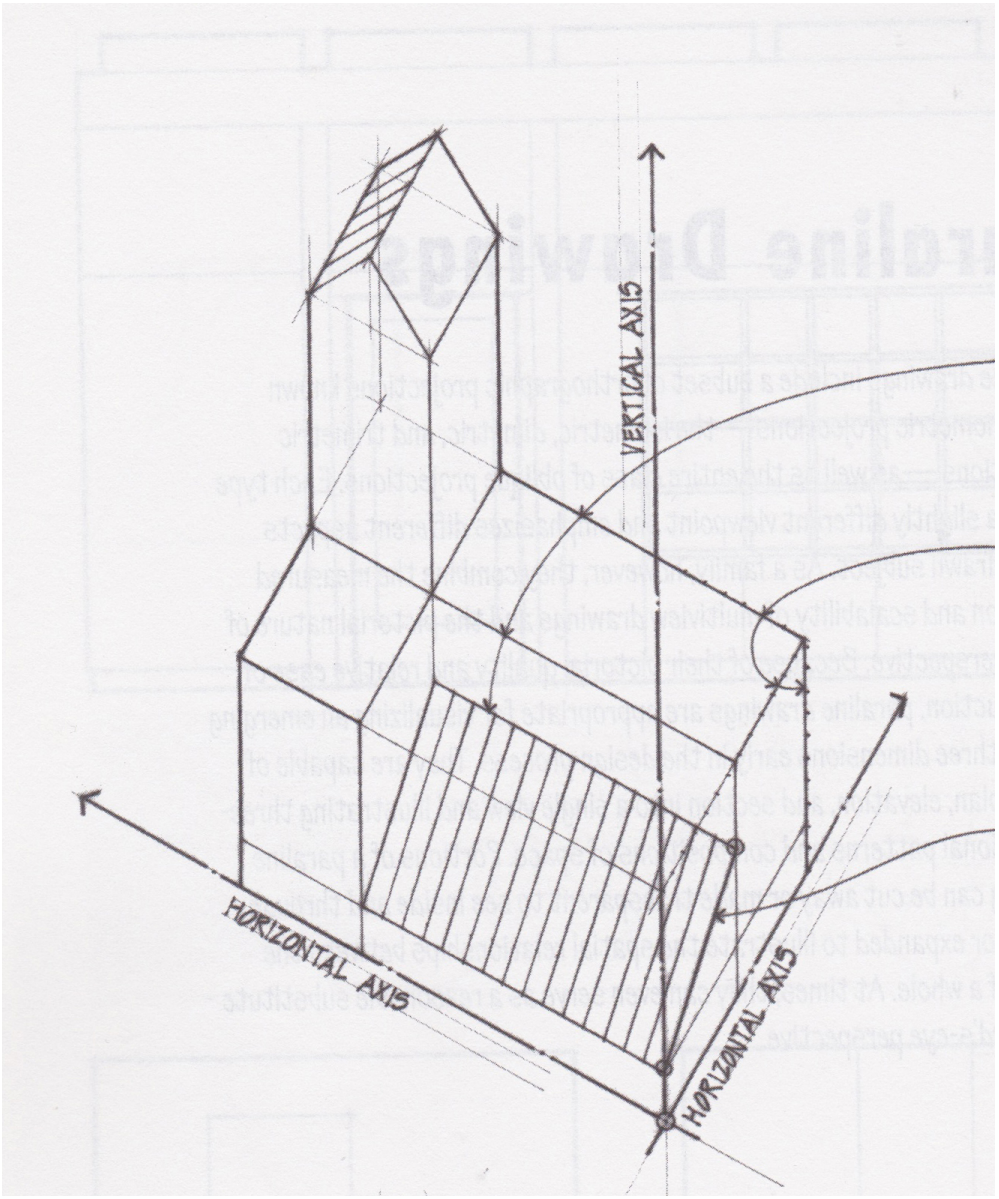
Gerrit Reitveld
-axonometric drawing of Schroder House

http://archiveofaffinities.tumblr.com/page/128.

Oblique projections

(oblique = slanting, sloping)

- parallel lines remain parallel – they do not converge to vanishing points as in perspectives
- Any line parallel to one of the three major axes can be measured (drawn to scale)
- Always present either a birds-eye view (looking down on the object) or a worm's eye view (looking up at it)



Francis D.K. Ching, Architectural Graphics, John Wiley & Sons, 2010, p. 87.

Oblique projections:

Parallel lines remain parallel
In the drawn view; they do
Not converge to vanishing points as in linear perspective.

Any linear measurement along axial lines can be made and drawn to a consistent scale.

(Non-axial lines are not parallel to any of the three principal axes. We cannot measure dimensions along these lines, nor can we draw them to scale. To draw them, we must first locate their end points using axial measurements and then connect these points).

Always present either a birds-eye view or a worm's eye view

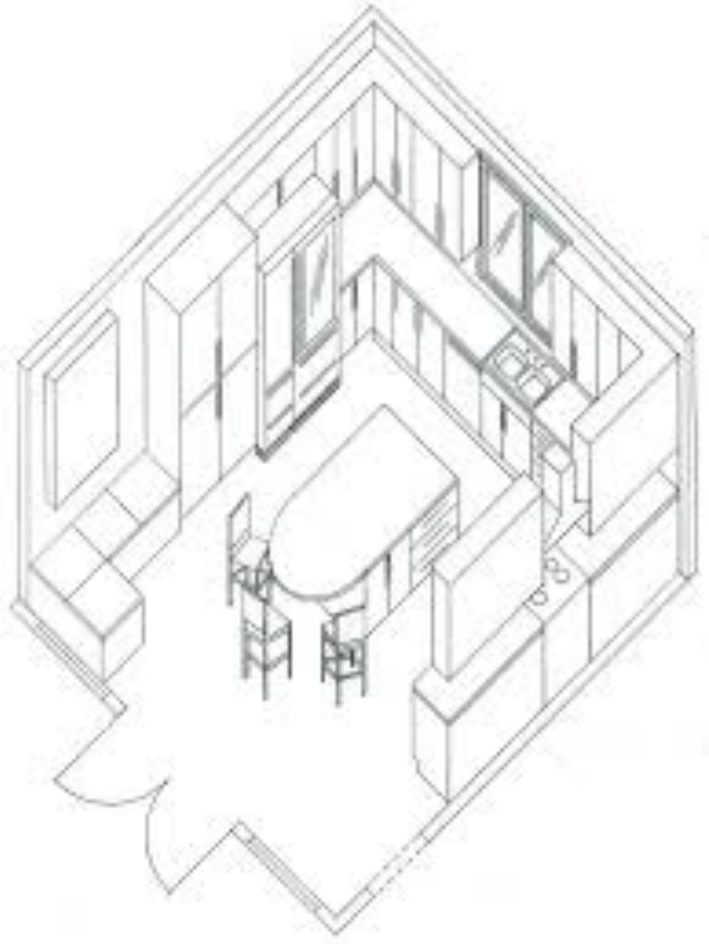
Paraline drawings
Oblique projections

Oblique projections
-plan obliques
-elevation obliques

Plan obliques
-axonometric (30/60) (45/45)
-isometric (30/30)
-

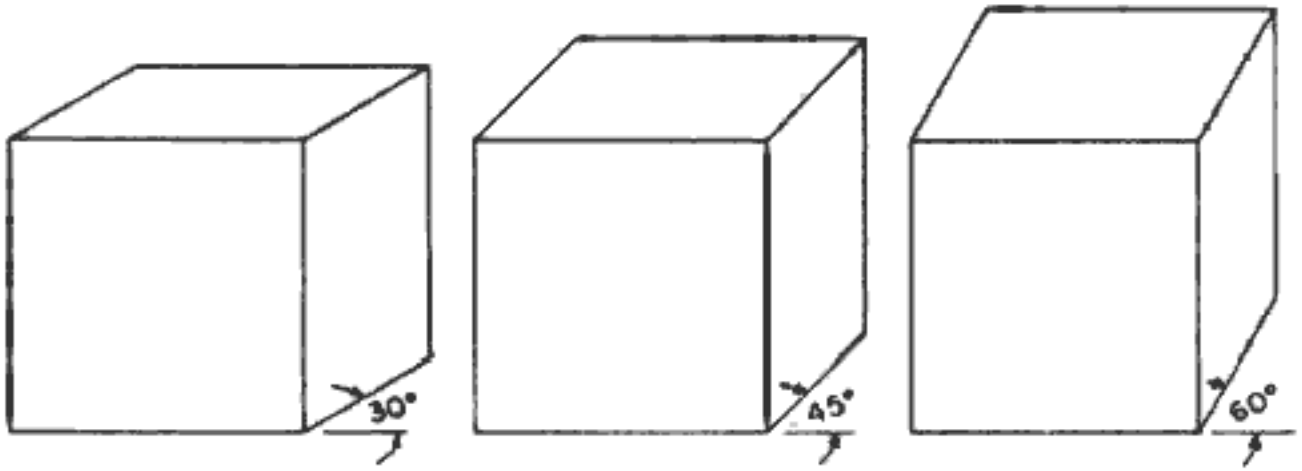
Plan oblique

-axonometric and isometric (a special type of axonometric)



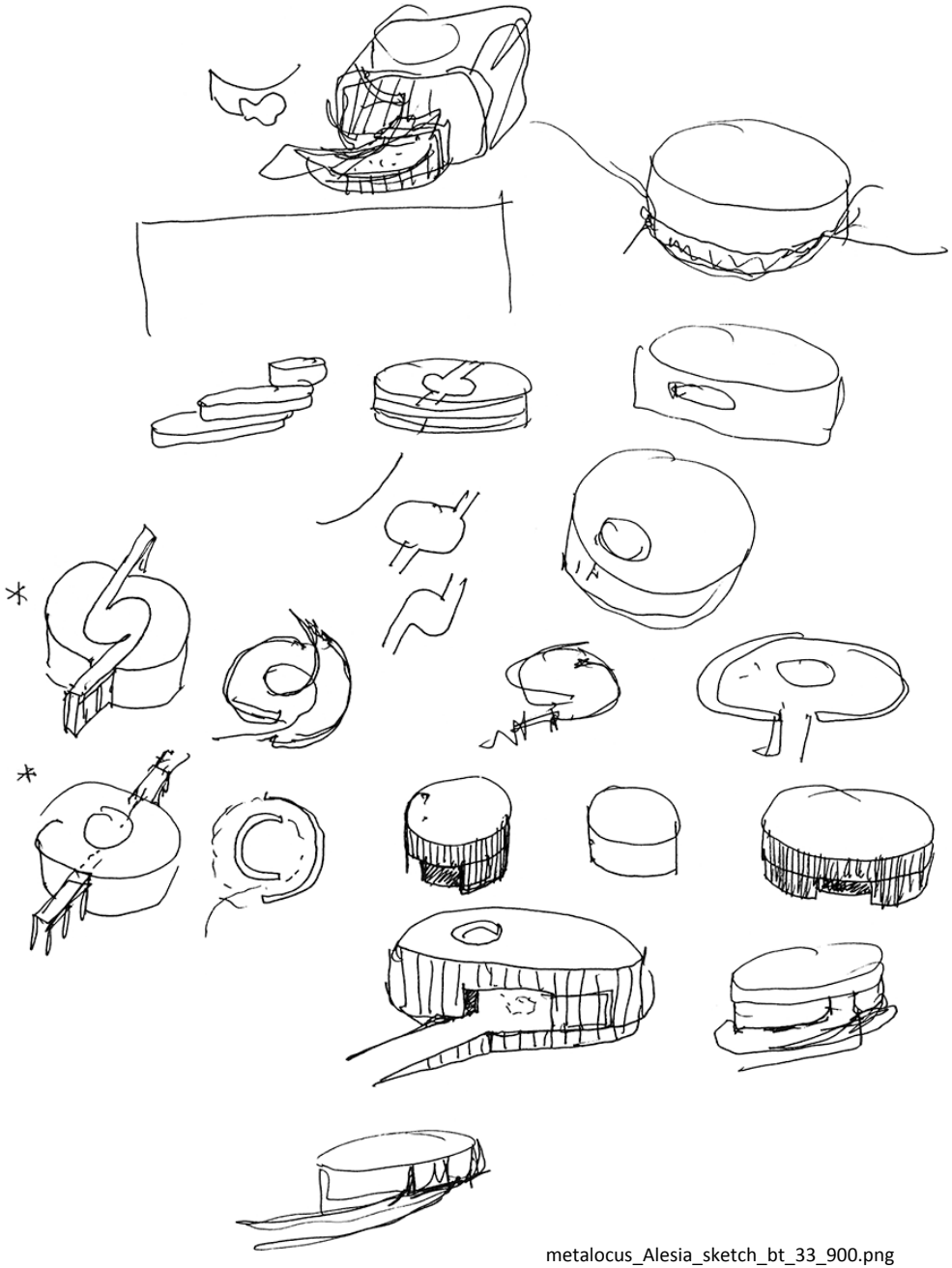
http://static.wixstatic.com/media/2ba72ccda24f5663953310d72b00f33f.wix_mp_1024

Elevation oblique
(not used often in architectural drawings)



http://static.wixstatic.com/media/2ba72ccda24f5663953310d72b00f33f.wix_mp_1024

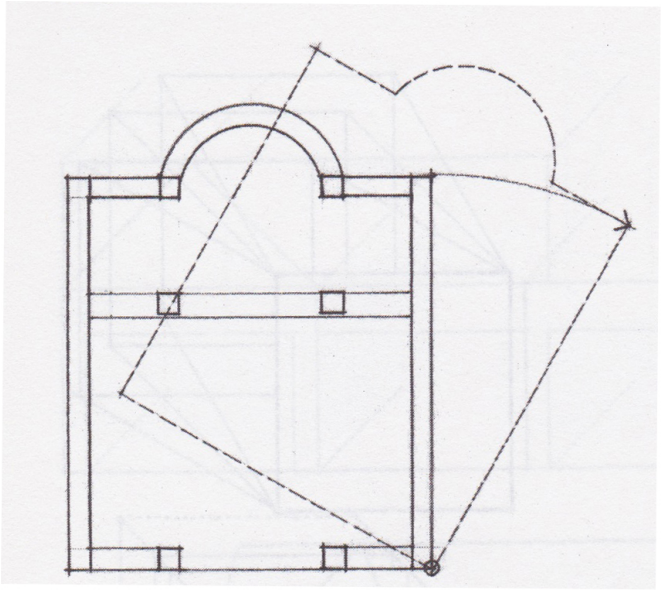
Plan oblique - Axonometric



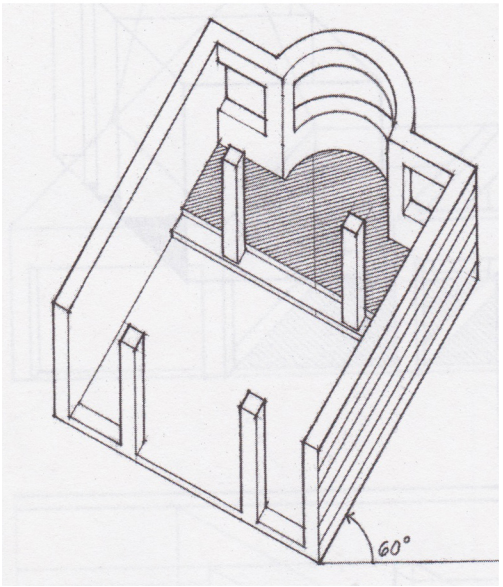
metalocus_Alesia_sketch_bt_33_900.png

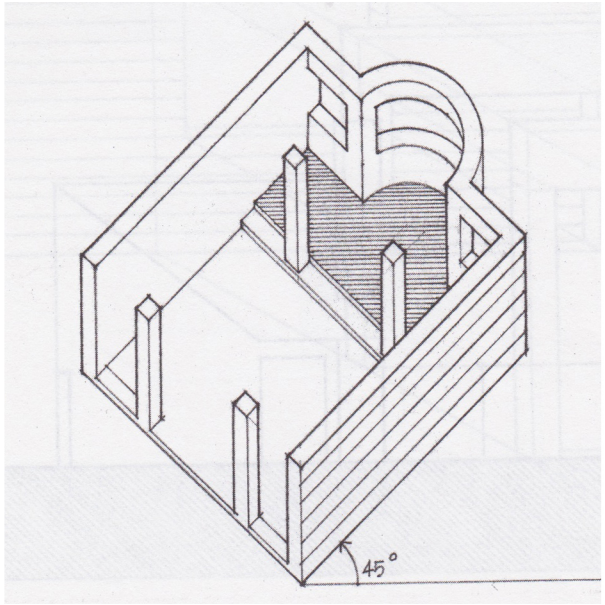
Although we will be focusing on measured hardline drawings in class today, axonometric drawings constitute an important tool for quick sketches of ideas in your sketchbook. Little axonometric sketches, like these, by architect Bernard Tschumi, often precede any attempt at a plan or elevation.

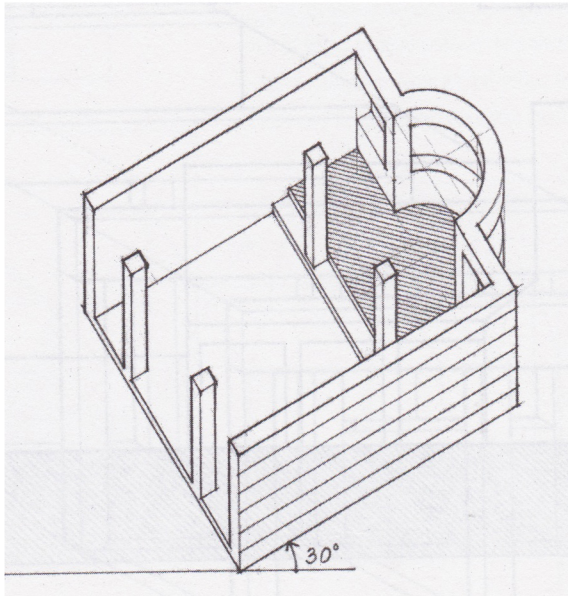
These drawings are capable of fusing plan, elevation and section in one drawing, illustrating three-dimensional compositions of space.



Drawn by simply rotating plans and projecting lines upward to correct height (except with isometrics)

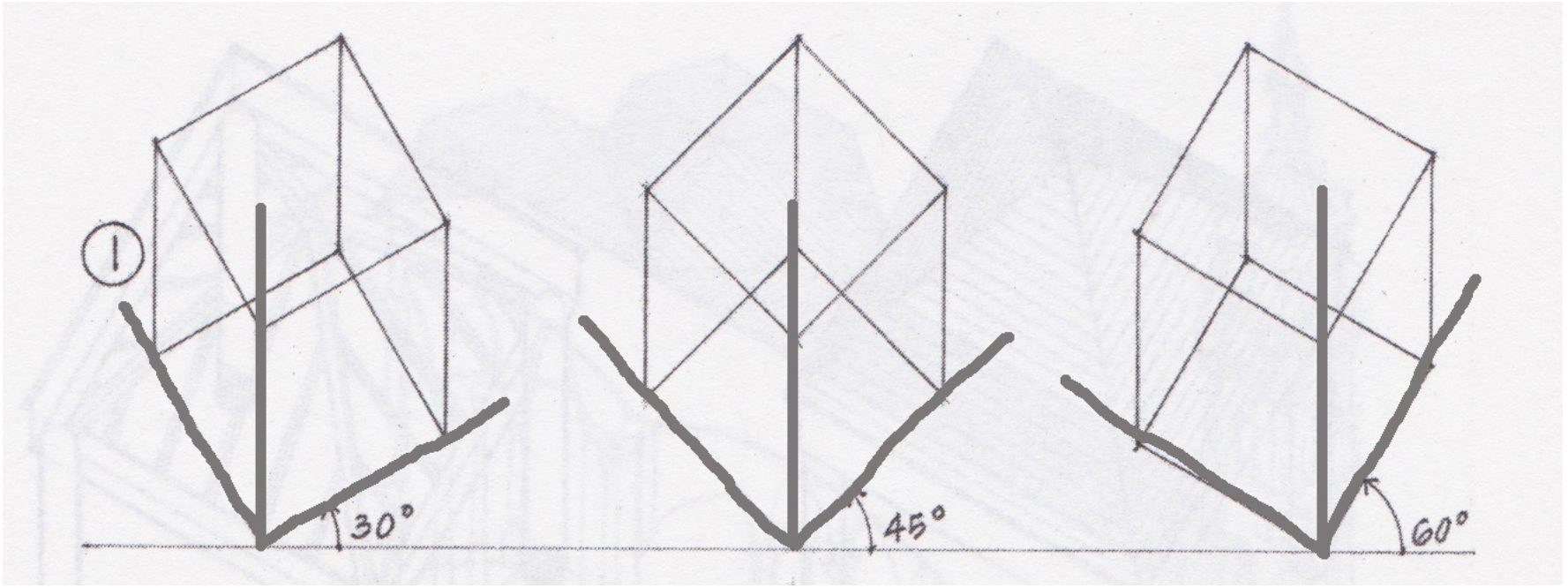






Possible angles of rotation for axonometric drawing

Francis D.K. Ching, Design Drawing, John Wiley & Sons, 2010, p. 208.



Axial lines (lines in the drawing that are parallel to the three major axes) are drawn to scale.

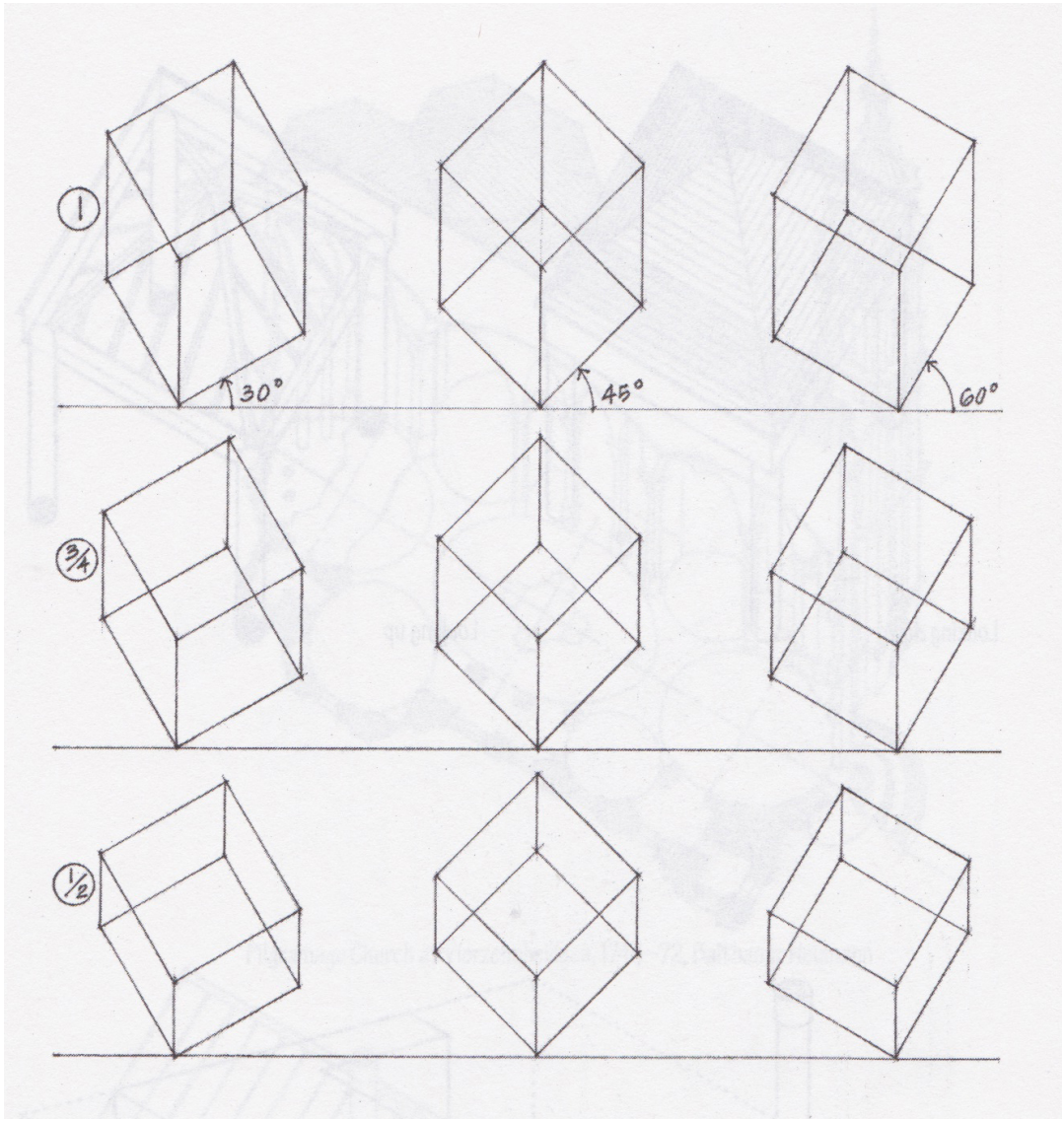
Axial lines = lines parallel to each of the three main axes

Francis D.K. Ching, Design Drawing, John Wiley & Sons, 2010, p. 193

100%

75%

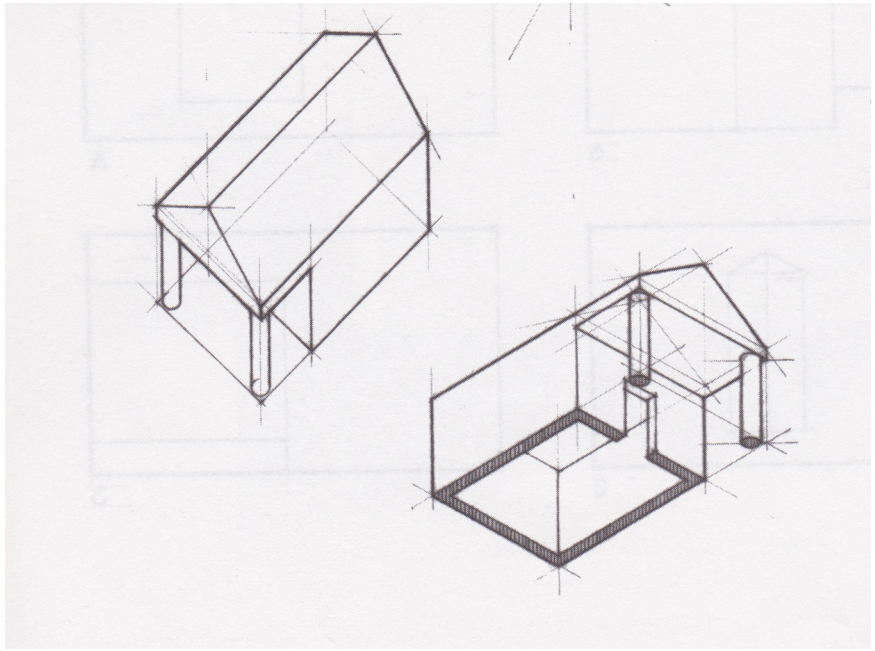
50%



Any axial line can be made and drawn to a consistent scale.

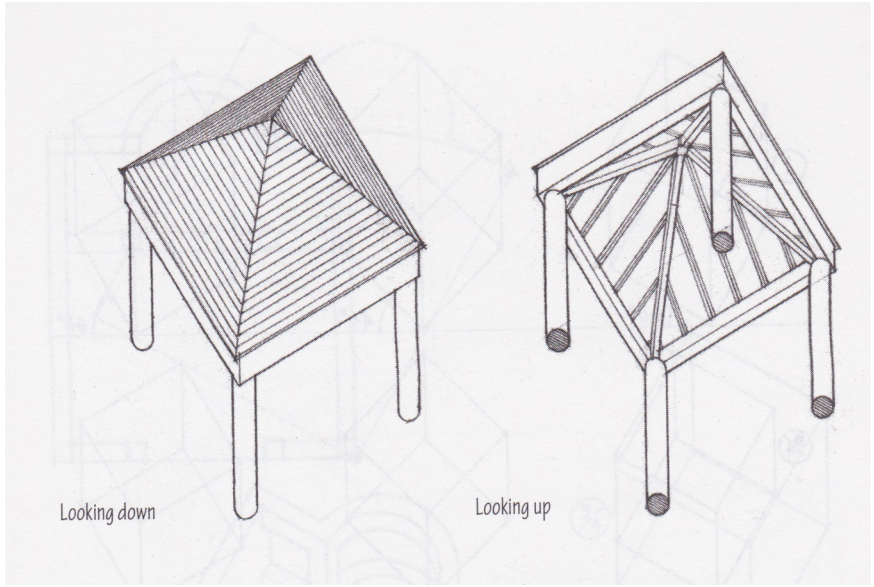
Different angles of rotation with different ratios of foreshortening

Francis D.K. Ching, Design Drawing, John Wiley & Sons, 2010, p. 209.

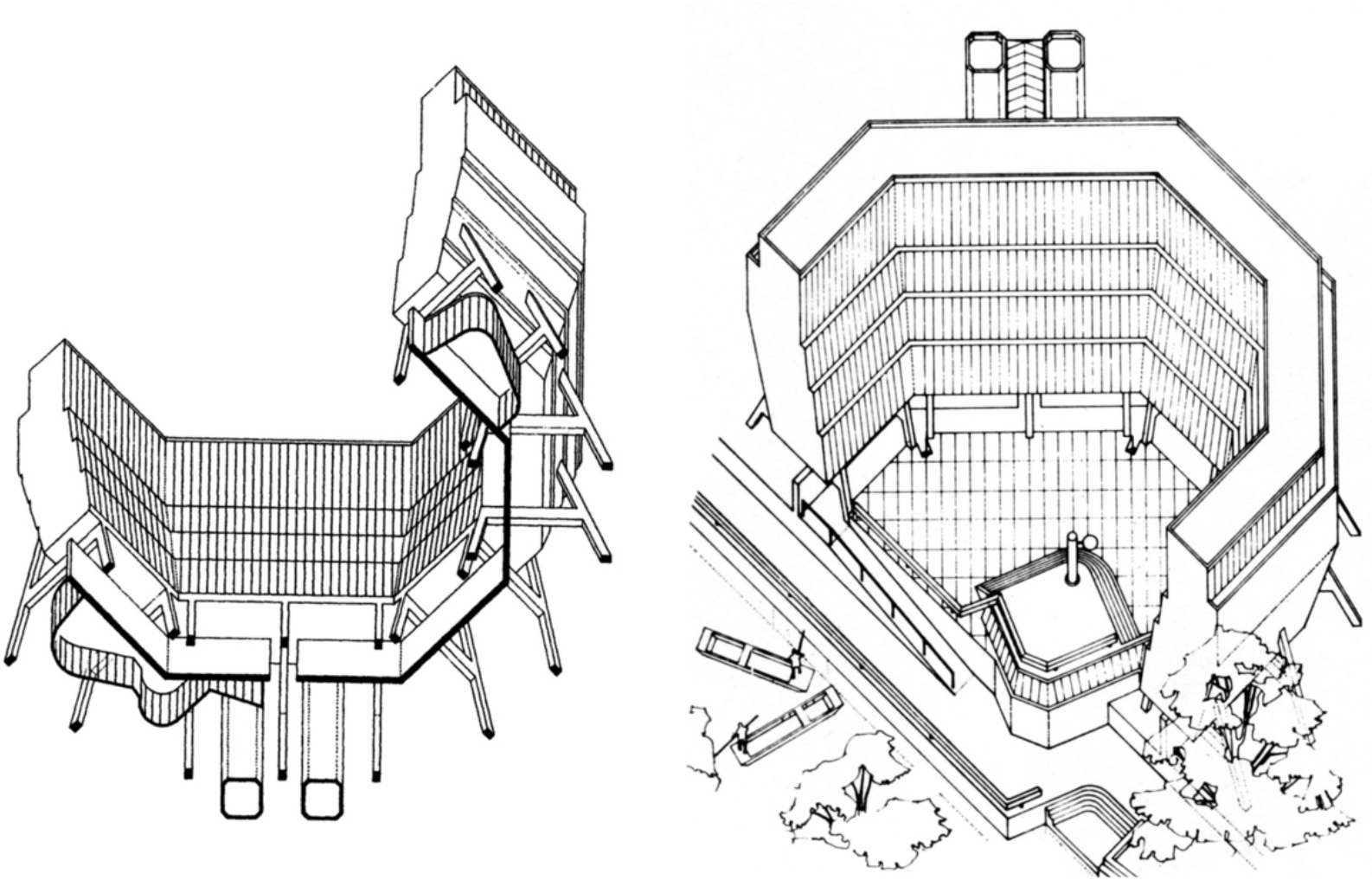


A oblique projection always presents either a bird's eye view (aerial view) or a worm's eye view (from below) of a subject.

Francis D.K. Ching, Architectural Graphics, John Wiley & Sons, 2010, p. 87.

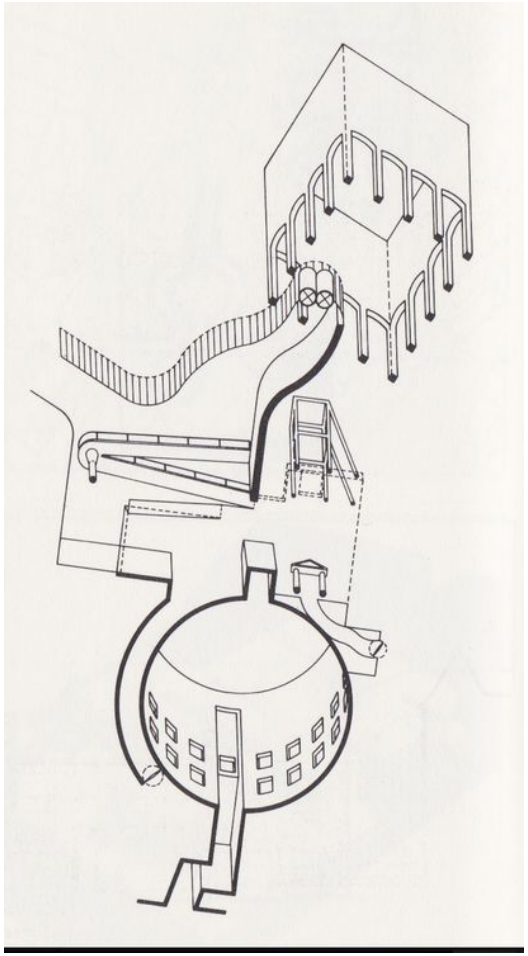


Francis D.K. Ching, Design Drawing, John Wiley & Sons, 2010, p. 210.



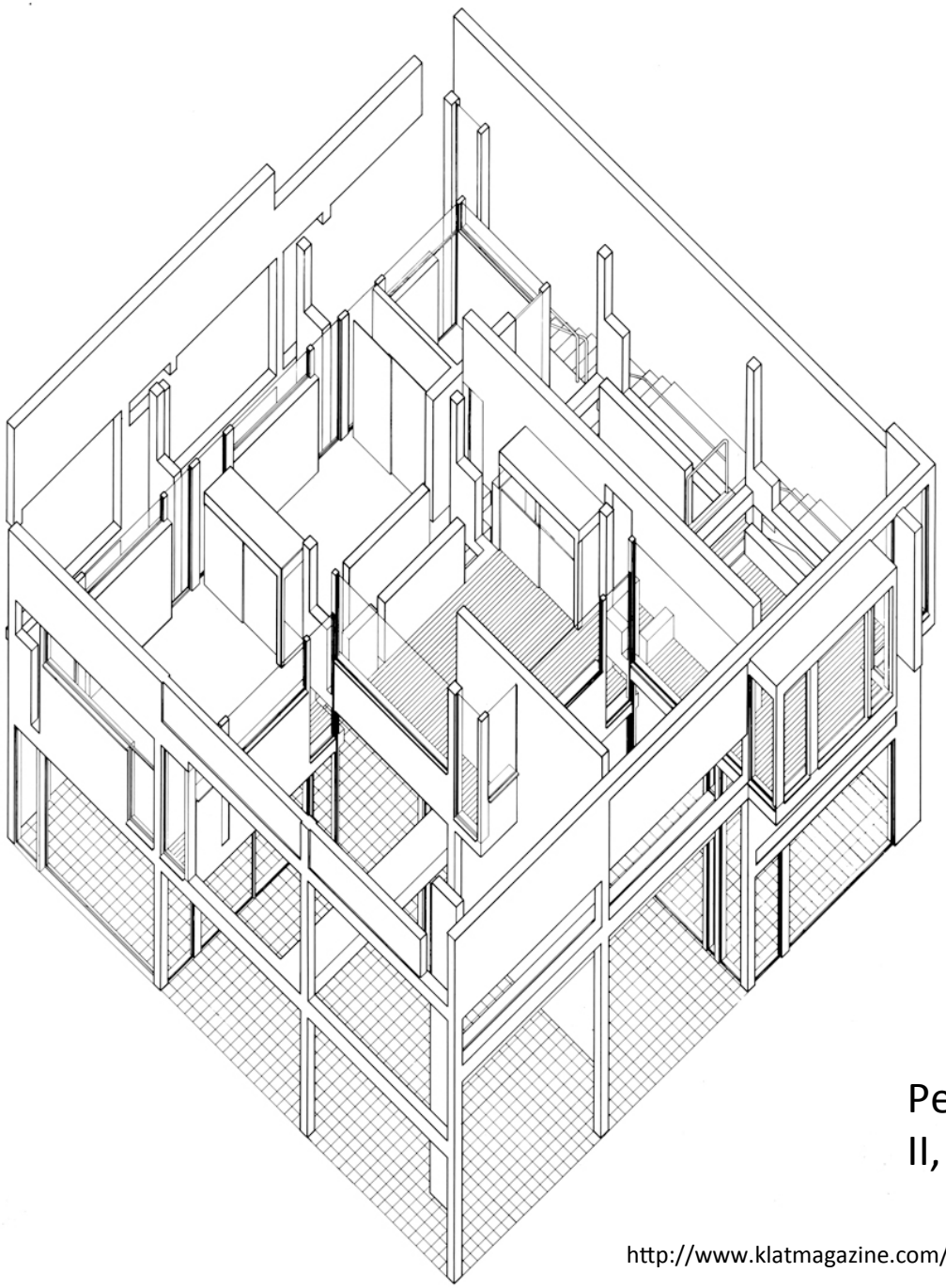
James Stirling axonometric, Florey Building, Oxford 1966-1971

http://40.media.tumblr.com/tumblr_lap7drBxSb1qb2gcso1_1280.jpg



James Stirling axonometric, concept for North Rhine-Westphalia art collection,

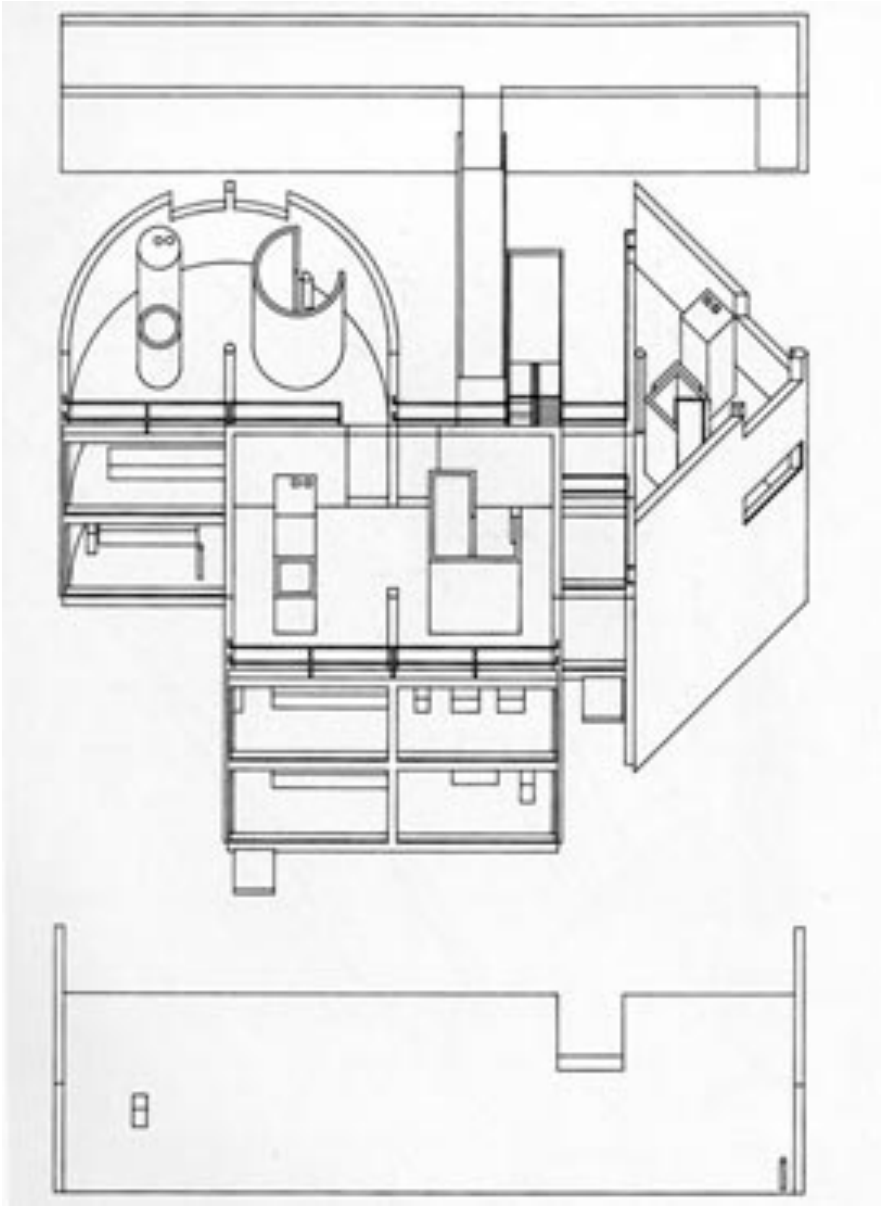
http://40.media.tumblr.com/tumblr_lap7drBxSb1qb2gcso1_1280.jpg



Here is an example of a standard 45/45-degree bird's-eye axonometric by Peter Eisenman.

Peter Eisenman, House II, axonometric.

http://www.klatmagazine.com/wp-content/uploads/2013/03/Klat_Peter-_Eisenman_3.jpg



http://etsavega.net/dibex/Choisy-e.htm

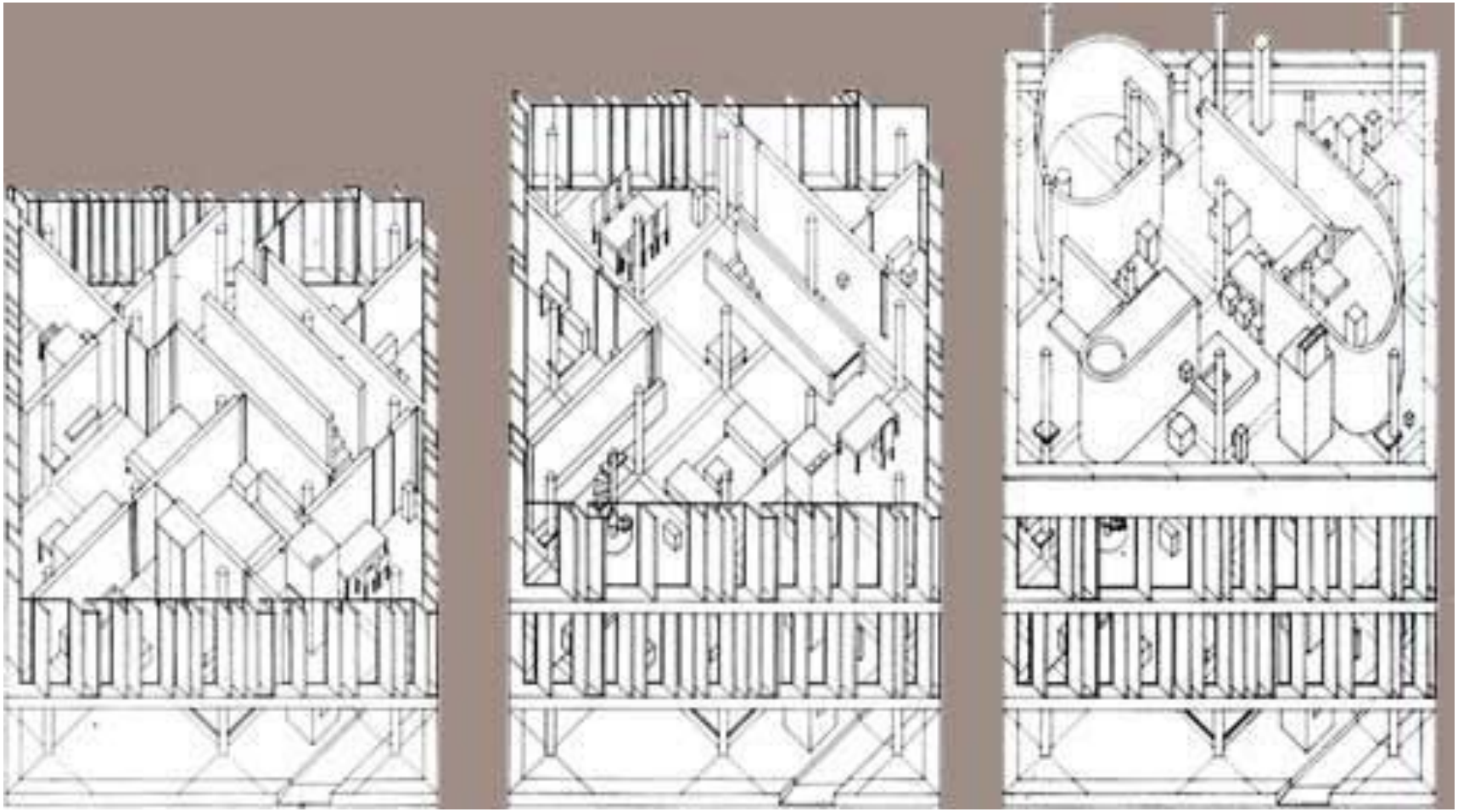
Some architects prefer to draw their axonometrics without rotating the plan. but still projecting lines straight upwards.
Notice how the lower floors are barely visible in these drawings.

John Hejduk, One-Half House, axonometric

This series of axonometrics by Bernard Tschumi also uses plans that have not been rotated.

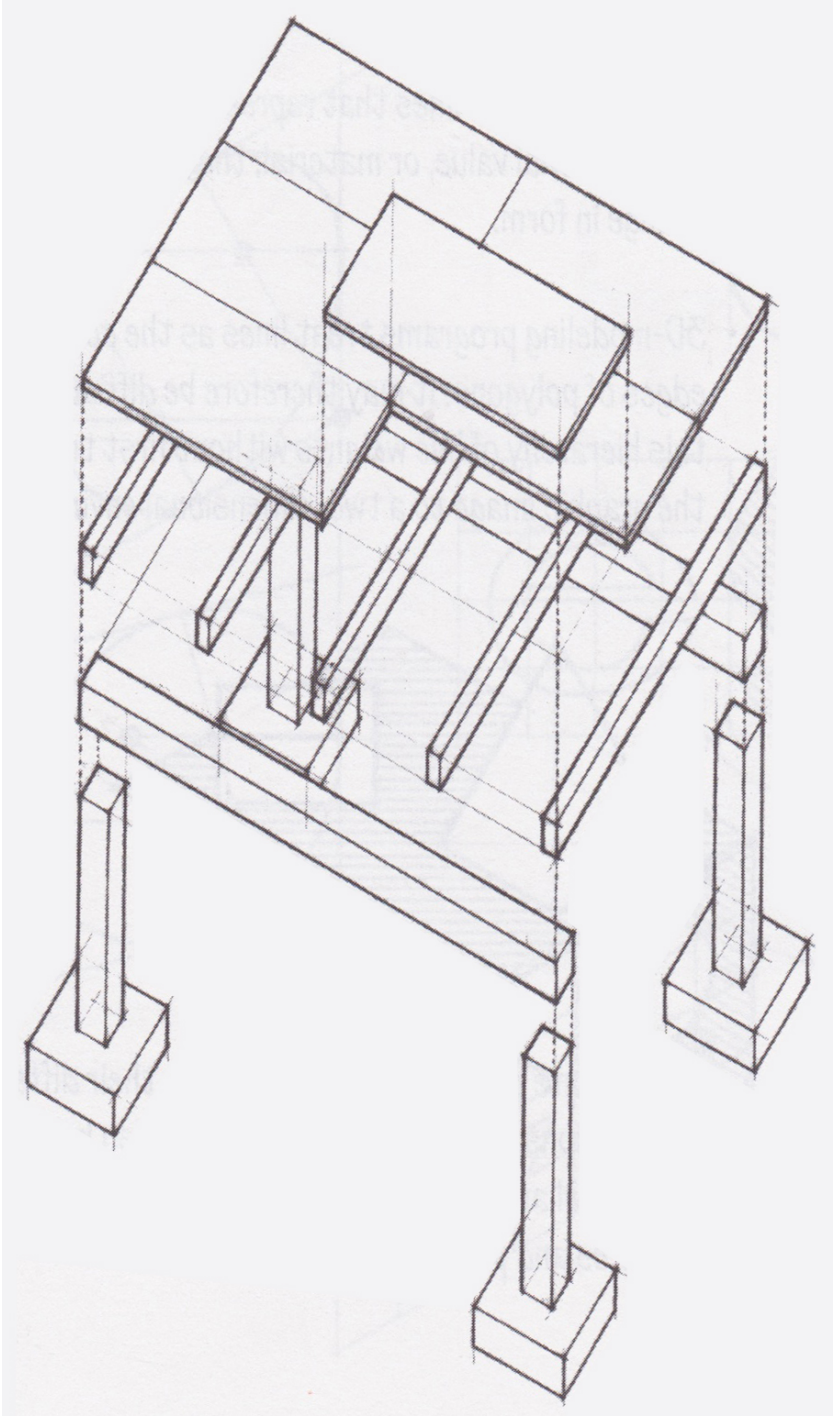
Bernard Tschumi, Parc La Villette follies, Axonometrics without rotating plan

http://static1.squarespace.com/static/5126a8e4e4b08376dc007217/54d2984ee4b0d87b5fd2d7d7/54d2989ce4b058d71b6e5740/1423087774001/01_la-villette_b-tschumi.jpg



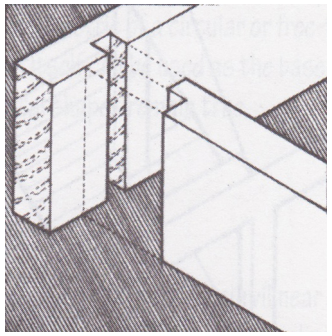
https://s-media-cache-ak0.pinimg.com/236x/53/90/f6/5390f676a2ded7bd57d30c0c9b881105.jpg

These plans, by architect John Hejduk, have been rotated 45 degrees, with lines projected upwards. Although they look like they have not been rotated, in their original orientation they are diamond shaped.

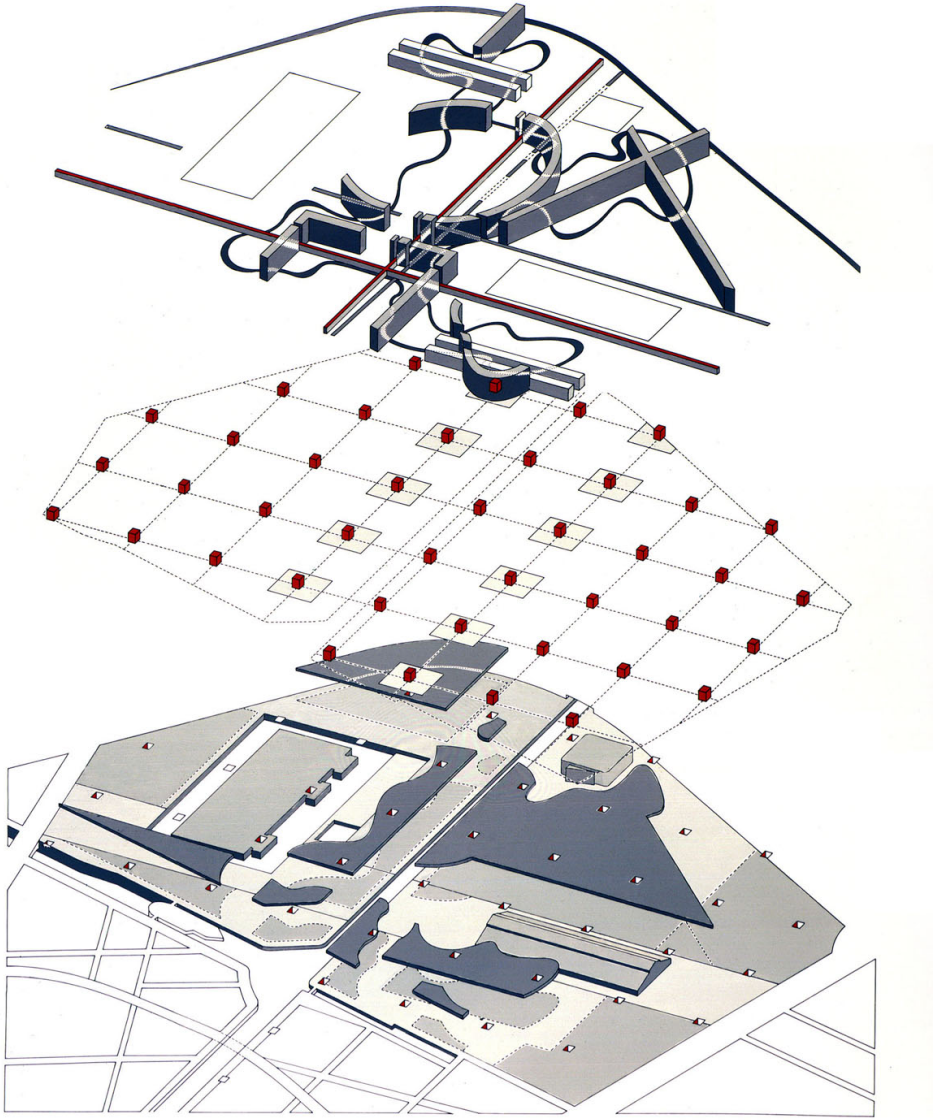


Exploded axo:

- Allow us to see the hidden portions of a complex construction.
- Made by shifting portions of a paraline drawing to new positions in space. The final drawing appears to be an explosion frozen at a point in time when the relationships between the various components are most clear.
- Useful in describing details, layering or sequence of an assembly.



Francis D.K. Ching, Architectural Graphics, John Wiley & Sons, 2010, p. 94.

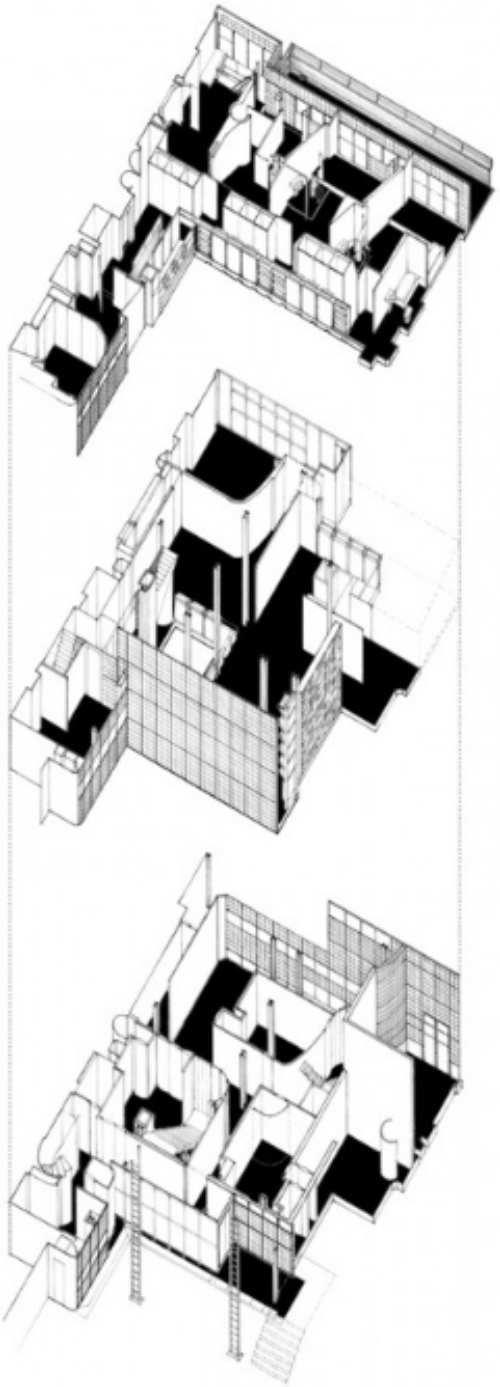


Exploded axonometric:

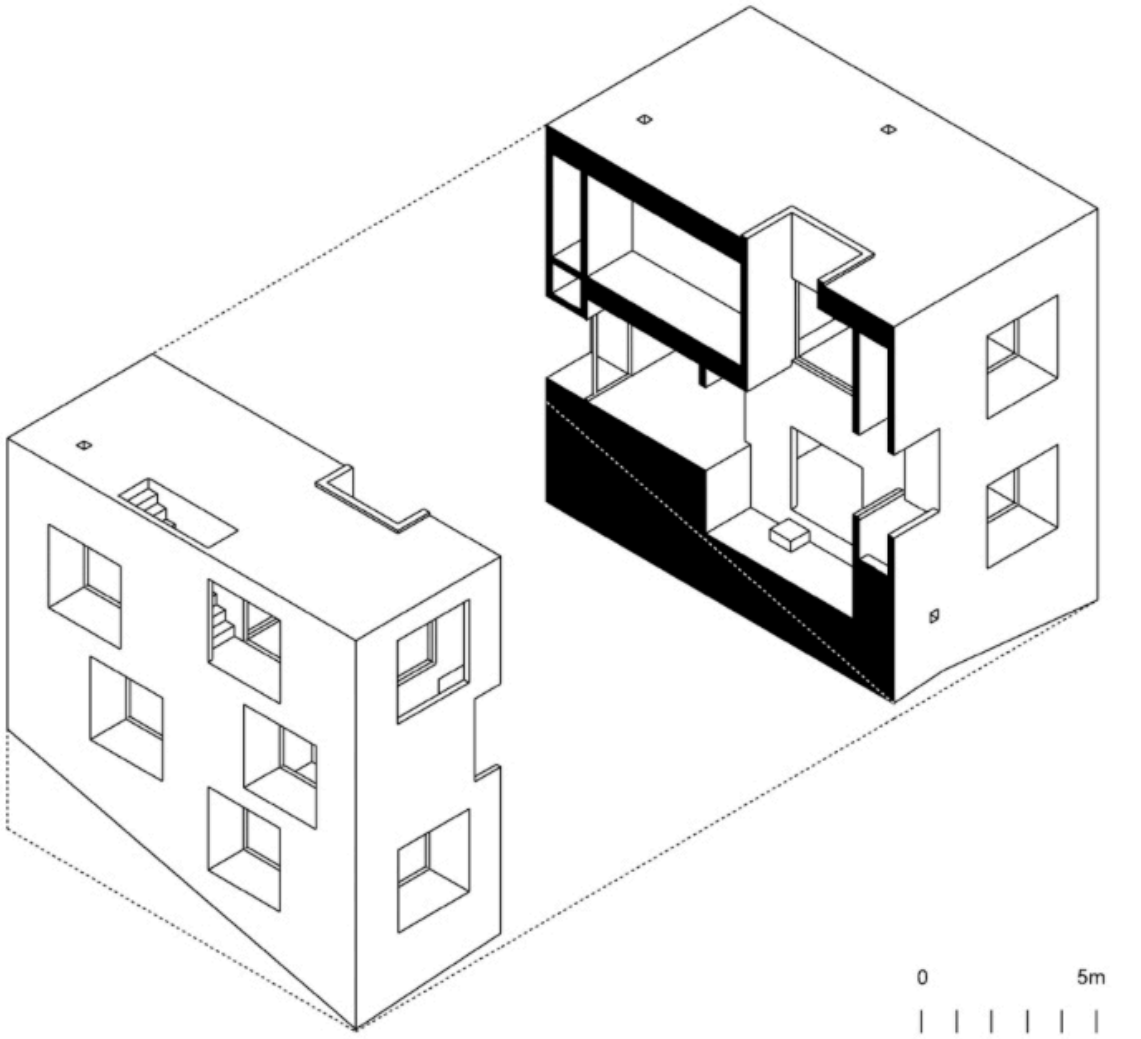
- Displacement of the parts should be in the order and direction in which they fit together.
- So, if exploding in several directions, parts need to be relocated along proper X, Y and Z axes.
- Indicate the relationships of the parts, to each other and to the whole, with dashed lines.
- Any overlap between the exploded parts should not conceal important information.

Bernard Tschumi, Parc La Villette exploded axonometric

http://41.media.tumblr.com/933cd12b0fdee7f310a993c96c8c7672/tumblr_nvm9colUTj1uv5nh7o1_1280.jpg

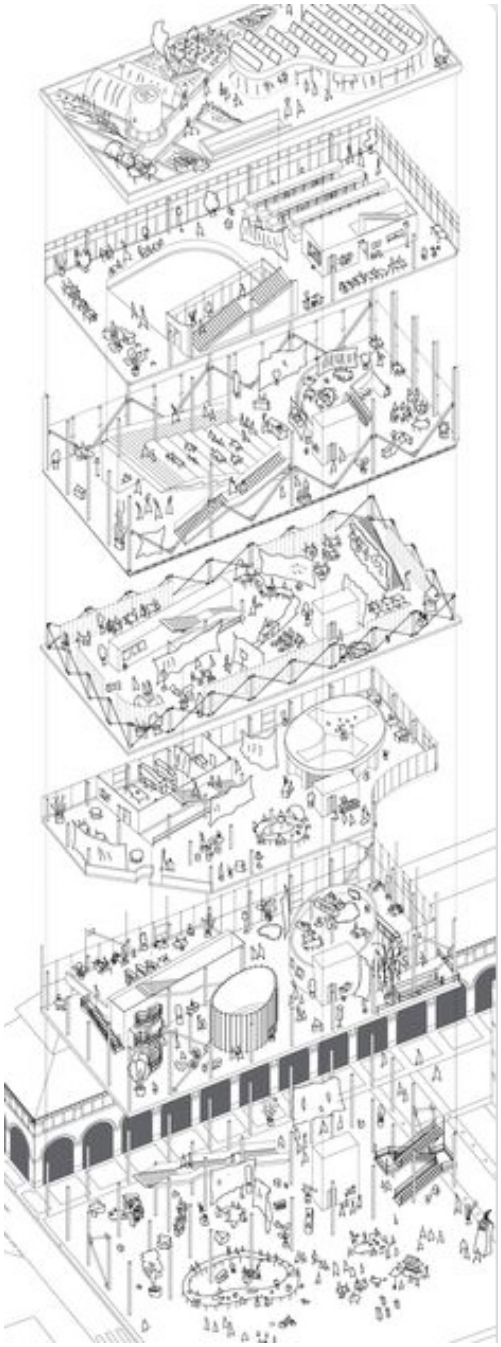


Pierre Chareau/Bernard Bijvoet - Maison de Verre – exploded axonometric
http://www.archdaily.com/248077/ad-classics-maison-de-verre-pierre-chareau-bernard-bijvoet/axon-30/



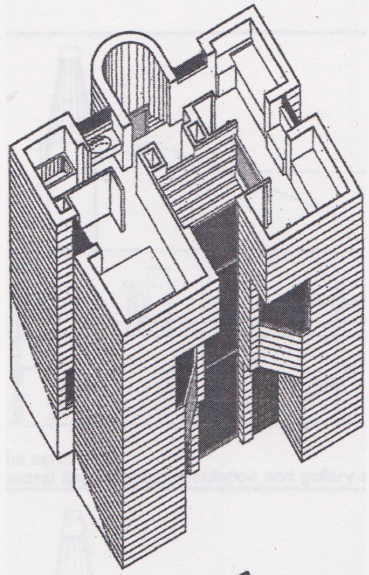
Poli House, Pezo von Ellrichshausen – exploded axonometric section

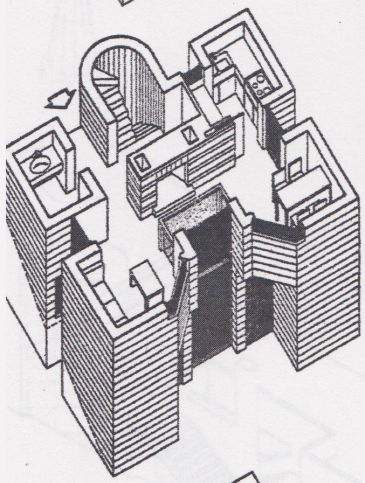
http://www.archdaily.com/476/poli-house-pezo-von-ellrichshausen/

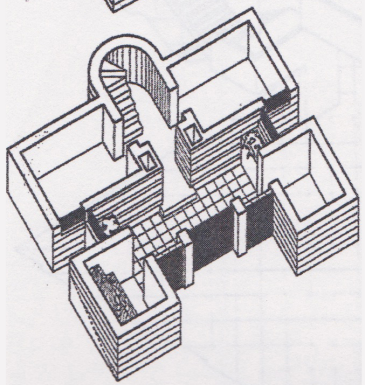


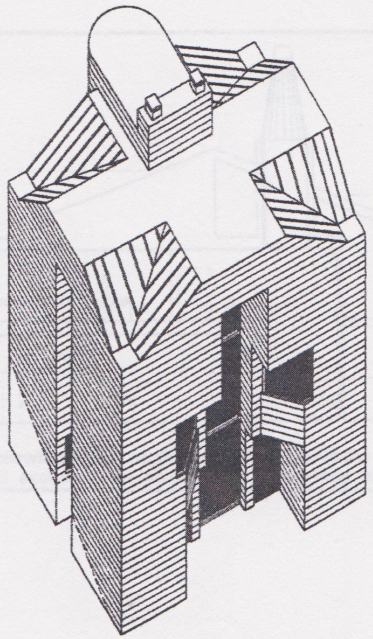
Gorka Beitia Zarandona – Paris Market Lab–exploded axonometric showing inhabitation

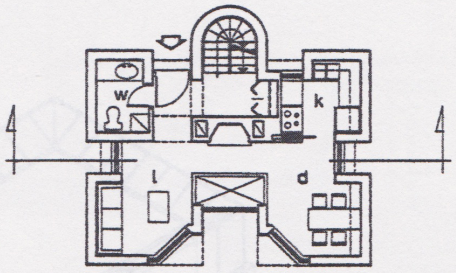
http://archinect.com/people/project/55410559/paris-market-lab/55433484







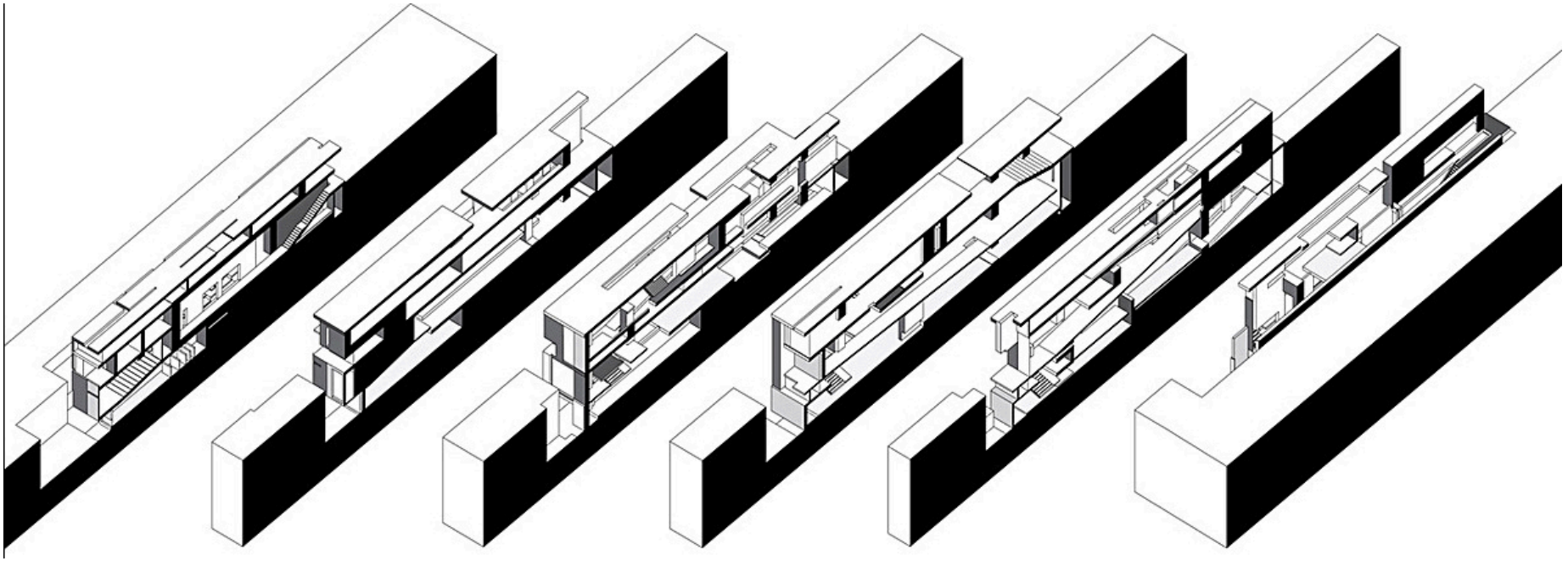




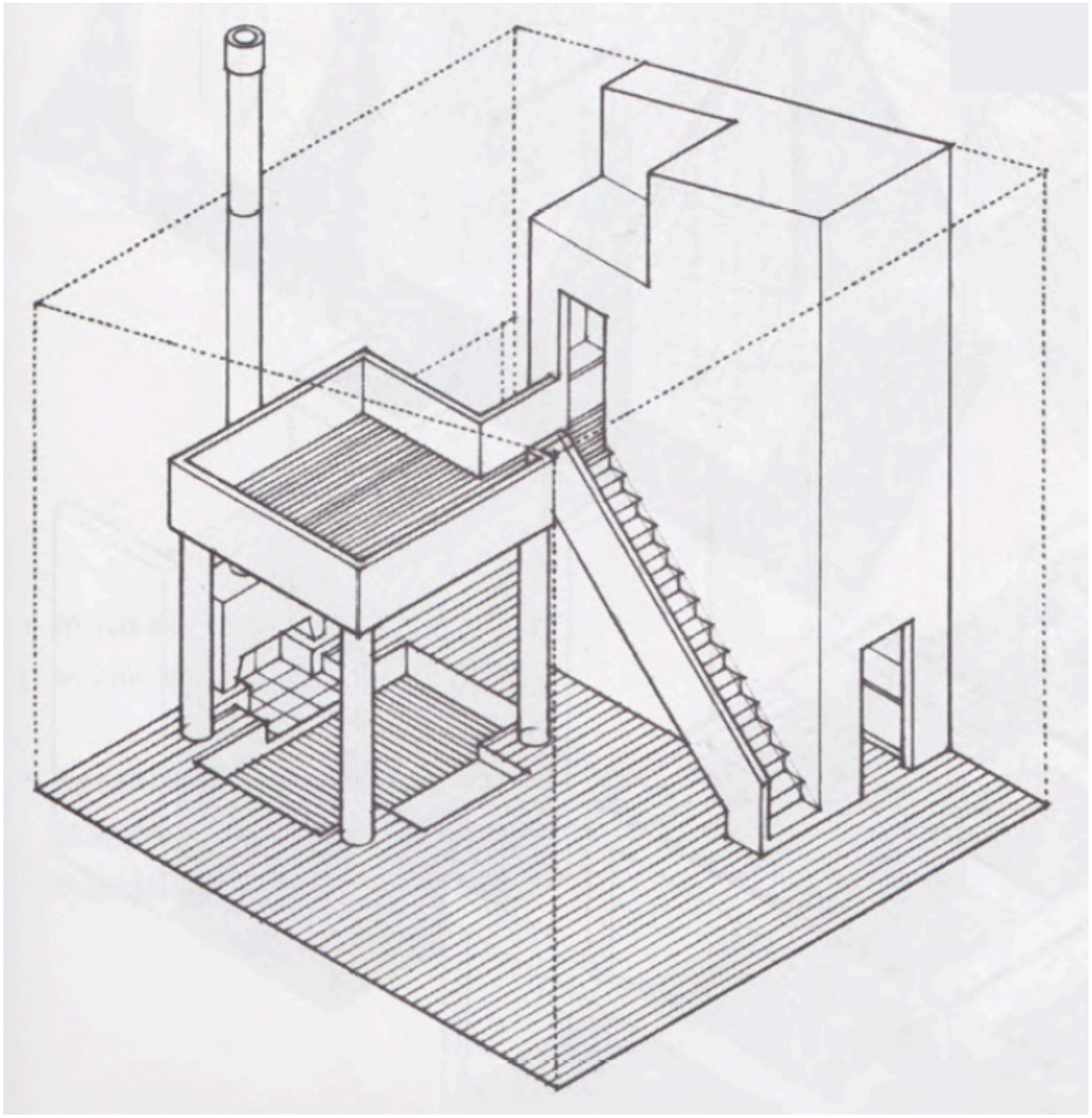
Sequential axo:

- A series of views that can explain processes and phenomena that occur in time or across space.

- Can illustrate interior organisation across several floor levels, with vertical elements (stairs, chimneys, etc.) linking spatially through all levels.



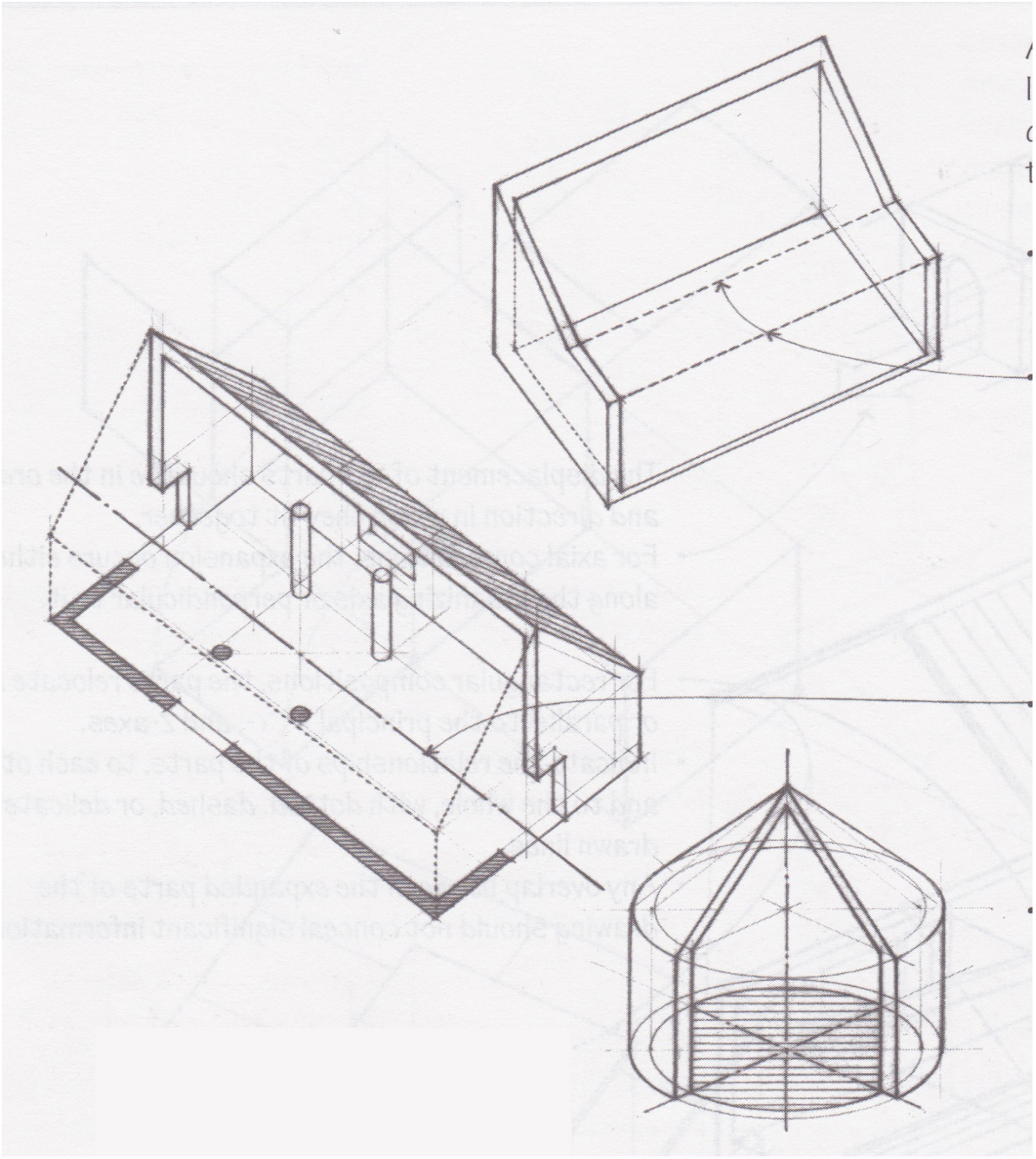
Yale University student project–longitudinal sequential sectional axonometric
http://archinect.com/features/article/2875457/5-projects-interview-5-alex-maymind



Francis D.K. Ching, Architectural Graphics, John Wiley & Sons, 2010, p. 97.

Phantom view:

- paraline drawing having one or more parts made transparent to allow viewing of internal information
- allows us to see the whole composition and its internal structure and arrangement
- should show the thickness or volume of the parts made transparent.

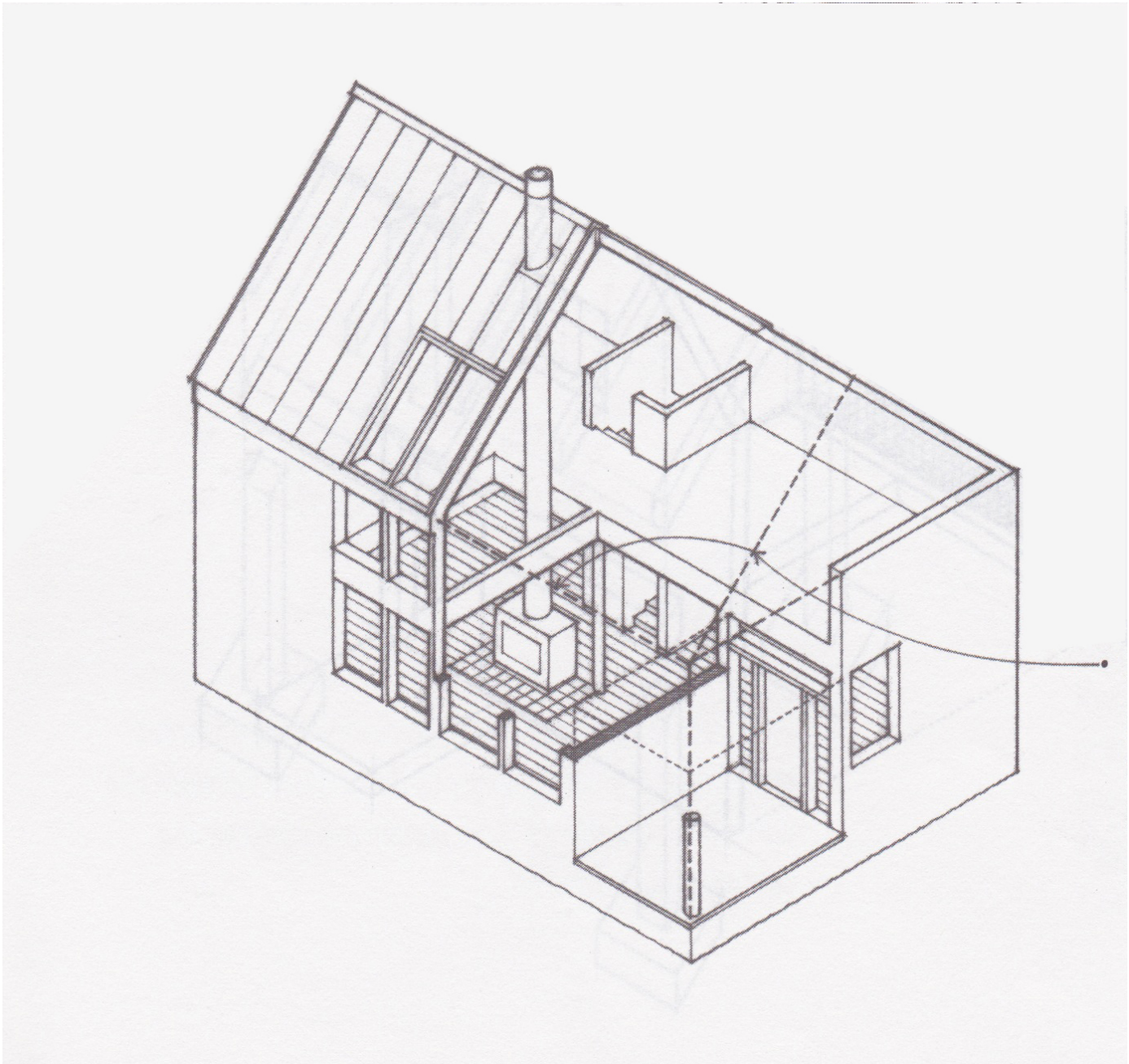


Cutaway view:

Paraline drawing having an outer section or layer removed to reveal an interior space or internal construction
Remove an outer layer (ie. roof, ceiling, wall, floor).

Remove a larger section by slicing through and indicating the footprint or plan view of the part removed.

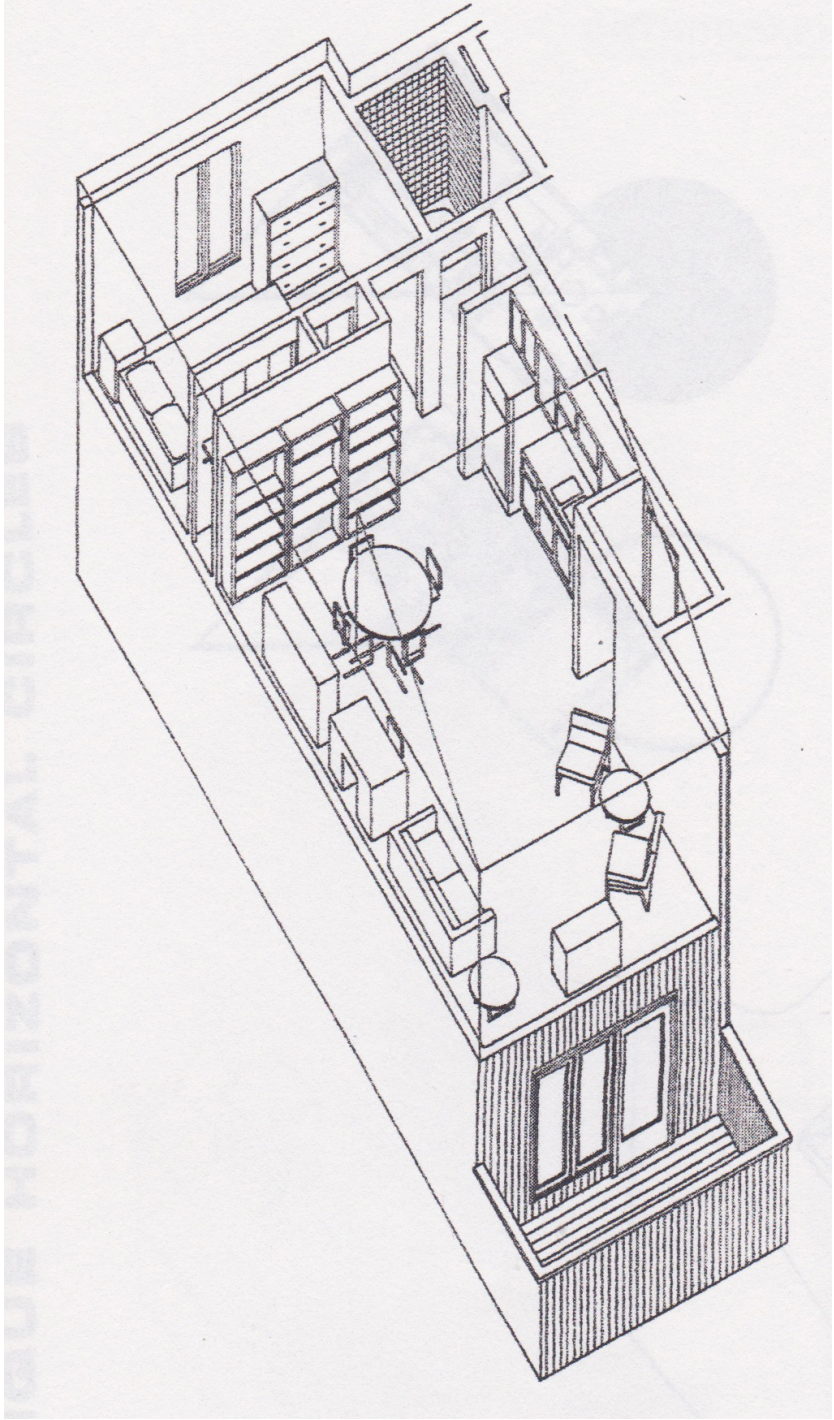
Francis D.K. Ching, Architectural Graphics, John Wiley & Sons, 2010, p. 96.



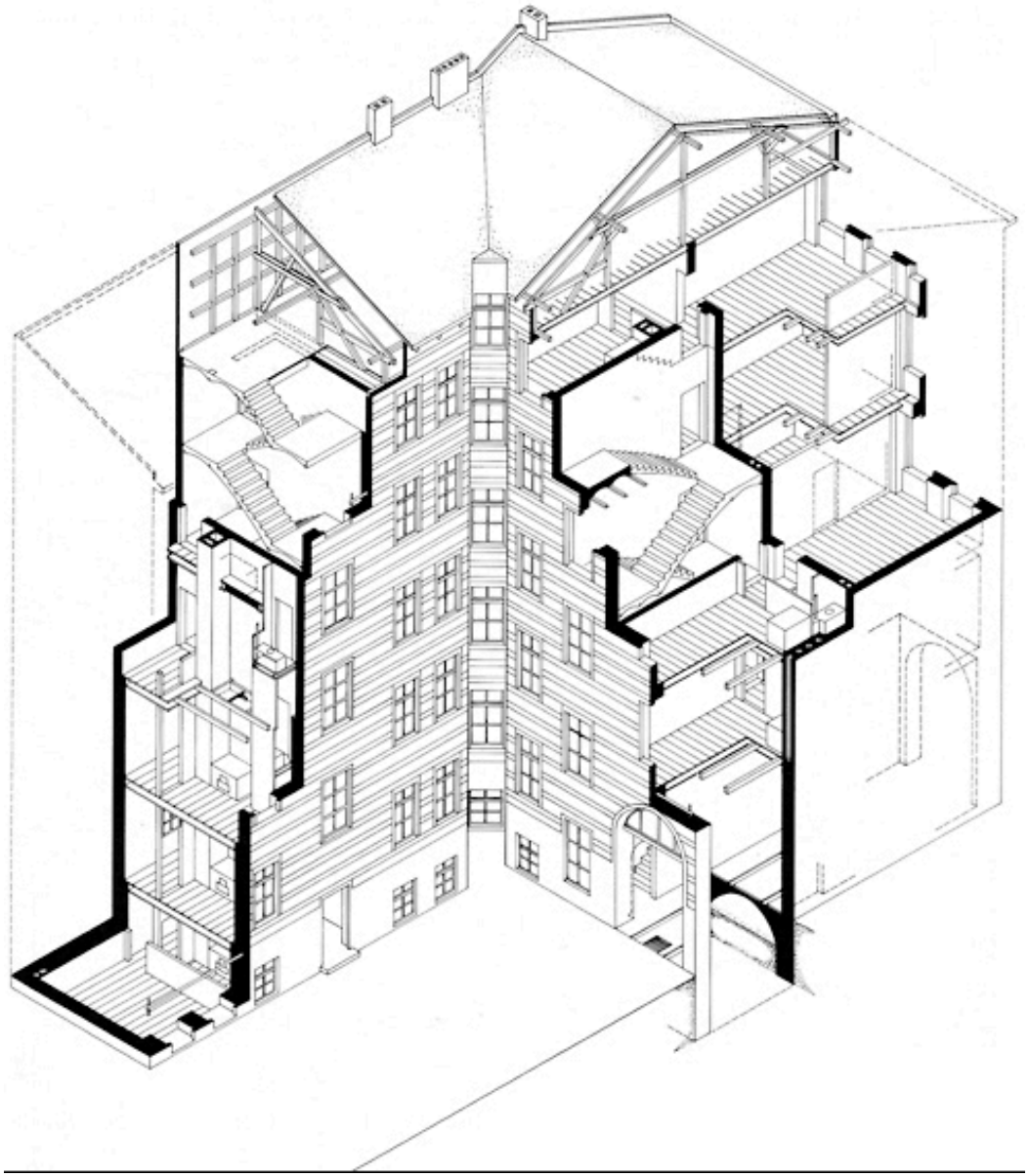
Cutaway view:

To reveal a more complex composition, the cut may follow a 3-dimensional route. The trajectory of the cut should clarify the overall form, and the cuts should be clearly articulated with line weights/tonal values. We can show the overall form of what is removed with a dashed line.

Francis D.K. Ching, Architectural Graphics, John Wiley & Sons, 2010, p. 96.

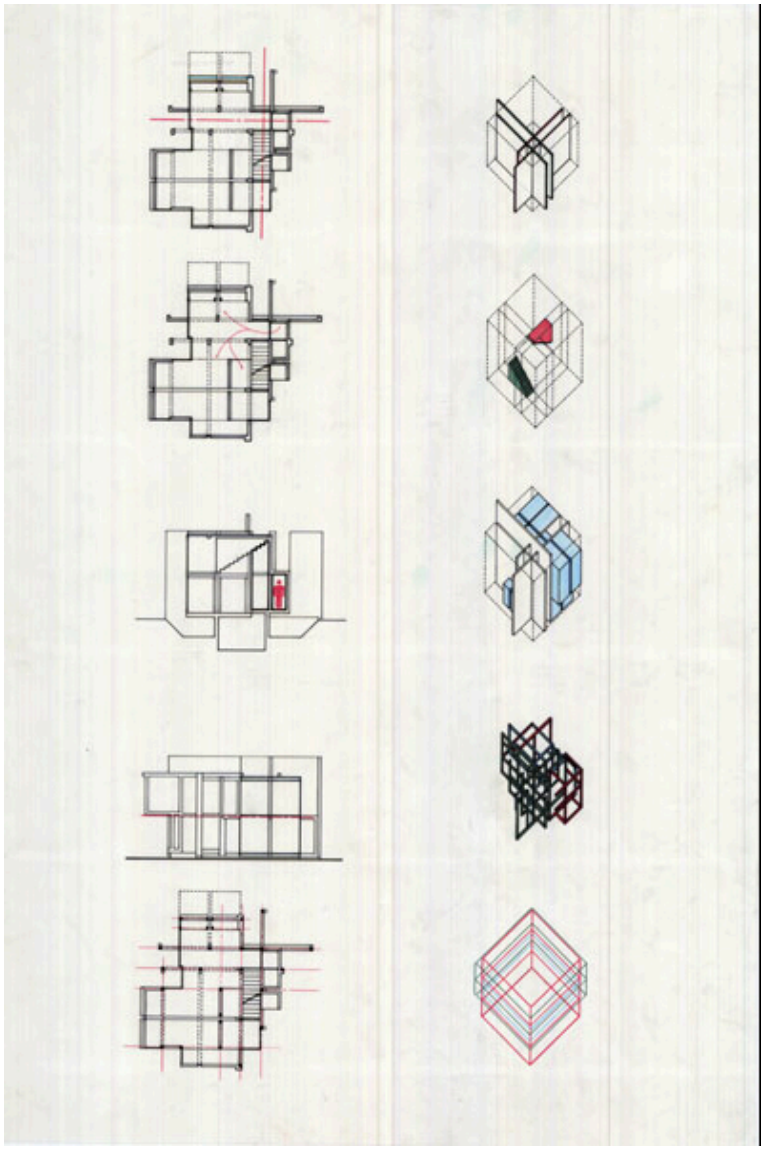


Cutaway view with two walls and roof removed



Barlett First year student project – cutaway axonometric of existing building

http://bartlettyear1architecture.blogspot.it/2012/04/heiko-rossger-systematic-axonometric.html



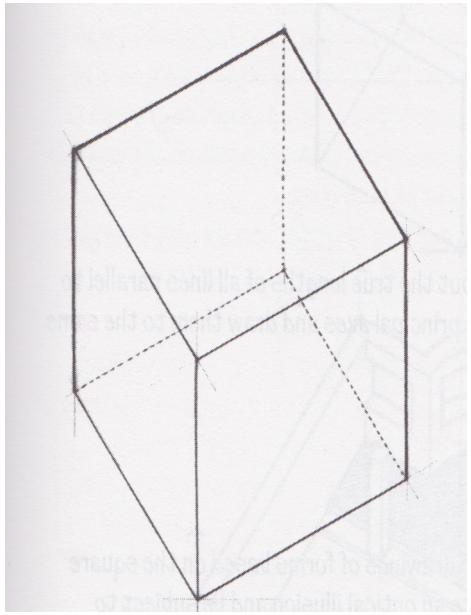
Peter Eisenman analytical axonometrics

http://artisticarchi.blogspot.co.nz/2009/04/interesting-things-of-eileen-grays.html

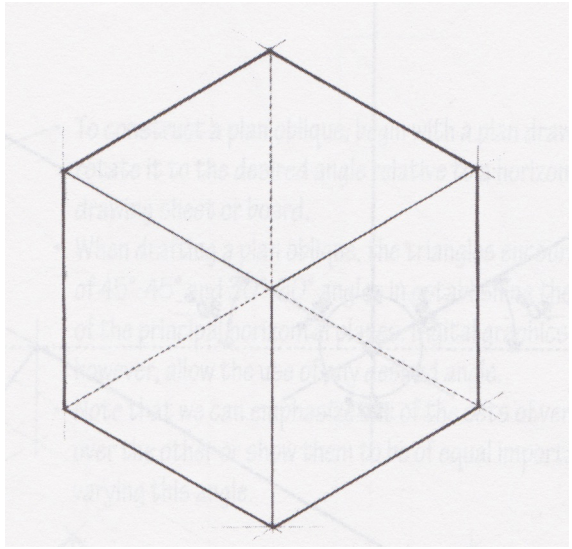
Isometric projection

An **isometric projection** is a special type of axonometric projection in which:

- all three principal sets of planes share equal emphasis.
- the angle of view is slightly lower than that of plan obliques (axonometrics).
- plans and elevations **cannot** be simply rotated and used as base drawings.
- relative proportions of the object are preserved and there is much less distortion of the object than in plan obliques (axos).

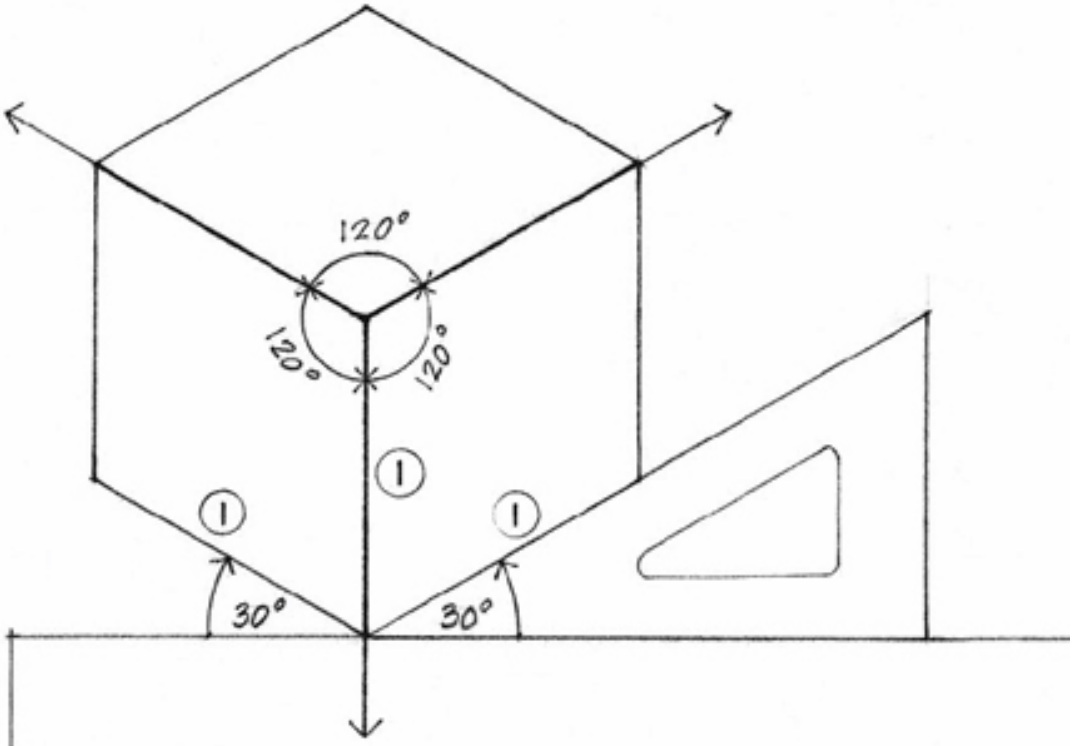


30 degree axonometric cube

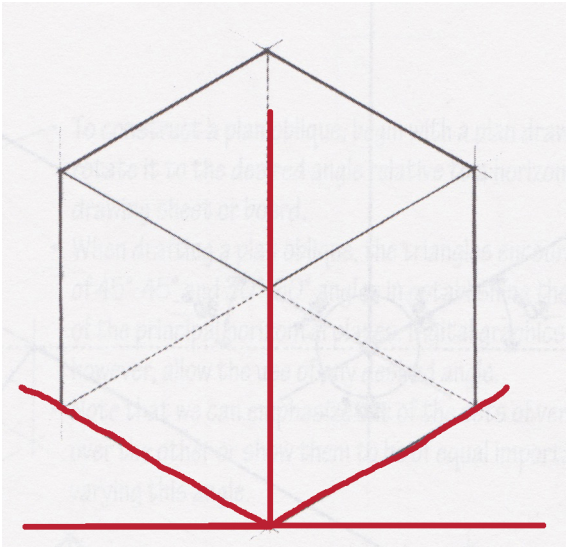


Isometric cube

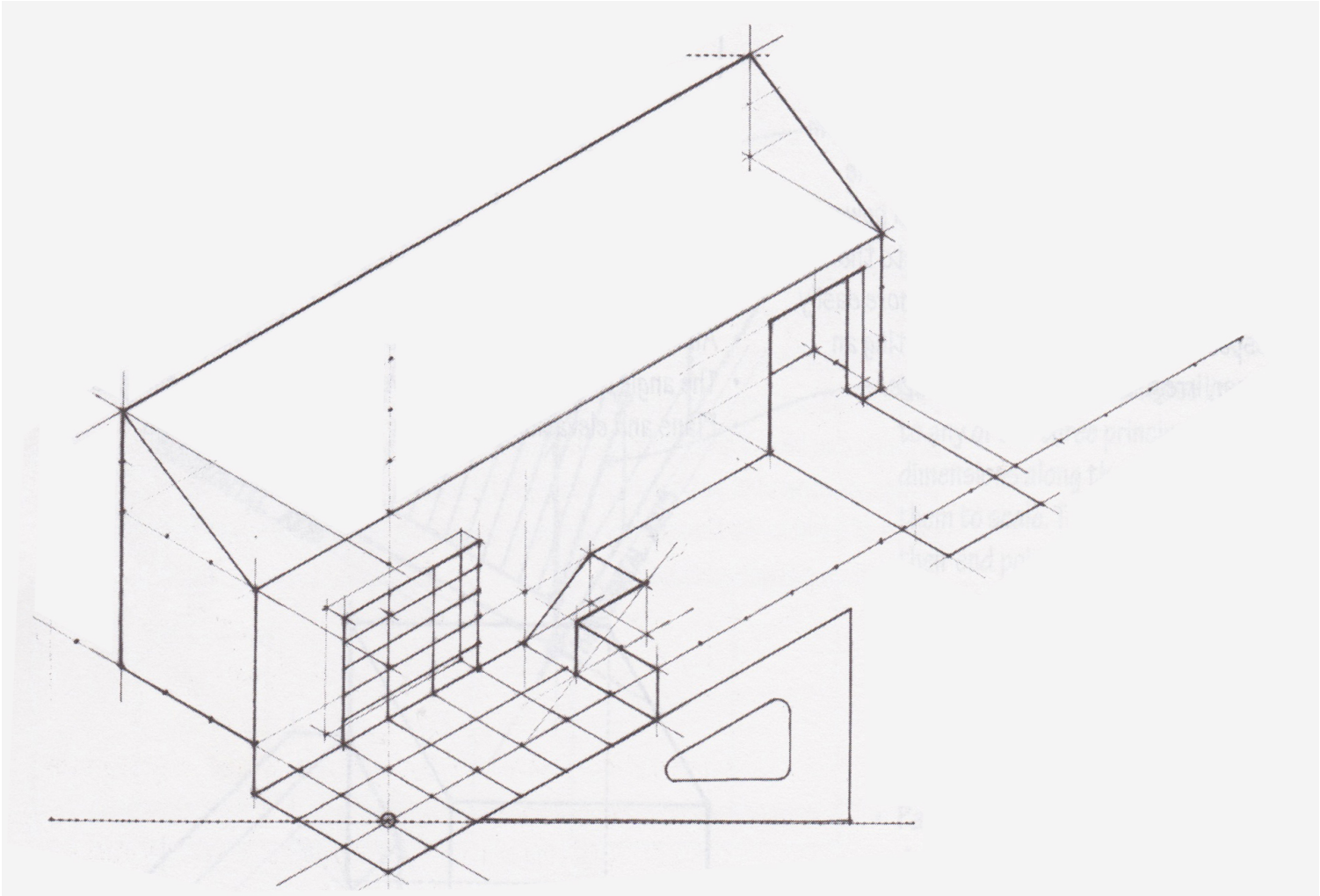
ISOMETRIC DRAWINGS



Francis D.K. Ching, Design Drawing, John Wiley & Sons, 2010, p. 198.



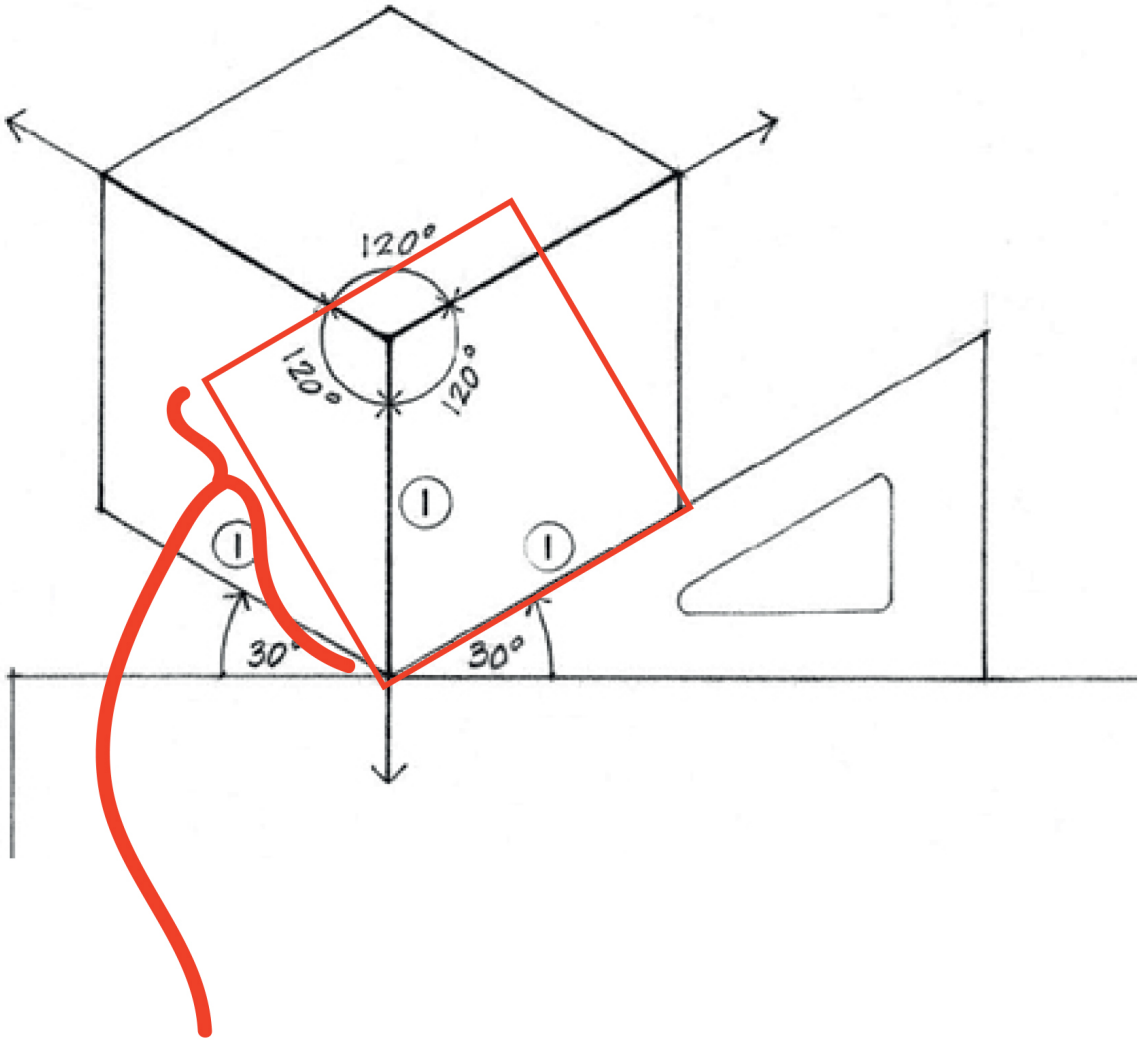
To construct an isometric drawing:
1) Establish the direction of the three principal axes. Because they are 120 degrees apart on the picture plane, if we draw one axis vertically, the other two axes make a 30 degree angle with a horizontal line.



Francis D.K. Ching, Architectural Graphics, John Wiley & Sons, 2010, p. 88.

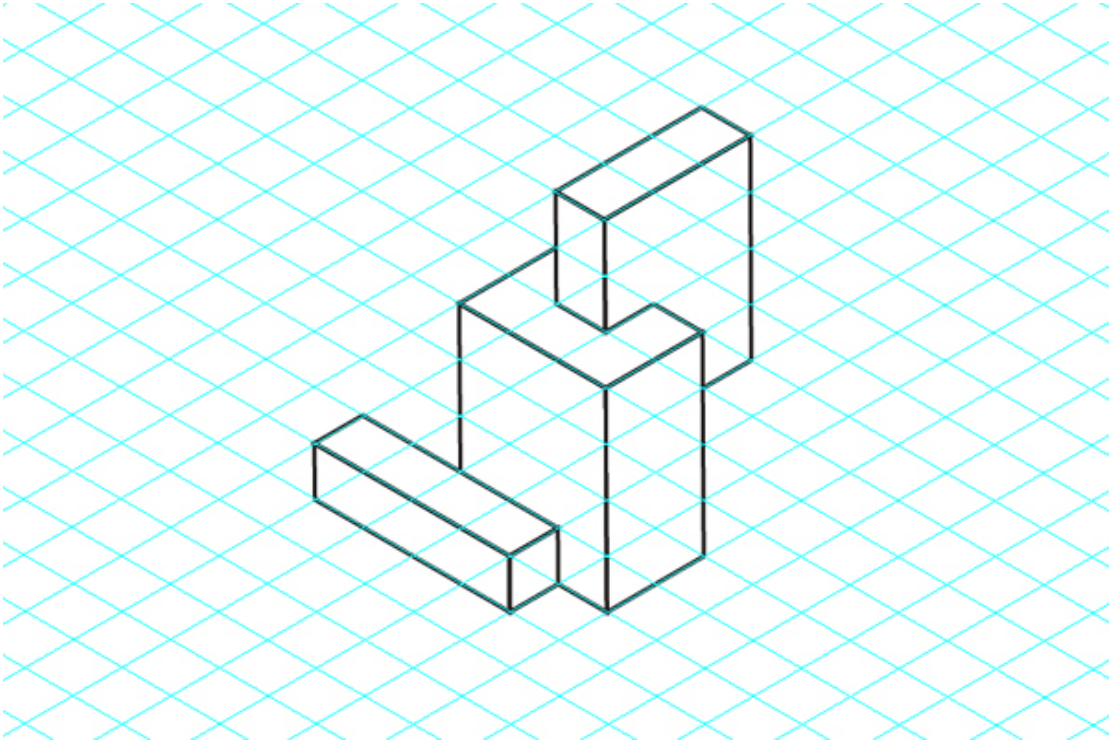
To construct an isometric drawing:
2) Lay out the true lengths of all lines parallel to the three principal axes and draw them to the same scale.

ISOMETRIC DRAWINGS



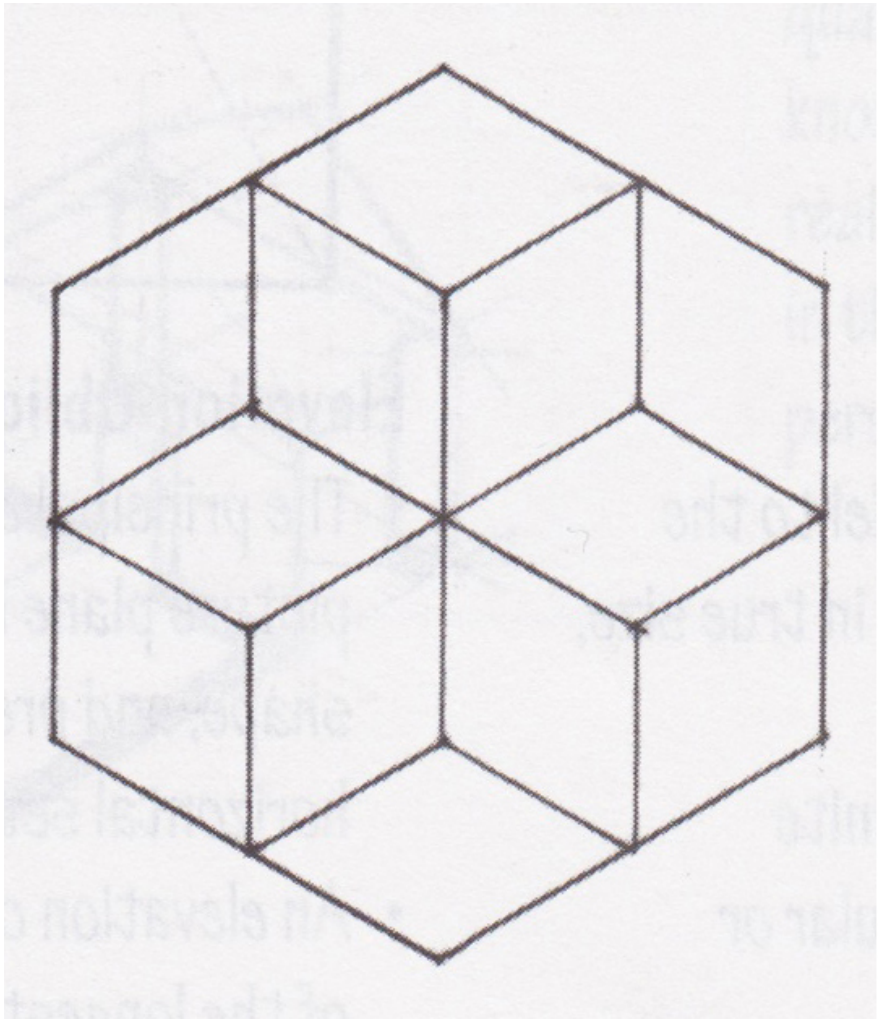
the distances along this axis must be measured and transferred to the 30 degree line

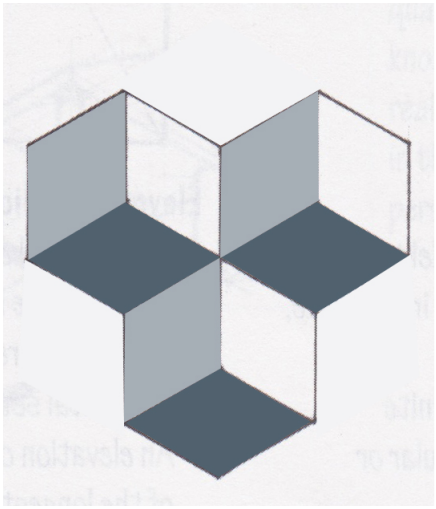
Because of the 30 degree angles, all elements in plan cannot be projected with vertical lines, but instead must be measured off of the plan and redrawn on the 30 degree angle line.

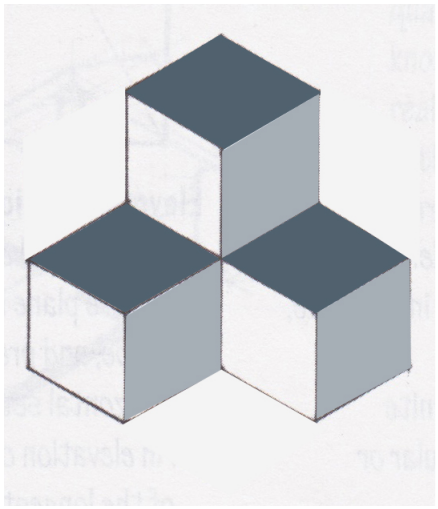


https://cdn.tutsplus.com/vector/uploads/legacy/qt/qt_35_isometric_grid/final.jpg

An easy way to construct an isometric is to draw a 30/30-degree isometric grid at the appropriate scale and then use this as your basis for transferring the plan to isometric space.

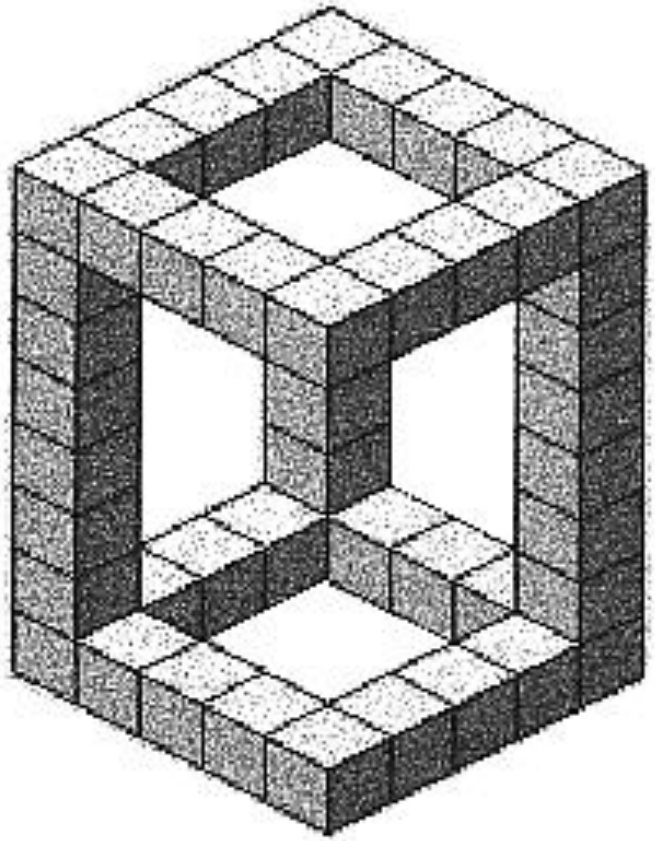






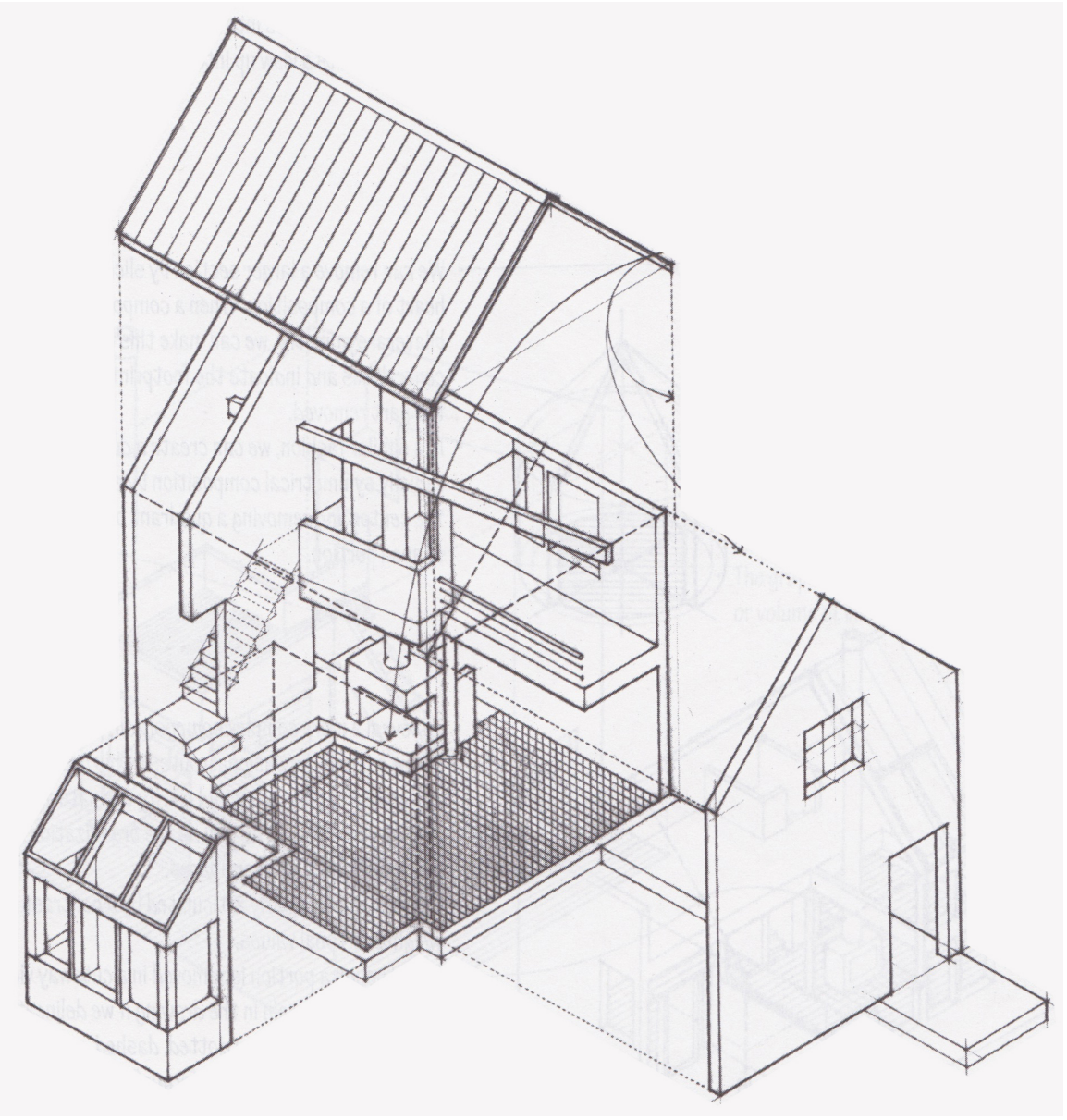
Francis D.K. Ching, Architectural Graphics, John Wiley & Sons, 2010, p. 88.

Isometric drawings of forms based on the square can create an optical illusion and be subject to multiple interpretations. This ambiguity results from the alignment of lines in the foreround with those in the background. In such cases, a plan oblique might be a better drawing to avoid the multiple interpretations.



This is why isometric drawings are often used when trying to create 'impossible' constructions

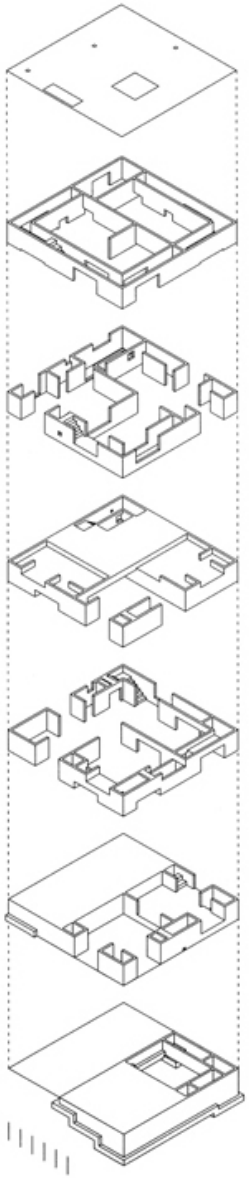
http://ehlt.flinders.edu.au/education/publications/JOURNALS/dix99a/Image2.gif



Exploded isometric:

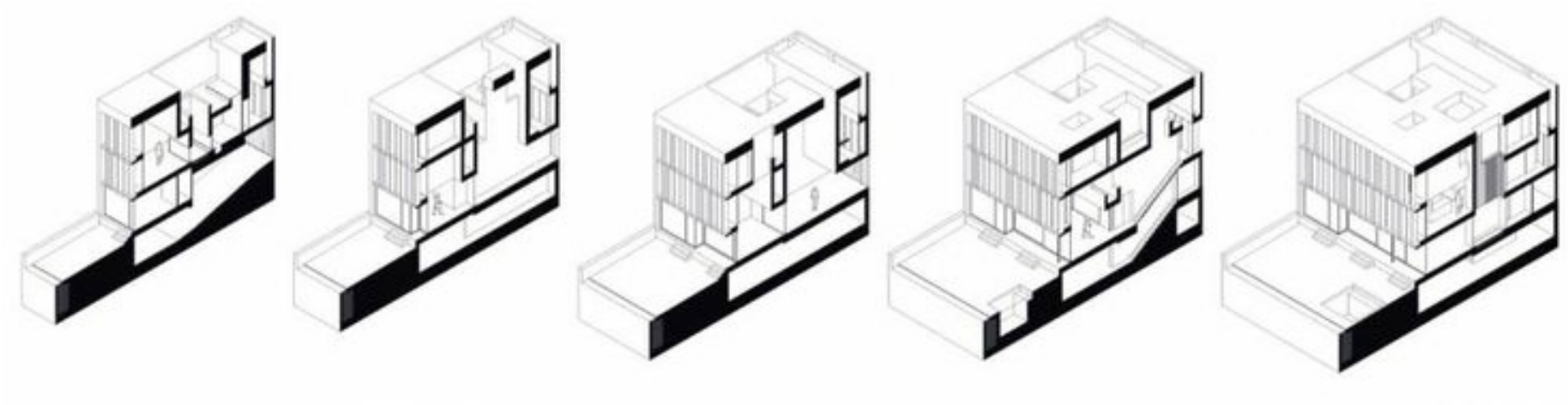
- Displacement of the parts should be in the order and direction in which they fit together.
- So, if exploding in several directions, parts need to be relocated along proper X, Y and Z axes.
- Indicate the relationships of the parts, to each other and to the whole, with dashed lines.
- Any overlap between the exploded parts should not conceal important information.

Francis D.K. Ching, Architectural Graphics, John Wiley & Sons, 2010, p. 95.



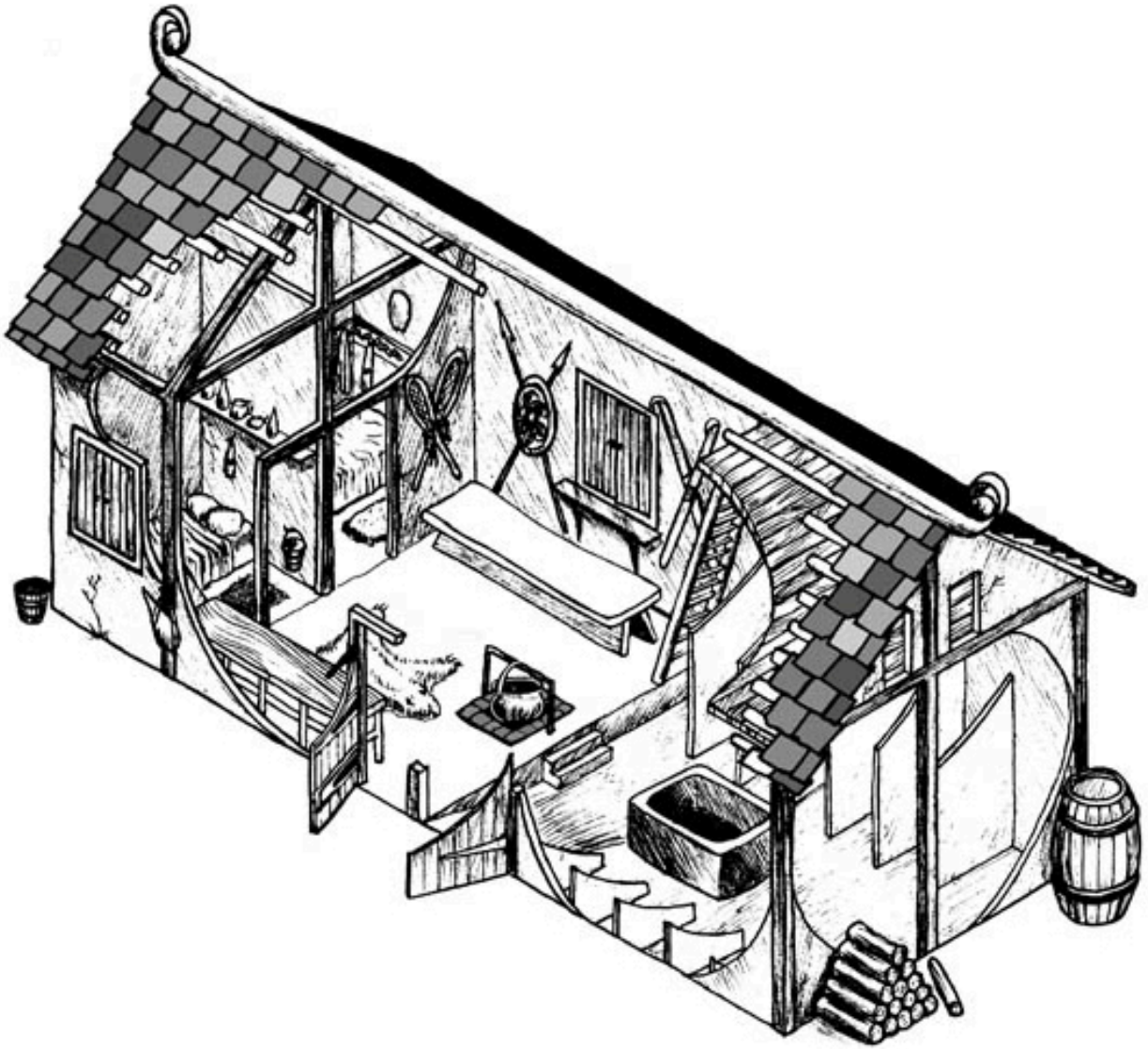
Pezo von Ellrichshausen, Casa Poli exploded isometric

http://www.plataformaarquitectura.cl/cl/02-1335/casa-poli-pezo-von-ellrichshausen/5126d7beb3fc4b11a700013b

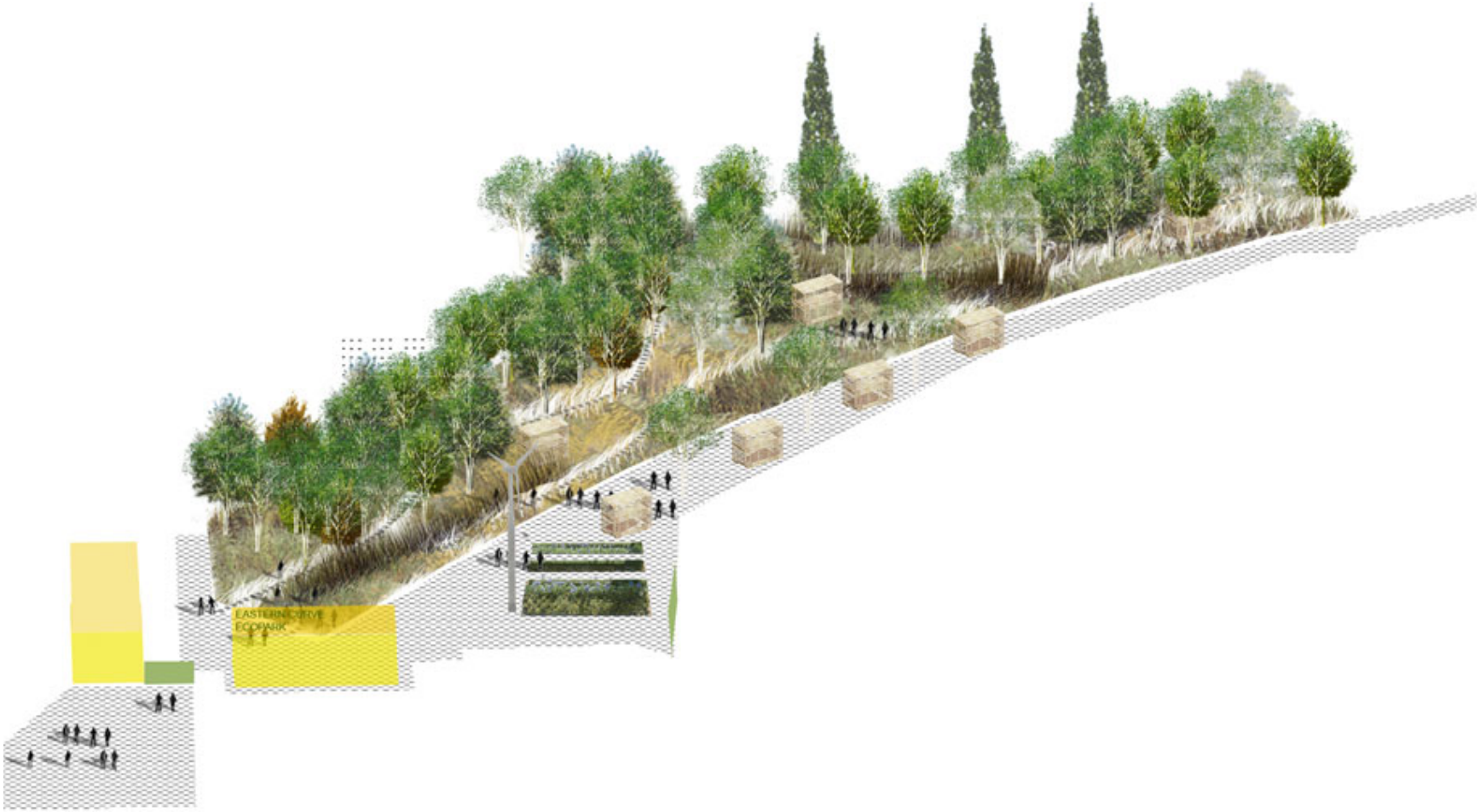


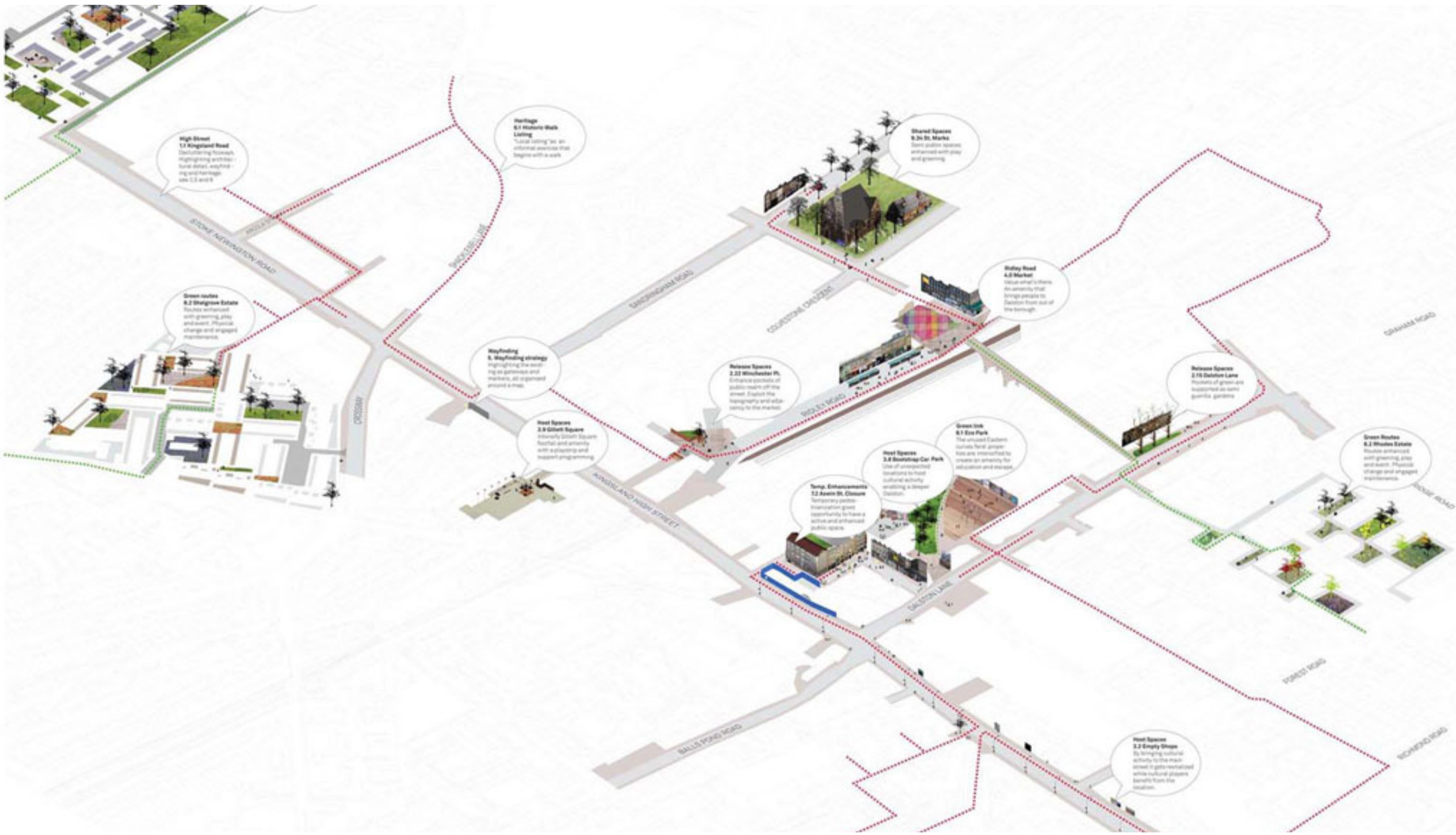
Can Joan Jaume – Ted'A arquitectes – sequential sectional isometric

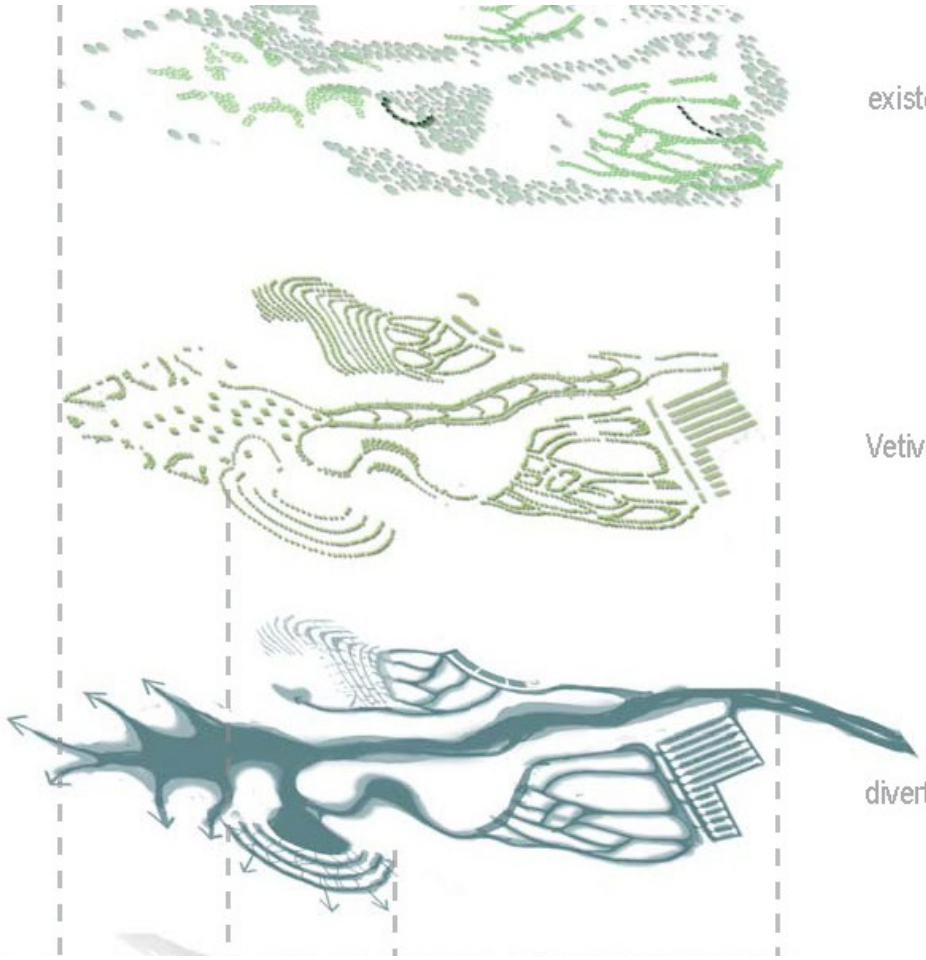
http://www.archdaily.com/137390/can-joan-jaume-ted'a-arquitectes/axiometric-7/



Cutaway isometric of Orlanthi steadhouse
http://www.cartographersguild.com/showthread.php?t=5177


EASTERN CORVE
ECO PARK

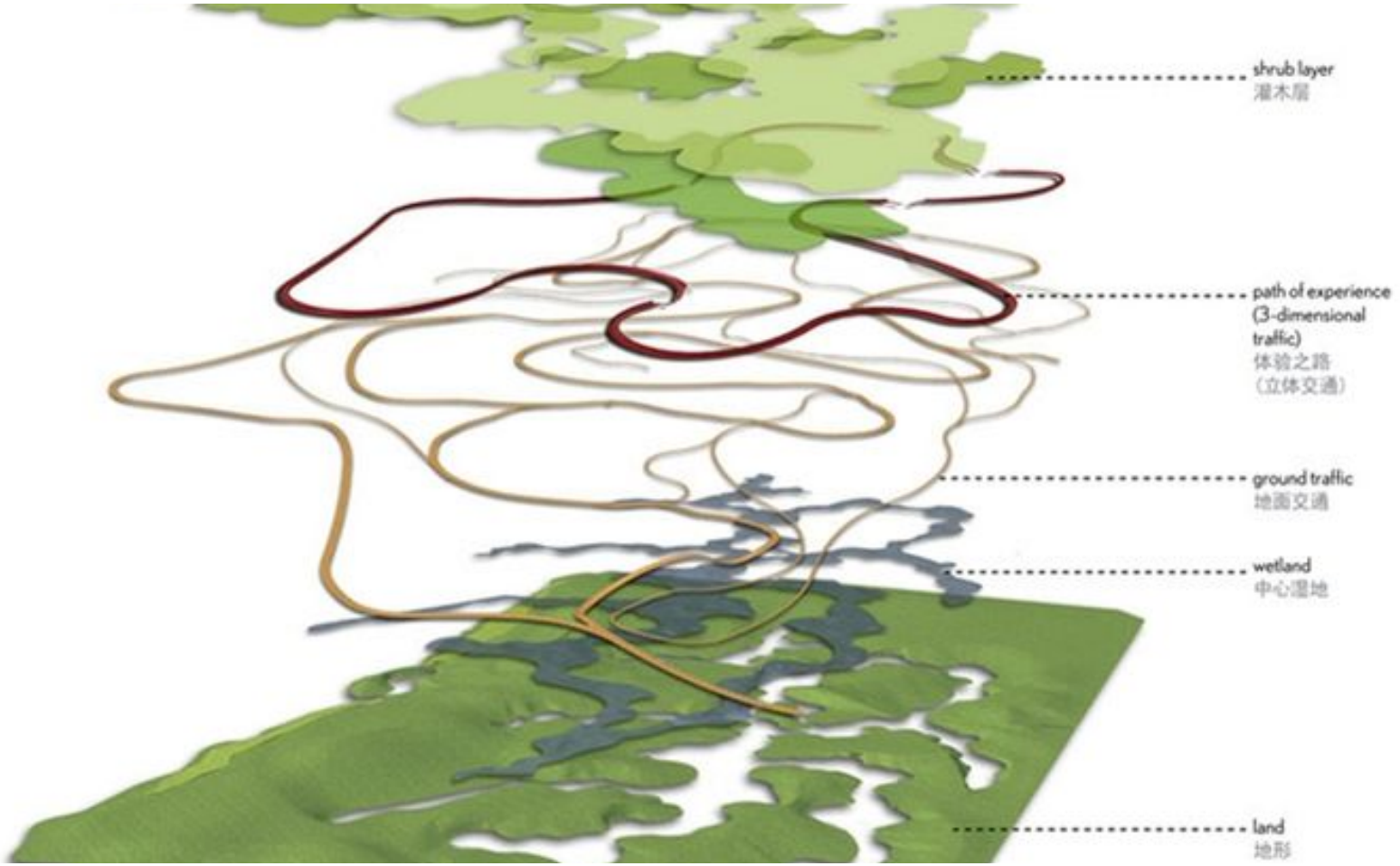

STOKE NEWINGTON ROAD
SANDRINGHAM ROAD
RIDLEY ROAD
KINGSLAND HIGH STREET
DALSTON LANE
BALLS POND ROAD
GRAHAM ROAD
FOREST ROAD
RICHMOND ROAD



existent and newly planted local plant species

Vetiver planted on channel edges and on contours.

diverted channel flow of water into wetland


shrub layer
灌木层
path of experience
(3-dimensional
traffic)
体验之路
（立体交通）
ground traffic
地面交通
wetland
中心湿地
land
地形

- References for Arch Rep images
-
- http://lalh.org/wp-content/uploads/2013/03/Camden-Amphitheater-Axonometric-BirdsEye-520.jpg
-
- https://i.pinimg.com/originals/f9/00/23/f900231c8be4176b7cee65e8ffcb6ab8.jpg
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- https://architectureau.com/articles/lady-cilento-landscapes/
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- 6/7. http://www.landezine.com/index.php/2012/01/making-space-in-dalston-by-j-l-gibbons-landscape-architects/