

Arch 464
ECS
Spring 00

Name _____

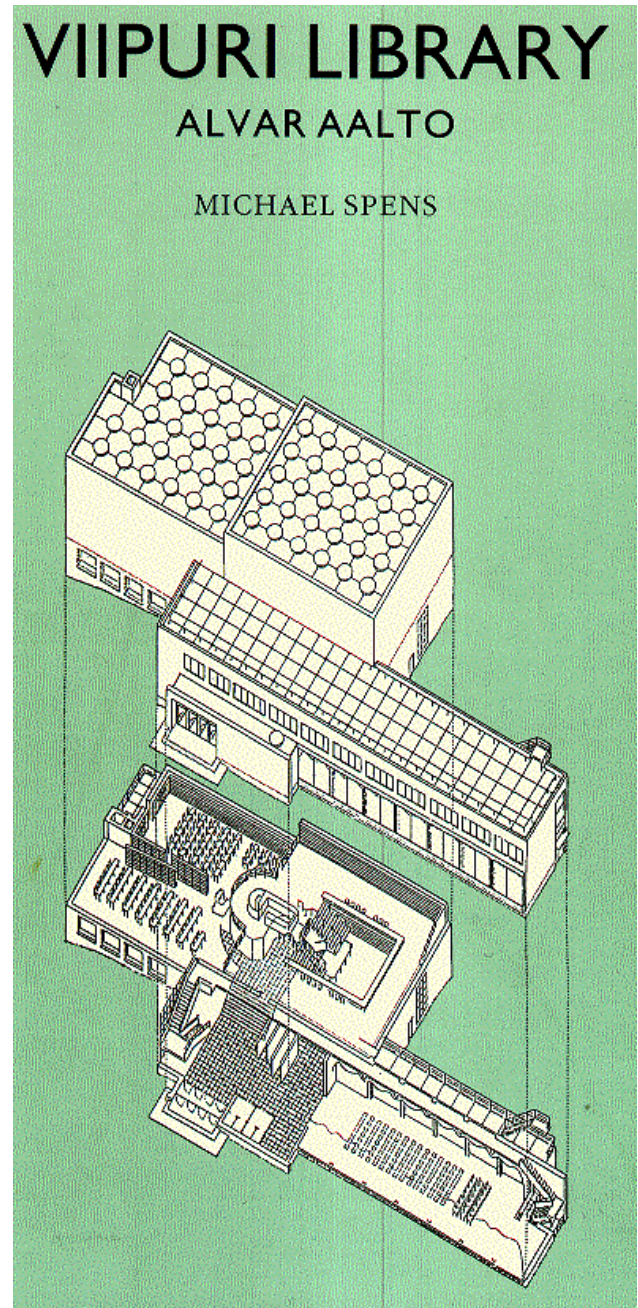
Quiz #2

"Re-Lighting Viipuri"

For this problem you are the electric lighting consultant for the remodeling of Alvar Aalto's 1927 competition-winning city library for Viipuri, Russia (also known as Vyborg). Aalto's scheme featured reading rooms daylighted by a matrix of round skylights with deep lightwells. Aalto conceived of an electric lighting scheme that complemented the daylighting scheme. Your focus for this problem is a two-level reading room that features book stacks at the walls of both the room and the well, with tables and chairs on both levels.

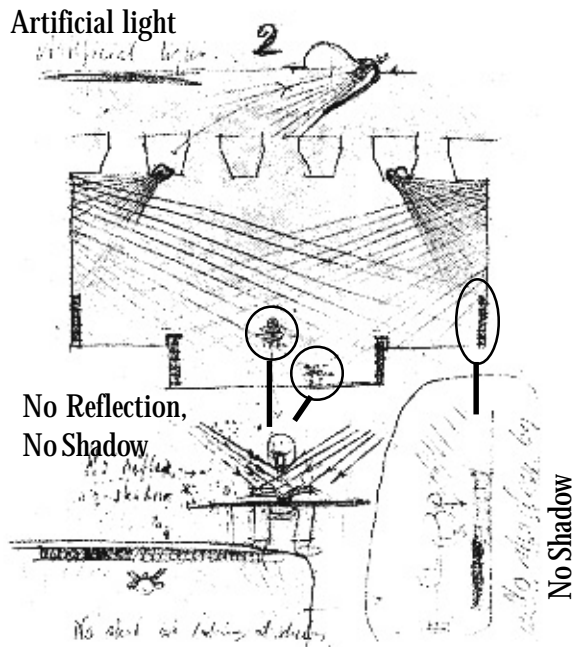
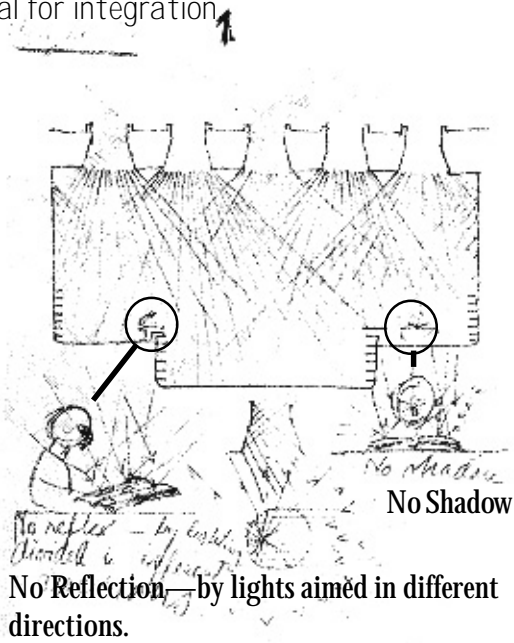
Viipuri is located about 50 miles northwest of St. Petersburg, Russia, on the Gulf of Finland, and at about 61° North Latitude. The sun ascends to 52.5° above the horizon at solar noon on the summer solstice. The climate is moderated by Viipuri's proximity to the sea and is primarily overcast. Winter days are short with low sun angles and summer days are long and bright.

READ THE ENTIRE QUIZ BEFORE YOU BEGIN!

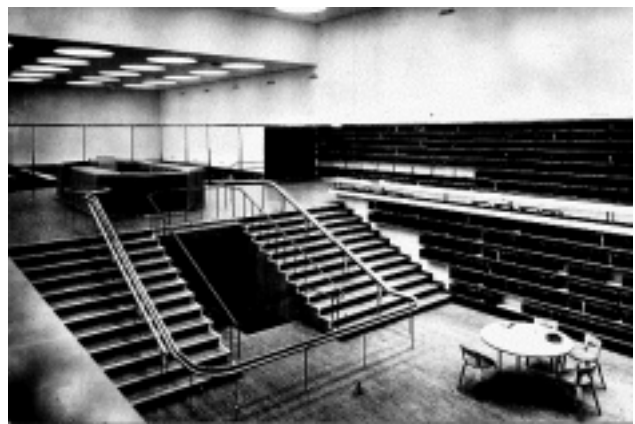


Viipuri Library, exploded axonometric.

4 pts. 1. The drawing below shows Aalto's 1927 concepts for (1) natural lighting and (2) artificial lighting (incandescent). Critique both concepts for illuminating the reading room and their potential for integration

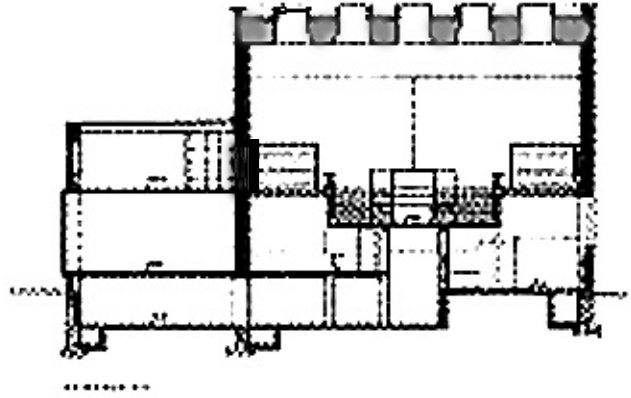


Aalto's 1927 sketch showing the ideas for natural and artificial lighting—note shelves at room and well walls and Aalto's concern for glare-free, shadow-free illumination.

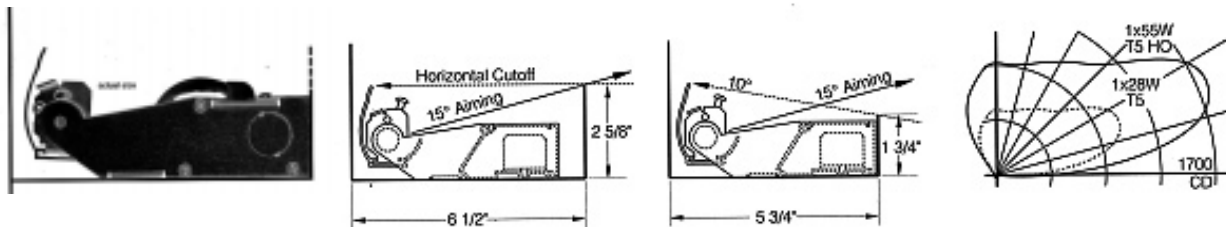


View from the reading room toward the control desk.

4 pts. 2. The incandescent fixtures used in the original library must be replaced by modern energy-efficient lamps/fixtures. The project designer has identified an indirect fluorescent T-5 fixture that can fit the lighting intentions and the energy criteria for the reading room. Show how this fixture can be used in the space in a manner that supports Aalto's design intentions. Indicate where the fixtures should be mounted in the section and draw a detail of how you would install the fixture for maximum effectiveness.



Library section which corresponds to Aalto's sketch.



End view, sections, and photometric curve for the T-5 fluorescent fixture.

- 2 pts.* 3. Discuss the details required to ensure that your design will successfully achieve Aalto's design goals, provide adequate and comfortable lighting, and fully integrate with the daylighting design.