Today a library has to satisfy the need of a reader, but of a group of readers too. New libraries are a symbol against the disappearance of knowledge, and spaces where people can walk, meet other citizens, in order to fight the urban loneliness. In USA the urban transformation eliminate squares, public libraries and shopping centers are the only gathering spaces left. In the continuous background noise of our cities the library represents a place of rest and of knowledge order.

For this reason spaces are of two kinds:
- Space for individual learning
- Space for collective life

In these type of libraries called decentralized library or branch libraries, the book is generally delivered to the reader.

The branch library has:
- a warehouse- reading room with shelves against or perpendicular to walls
- a conference room
- a hall or atrium
- a computer room
- an outdoor space for reading in open air

- For the librarian:
  - one or two space to control, to receive and deliver books
  - a laboratory for copies and photo reproductions;

![Figure 1: Fitchburg library- usa: distribution of spaces](image)
Shelves are 2.30 meter high or modular to this measure, in fact they are proportional to human figure, they are a level or two level high, in order to give an intimate atmosphere to the reading room in preferable to use the one level. The are two types of shelves
1. adjacent to walls
2. perpendicular to walls

Adjacent to walls
In the first example the volumetric unity of the room is evident, the space dedicated to reading is prevailing in comparison to the space reserved to shelves. Shelves look like a wall clad. The preferable shape of the room is the elongated rectangular dimension, in order to have a greater perimeter development, useful to put numerous shelves. The rectangular shape is preferable if the daylighting arrives from one side only. Shelves are put on the blind wall and tables for readers nearby windows, anyway is advisable to open windows upper the shelves, in order to balance daylight and produce cross ventilation.
Perpendicular to walls

The preferable shape of the room is the rectangular or square dimension. If shelves don't touch the ceiling the spatial unity of the room is preserved, if they touch the ceiling the room can be divided into two spaces one dedicated to reading, and the other one dedicated to shelves, or the division of several little reading rooms. If shelves don't touch the ceiling the librarian can easily control readers.

Picture 2: Library Municipal di Viana do Castelo - Alvaro Siza- perpendicular shelves

Fig. 1 – Sala di consultazione
A, nicchie per consultazione; B, carrelli.

Fig. 5 – Sezione schematica di sala di consultazione con scaffali disposti su due piani e direttamente accessibili ai lettori.
**Reading room**
The reading area is closely connected to the warehouse for books, it's preferable to create a soundproofing space. The room should be not very large in order to avoid noise. Floors should absorb noise, the preferable materials are: linoleum or gum, and to avoid noise from outside is preferable to put reading rooms far from streets and far from offices or technical spaces inside the building.

**Daylighting in reading spaces**
The daylighting can be lateral bilateral or from the top, the distribution of light is uniform and widespread. The lateral lighting is suitable if the width of the room is not double of its height. It's preferable to open windows on the north side of the room. The bilateral daylighting is suitable when the width of the room is not bigger than four times the height of each lightened wall. For example if the height of the room is 5 meters, in the case of lateral lighting the measure is 7,5 meters, in the case of bilateral lighting 12,5 meters. The top lighting avoid shades and it is positive for reading.

**Warehouses for books**
It's preferable to avoid underground spaces because of humidity or to put warehouses on the higher levels of building, because of the weight of books. The ideal situation for books is to stay in areas with ventilations and indirect lighting, because direct light and heat modify papers and generates pathogens. The vertical connection is with goods lift.

*The main problem of a library is the human sight*. The library can be built correctly, and can be functional, but it is not complete if the designer doesn't think of the main human function: to read a book. The eyes are only a little part of human body, but probably the most sensible and the most important one. The use of uncorrect natural light, that annoys human eye, or the use of artificial light, that doesn't consider the human sight means to make an obsolete architecture, even if the building has its value.”

Alvar Aalto

Alvar Aalto utilized in his libraries different shape skylights, that filter sun light inside the building and capture the diffused brightness of sky.
In Viipuri Library Aalto studied the connection between the height and the diameter of the white cylinders that pierce the ceiling in such a way that sunlight never enters directly, but
It is always reflected.

In the Rovaniemi Library the light is also emitted outside, bringing cultural light into the darker twilight period of winter. The library also has many pieces of Artek standard furniture designed by Aalto, as well as other fittings and lamps.

The spacious lending department of Rovaniemi library is separated into various divisions, in the centre of which are recessed reading spaces. Natural light fills the joint space through the large upper windows. The natural light filterering into the spaces is reflected off the curved ceiling onto the book shelves. The reflection of this natural light off the curved walls is an element that Alvar Aalto has used widely in the design of his libraries and museum buildings.
f \( D > H \) the light can be direct. Direct sun rays enter when \( \text{Alpha} < 45^\circ \) and \( D = H \)
Illustrazione 7: Rovaniemi library: Artificial light has the same direction of natural light.
The Library Municipal di Viana do Castelo - Alvaro Siza

It is a two storey square shaped building, (3100 m²) formed by an elevated volume of 45x45 meters, including a void of 20x20 meters, prolonged eastward on the first floor by a L shaped volume.

The library headquarters, the library events area and the bar are on the first floor and the reading rooms are on the second floor.

Figure 9: Library Municipal di Viana do Castelo - ground floor
Figure 10: Library municipal di Viana Castelo - first floor