

Arch 463
ECS
Fall 2004

Name _____

Quiz #4

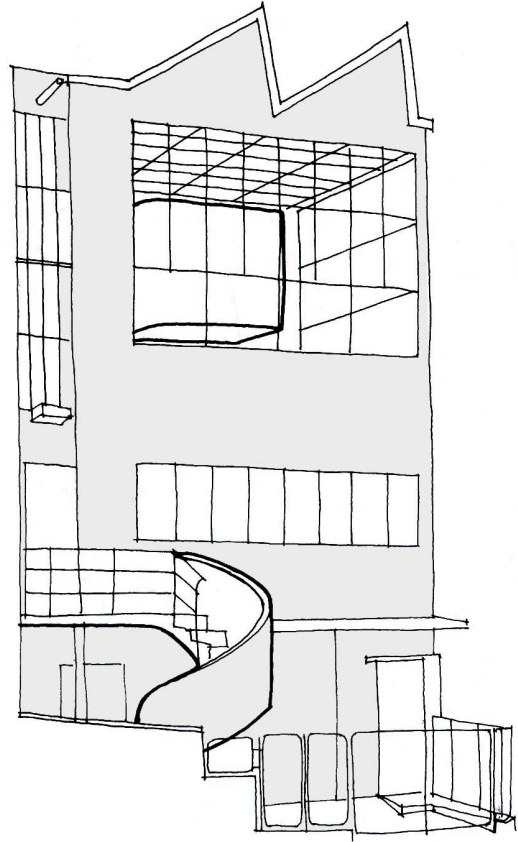
"New Life for Ozenfant's Studio"

For this problem you are the mechanical systems advisor. You've been asked to help the architect integrate the HVAC systems with the structural and spatial design for his remodel of le Corbusier's 1922 live-work studio for Ozenphant. The building has survived the past 80 years intact, but stripped of all its original interior features, except the spiral staircase. Original walls (uninsulated concrete) and windows (single pane clear glass) are intact. The structural system is concrete post and slab construction with the posts embedded in the concrete exterior walls (the post at the south-west corner is the exception), so each floor offers an expanse of open space unencumbered by vertical structural elements.

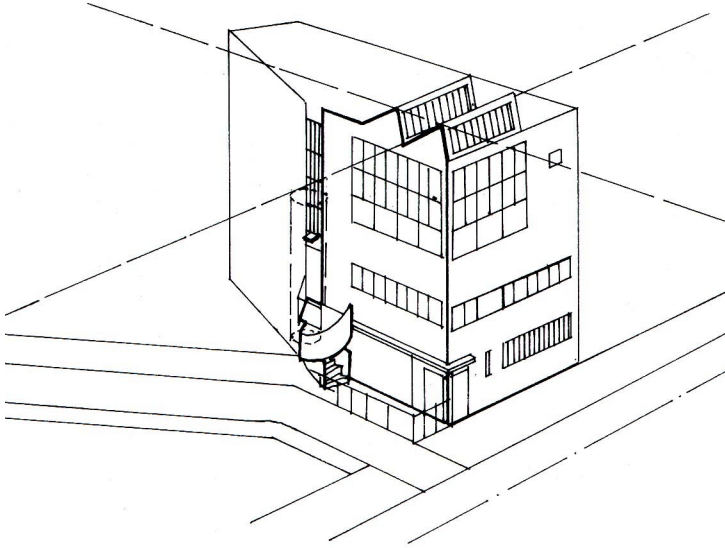
The plan is to use the ground floor as a cafe with indoor tables and tables on the street. A large garage door connects the indoor and outdoor spaces. The first floor will be a more formal restaurant, serving lunch and dinner. A sculpture gallery will occupy the loft space of the upper floor. The general intention is to place all the services (kitchen, bathrooms, and offices) at the north end of each floor with reception near the doors and gallery and dining spaces near the south and west walls.

Espresso will happen in the cafe, so it's occupancy extends from 6 am until midnight; the restaurant will be packed with diners from 11 am until midnight; and the gallery although open from 11 am until midnight will rarely have more than a handful of occupants except during the rare gallery openings.

The building is located in Paris just south of the Latin Quarter. It suffers from Paris' hot humid summers and cool damp winters. The city is located several miles due East of Moscow, Idaho.



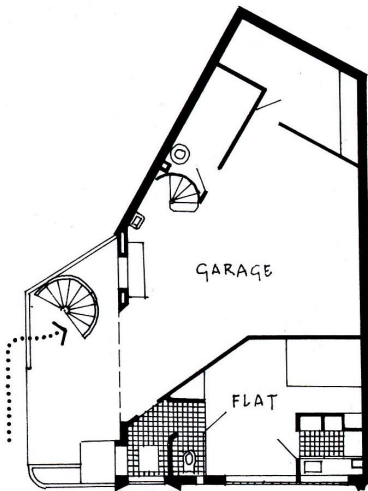
Sketch of the West facade from the street. The sidewalk cafe is at the ground floor, the spiral stair provides access to the restaurant, and the gallery features two large window and a pair of south-facing sawtooth clerestories whose light is diffused through a translucent laylight in the ceiling (visible in the drawing above).



The drawings show the Ozenfant studio as Corbu designed it and the photo shows the building in the 1990s before purchase by the current owner. Since the site slopes to the north, first floor is accessible from grade on the north end, where the ground floor is earth-sheltered.

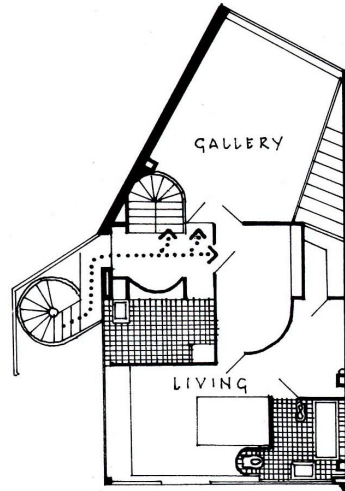


photo: Don Corner & Jenny Young



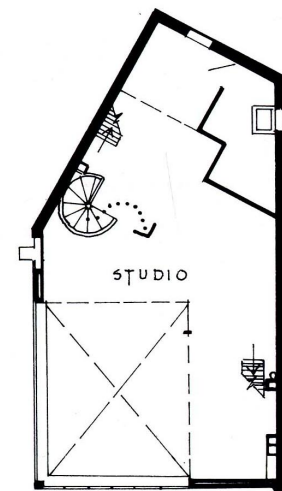
GROUND

ascent by spiral in transitional zone



FIRST

confined hall

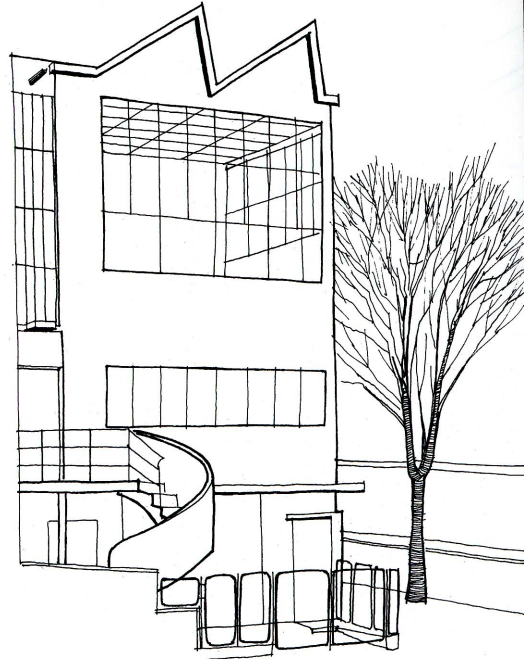
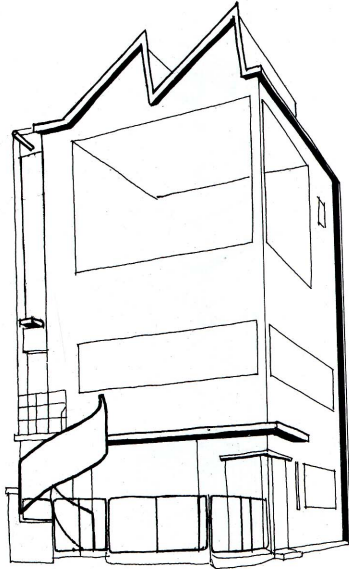


SECOND

grand space of studio

Le Corbusier's liking for compact planning is evident in the design, this being necessary on such a confined site. Although the opportunity to provide a significant movement progression was limited each stage of movement into the building is carefully considered.

3 pts 1. **Suggest** three (3) remodeling efforts that will help reduce the size of the mechanical systems. **Explain** the importance and effect of each.



Le Corbusier continues to 'frame' his facades and canopies define entrances. A waterspout expresses contact with the elements and a wiremesh railing contains the entry zone. This transparent membrane extends the planar theme with the three-dimensional spiral stair in dynamic contrast along with the powerful zig-zag of the rooflights.



2. While retaining the building's look and design concept, **show** how you'd organize the three floors below spatially and into simple thermal zones. **Explain** where the thermostats would be located. Use plans to clearly **illustrate** your ideas. ^{3 pts}

Program:

Ground floor: Indoor and Outdoor Seating

Kitchen

Bathrooms (2)

Reception

First Floor: Indoor Seating

Kitchen

Bathrooms (2)

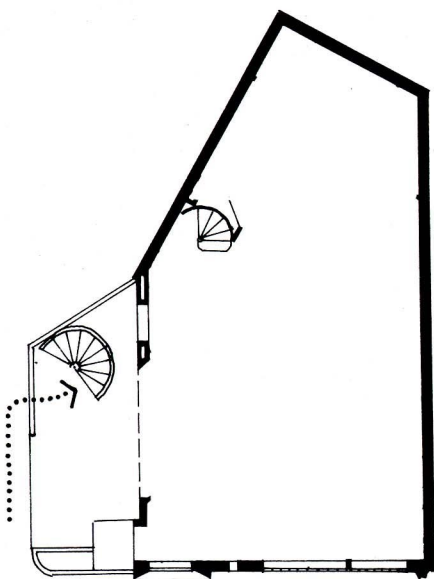
Reception

Second Floor: Sculpture Studio

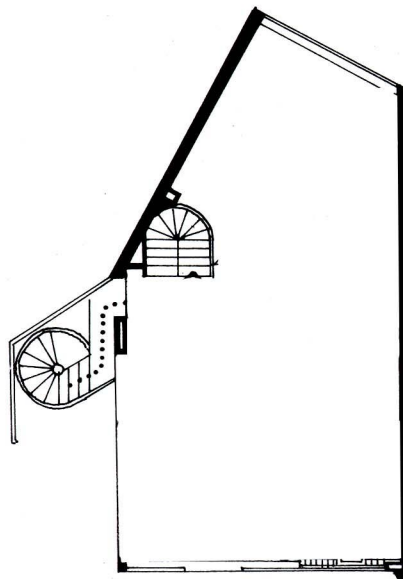
Storage

Office

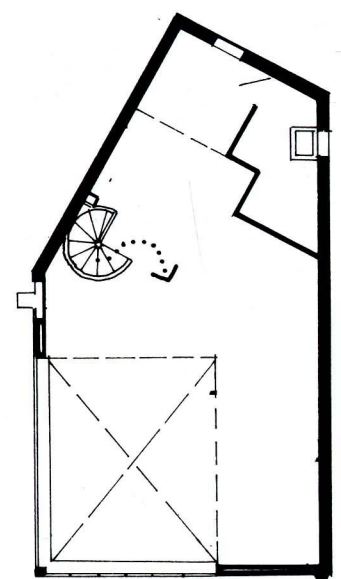
Reception



GROUND

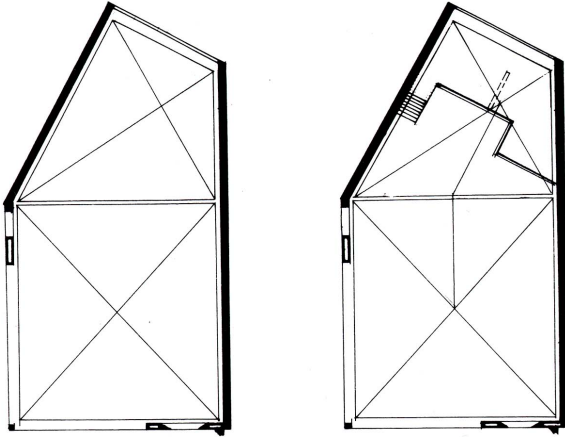


FIRST



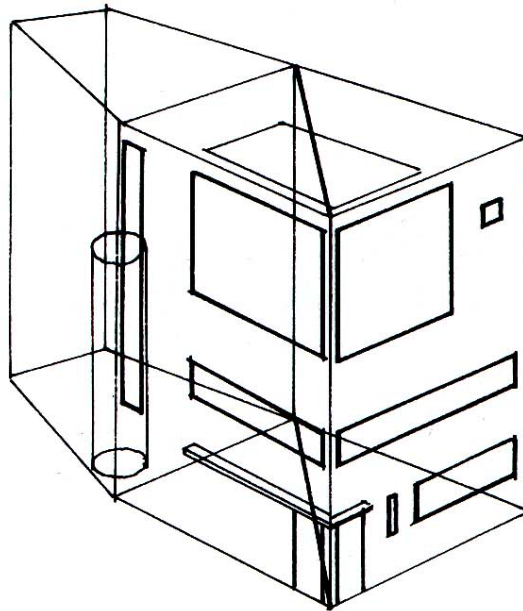
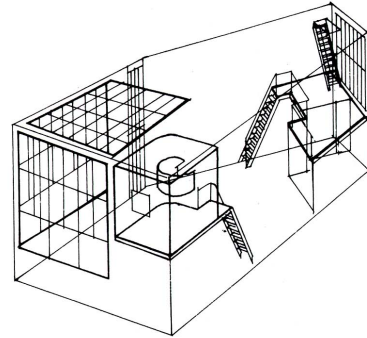
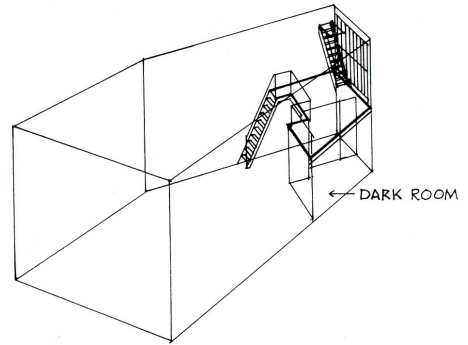
SECOND

The second floor has a two-story space to the north, formerly office above and darkroom below (p. 6).



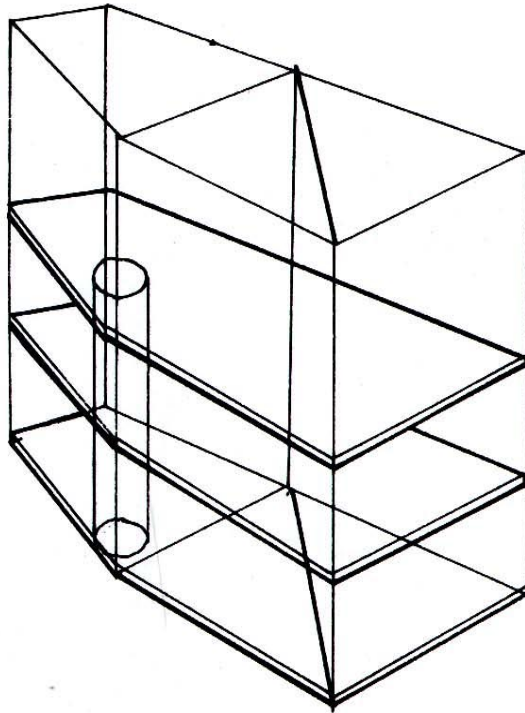
The studio space can be subdivided into a trapezoid and a square. A suspended gallery is placed at right angles to the oblique wall. Below this echeloned walls contain a dark room.

Three ladders are used along with factory rooflights in an industrial aesthetic in which the various functional elements are arranged in a state of dynamic equilibrium.



FENESTRATION ORGANISED ABOUT THE CORNER

4 pts 3 **Suggest** a mechanical system for this building and **explain** why you think it's appropriate. In the drawing below, **show** where you'd place mechanical spaces and the vertical and horizontal elements of the system and **explain** how they're integrated.



ACCOMMODATION STACKED ON THREE LEVELS