

A LIBRARY PROJECT FROM AN ARCHITECT'S POINT OF VIEW

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INTRODUCTION

When the issue of what new libraries should be like is discussed, the functionalist discourse of professional librarians contributes the following conclusions:

- Rejection of the image of a “temple of culture” and general condemnation of symbolic devices that might discourage people from frequenting them, such as majestic entrances, grand staircases and opaque circulation spaces.
- The incorporation of devices to facilitate access:
 - Openness to the street, with simple internal organization and free circulation for the public.
 - Adaptation to the local surroundings, integration into the urban fabric in order to integrate it into the social fabric too.

Some architects have disagreed with professional librarians who have taken these conclusions to extremes, with demands oriented towards the strictest functionalism, rejecting architecture and the architect's work.

On the other hand, the interrelation of the two disciplines has resulted in libraries with good architecture that work well.

The architect must respond to multiple demands. He or she must design a library to accommodate a varied public as well as allowing for the conservation and updating of the collections. It must also be a repository of memory, but open to the present and future with all the necessary technical resources. Finally, it should act as a sort of garden of knowledge in which one can stroll.

Can architecture translate and reflect the variety of missions the library must fulfil?

Can it assume the contradiction of its being a public place devoted to the private, individualised act of reading?

Is the library a receiver or a transmitter?

Is there a model library that will answer these questions?

Clearly, there is no single solution that is compatible with all these situations. Nor is it possible to combine all the optimum recommendations in a single building, amongst other reasons, because they may contradict one another.

To achieve a good result, architects must evaluate all the factors that condition the project and, using the tools at their disposal, opt for the best solution.

STAGES OF THE ARCHITECTURAL PROCESS

The process of creating a library involves several technical, administrative and financial stages.

Of these stages, those concerning architecture are:

- Specifications of the project.
- Drawing up the project.
- Executing the works.

The time frame for each of these stages is dependent on two types of determining factors:

- Some stages demand calm consideration, execution and consensus with the monitoring team.
- The length of some stages is determined by legislation, and subject to time-limits for the administrative procedures and approval.

Hence, the entire process may take a considerable length of time. Although it is desirable to avoid hasty decisions and not impose a rigid schedule for such an important investment, it is also desirable to ensure that no time is wasted in the various stages of the process.

SPECIFICATIONS FOR THE PROJECT

After an in-depth study of the client's specification of requirements and the possibilities offered by the site on which the building is to be constructed, the architect develops an architectural solution.

It may be that the architect involved in the project is not familiar with the characteristics required of certain types of library. This imposes an obligation on those responsible for library services to promote the creation of documentary resources dealing with buildings of this type. Furthermore, architects must research the subject through specific technical publications and visits to other libraries in order to attain the best possible architectural solution in functional, cultural and financial terms.

The specification of requirements is not to be understood simply as a list of spaces and their required dimensions. It is important that it should present the key idea behind the project, define the challenges, define the different spaces and determine the desired standards of quality. But the information thus presented must not predetermine the architectural solution: that is exclusively the task of the architect.

Independently of the structure of each specification of requirements, the architect needs information about the following aspects:

- The characteristics of the site
- A description of the spaces
- Technical requirements
- Cost forecast

Characteristics of the site

From the architectural point of view, the information about the site must include the following points:

- Location
- Area
- Development restrictions
- Town planning
- Planning regulations
- Topographical definition
- Geotechnical characteristics

Description of the spaces

The architect needs the following information about each “area of activity”:

- Usage characteristics.
The description should help the architect understand and become familiar with the various things that must take place in each space.
- Position within the building and relation with other areas.
- “Specified area” in square metres.
- The number of documents on the different types of media that are to be accommodated and a forecast of future growth.
- The number and nature of fixed points for the public and for the staff for the different consultation systems.
- Table summarising the “specified areas” by surface area and the approximate value of the “total built surface area”.

A note on “areas”

The value attributed to the surface area of a library may lead to confusion if it is not clear which sort of area is being considered. Although the “gross area” is the real value from which all the financial data concerning a project can be obtained, it is advisable to define what is meant by the “area” of a building so far as libraries are concerned.

Specified area

This is the area given by the “specification of requirements”, and refers to the net area that can be used in each zone of activity, without including circulation space or any other architectural consideration.

Useful area

This is obtained by adding the following spaces to the “specified area”:

- Circulation spaces between the different zones.
- Toilet facilities.
- Space for use by cleaners.
- Installation rooms.
- Effect of stair-wells and lifts.
- Effect of ventilation wells, overhangs, terraces and arcades.

Gross area

This is obtained by adding to the “useful area” the space occupied by constructional elements.

The fact that there is a linear relationship between the gross area and the cost of the works means that it is necessary to attribute an approximate value to it in the “specification of requirements”.

In spite of the difficulty of defining it without knowing the architectural solution to be adopted, several studies recommend applying a 35% increment to the “specified area”.

Technical requirements

- Recommendations on the most suitable materials (flooring, roofing material, etc.).
- Environmental requirements (air conditioning, artificial light, acoustic conditions, etc.).
- Description of the specific installations for library use (voice and data, audiovisuals, anti-theft system, etc.).

Forecast cost

It is important to establish the forecast cost of the works, which is coherent with the technical requirements imposed on the building.

Investment costs:

- Civil engineering.
- Professional fees.
- Furnishing and equipment.

It is also recommended that a forecast of maintenance costs be included, both for the building and the library service. This forecast will help the library’s owner to determine an annual budget for subsequent operation.

Maintenance costs:

- Building (cleaning, consumption, insurance, etc.).
- Service (collections, staff, activities, etc.).

DRAWING UP THE PROJECT

The logical evolution of a building takes the form of a chain of stages ranging from the general concept to the specific details. The formal grouping of these stages into phases brings the following advantages:

- Monitoring of the project’s progress by the representatives of the various bodies with responsibilities for the new library.
- Analysis of the functioning of the building at each stage to ensure it is suited to the real needs of the “specification of requirements”.
- Incorporation of modifications in each phase without reopening aspects on which a consensus has been reached in previous stages.

Phases of the project:

- Initial scheme.
- Pre-project.
- Execution project (with distribution of the furnishings).
- Furnishing project.

Initial scheme

This is the initial architectural response to the “specification of requirements” provided by the client and contains the following information:

- The volume, inserted in the urban context.
- General organization of the building and realisation of the different functions defined in the specification, and how these are articulated and related to one another.
- Surface area of the different zones and number of floors.
- Constructional system in general terms.

Since this is a proposal that has undergone little development, modifications concerning the basic aspects of the specifications can still be introduced.

It is desirable that the tracking group analyse it closely and interpret the basic concepts.

Once this scheme has been accepted the architect can work on more specific aspects.

Pre-project

This is a study that is developed seamlessly with the initial scheme, but may differ from it in significant respects, due either to modifications to the specifications or to the inclusion of a parameter that had not been considered at the previous stage.

It provides the following information:

- The functioning of the building: the library programme is fully represented by spaces that are highly delimited and dimensioned.
- External appearance, interior circulation spaces and definition of the main materials used in the finishes.
- Main technical aspects, such as the type of foundation and structure and the air-conditioning system.
- Estimate of the schedule for the works and the cost.

The tracking group may propose amendments that would not prejudice the basic concept of the proposal.

Execution project

This is a technical definition of the building, with the information necessary to carry out the works.

Basic documentation:

- The plans needed to situate, lay out and construct the building.
- Descriptive memorandum (characteristics of the site, compliance with regulations, table of areas, etc.).
- Constructional memorandum (specifications of the materials, conditions and time limits for execution, etc.).
- Survey information.
- Technical and administrative conditions for tender.
- Prices.

The execution project is not always readily understood by those who are not versed in architecture or engineering.

The level of the information is such that it is impractical to introduce modifications, and it is important to stress the need to develop the project while it is being evolved in the stages mentioned above.

With the execution project in hand, the relevant permission can be sought to begin construction of the building.

The law is such that in general execution projects are valid indefinitely. It is therefore desirable that they be reviewed and updated if the contract for the works is actually awarded a long time afterwards.

In the case of a library that is being promoted by the public administration itself, the administrative stages the project has to undergo are as follows, within the time period defined by law:

- Public information.
- Definitive approval.
- Construction permit.

The total time taken by the initial project, the pre-project and the execution project:

In spite of the difficulty of dimensioning certain phases that require time for thought and for a consensus be reached, one may think in terms of twelve months for this process.

Furnishing project

Organising the furnishing in a library is highly complex. It is one thing to distribute a series of shelving and tables in the first stages of organising the spaces, but it is another matter to define a specific distribution of the large variety of pieces of furniture that are needed.

This is a fundamental issue because the physical space of a library makes no sense without furniture, it is the element that is closest both to the documentary resources and to the user, and that adapts the space to its function.

It is therefore recommended that the following advice be sought:

- Professional librarians, who are those who best know the movements generated in a library facility, as well as the systems for organising and displaying the collections.
- Specialists in library furnishing.

The advantages of entrusting it to the architect who designed the building range from the possibility of conceiving the whole facility in an integrated way, to the ease of optimally relating the building and the furnishing.

The repercussion of this phase is evident when we turn to real examples. Often, a good distribution can compensate for inappropriate resolution of the spaces. On the other hand, a good architectural solution may turn into a bad library through poor organization of the furniture.

In reality, several problems often present themselves:

- When the surface area for a particular section has not respected what was defined in the "specification of requirements", it is very difficult for it to contain all the documentary resources and work stations.
- In some projects, the furniture installation stage is forgotten, without there being financial provision for it or completion dates; however, it becomes an important, urgent issue at the end of the works.
- The pressure imposed by other commitments (date of official opening, etc.) make it necessary to complete this stage with shortfalls in services that make short-term modifications inevitable.

The cost of the operation is also considerable. If there is a commitment to quality, it may represent a fifth of the total cost of the works.

Desirable phases:

- Distribution of the furniture.
The distribution of the furniture should be included in the execution project, in view of the fact that this is helpful for the design and for the calculation of the following aspects:
 - Artificial lighting:
Although it is recommended that this be independent of the furniture, lighting calculated to give a certain intensity of illumination may cause shadows and other problems if it was designed without taking account of the furniture (continuous rows of tables, isolated spaces with specific lighting requirements, etc.).
 - Specific installations:
Computers, audiovisuals and other installations are fed by a cabling system that ends at the desk at which the user sits. Although it is recommended that the routes provided for the cabling should be flexible, awareness of the distribution of the furniture is helpful when designing the installation.
 - Overall coherence:
Harmony of the materials and colours used in the equipment, the finishes and the furnishings, without prejudicing strictly functional considerations.
- Full furnishing project.
(see the section "Carrying out the works")
- Award of contract.
(see the section "Carrying out the works")
- Installation.

CARRYING OUT THE WORKS

Phases of the works:

- Tenders.
- Contract with the construction company.
- Construction of the building (with the drawing up of the full furnishing project and the award of the furnishing contracts).
- Hand-over of the works.
- Furniture installation

Tenders

The execution project is an administrative document that contains the information the construction companies need in order to estimate the cost of the works and participate in a call for tenders.

Having analysed the tenders the promoter will award the works according to the selection system defined by law.

Very often the prices given in the estimates differ from the one set in the call to tender. This difference is usually related to the situation of the construction market. Whether the estimate is higher or whether there are significant reductions, it is necessary to keep an eye on the quality of the materials and the constructional systems proposed.

On the other hand, it may happen that the tender stage is much later than the execution project. In these cases it is recommended to review the functional characteristics at the time of the tendering procedures. If this is not done, there is a danger of building a library that is unsuited to real needs.

Contract with the construction company

The construction of a building takes place under the terms of a contract based on the project documentation.

When the contract is signed the parties agree, amongst other things, to the terms of payment, the deadlines for carrying out the work and the penalties incurred if the latter are not met.

Erecting the building

Once the contract between the owner and the construction company is signed, work starts according to the schedule set out in the contract.

The site manager will monitor the execution of the work with the technical representatives of the different branches of activity that make up the construction process.

It is necessary for the architect who drew up the project to take a hand in the entire process. In this way, continuity between the building as designed and the building as constructed can be ensured.

The number of decisions that have to be taken on site, even if the execution project is very detailed, means that it is desirable for library representatives to be available. As the future users of the building, they can influence aspects related with the optimal functioning of the facilities.

The complexity of the construction process may imply actions that modify the project, and consequently the price that had been agreed. These variations make the work more expensive as they imply complementary contracts, which the site manager must agree with the construction company. This is a situation that brings home the need to analyse the project in the phases prior to the execution project.

Approximate duration of the works:

In a construction process unimpeded by external factors, and in function of the size and complexity of the building, it can be expected that the construction work will take from 12 to 24 months from the final award of the tender until completion.

Drawing up the full furnishing project

It is recommended that this be done once the structure and roof of the building are completed.

At this time it can be seen how long the works will take to complete. Under normal conditions, this period of time will make it possible to dovetail the furnishing project with the tendering, manufacture and final installation.

If it is done sooner, it may be the case that delays make the project and the estimate obsolete and that they have to be done again as the works eventually draw towards the end. The starting point is based on the distribution defined in the execution project. The relevant modifications are made in accordance with the library's current needs.

It is recommended that the project take account of the following aspects:

- Detailed technical specifications to enable companies to make accurate estimates.
- Inclusion of all the items necessary to fully furnish the building.
- Provision for unforeseen expenses that may be incurred as a result of changes (differences between the dimensions in the project and the real ones, suiting the modules defined in the project to those used by the company awarded the contract, etc.).

Approximate duration:

From one to three months.

Award of the furnishing contract

As in the case of the furnishing project, this phase runs parallel with the progress of construction work on the building.

It is recommended that the tender be awarded with the following criteria in mind:

- The selection system should prioritise quality, functionality and ergonomics over price. The guarantee, after-sales service and experience with facilities of this type should also be taken into account.
- Analysis of the different offers with advice from specialists in library furnishing. The large number of supplier companies and the tendency to copy the same models with only slight differences, make it difficult to evaluate the positive and negative aspects of each offer at first sight.

It is recommended that there should be a detailed analysis of the composition and dimensions of each item and of the materials used in the finishes. It is also very helpful to have samples to help in the evaluation.

Hand-over of the works

Once the construction work is finished the building is handed over, and the site manager certifies that the work has been carried out in accordance with the contractual documentation.

This is a legal document certifying that the building complies with the conditions required and may enter service.

At this moment the owner should be given a "Maintenance programme" for the building. This document may be required by the applicable legislation. If this is not the case, it is desirable to include this requirement in the contracts with the architect and the construction company.

Independently of the structure of this document, it must include the following information:

- Plans "as built".
During the construction, modifications are usually introduced with respect to the original project. It is therefore necessary to make new drawings that reflect the real state of the building as erected.
This documentation must cover the aspects that might affect the use and maintenance of the building:
 - Structural calculation indicating the loads each zone is designed for.
 - Exact location of the routes taken by services.
 - Most significant constructional details.

- Instructions for use.
The way the users are to treat the building is specified, with indications regarding use and function, cleaning and evacuation in case of emergency.
- Maintenance instructions.
Lists the essentially preventive measures to be taken for the building to remain in good conditions for use and function.

Installation of the furniture

Once the building is finished and cleaned, installation of the furniture can begin.

At this stage it is recommended to install the connections for those specific services that are to terminate in a piece of furniture, in accordance with the project.

Approximate duration:

From 15 days to two months.

THE BASIC CONCEPTS OF LIBRARY ARCHITECTURE

An architect who designs a library must base his or her work on a series of criteria which, without interpreting them as precise standards and rules, are closely linked to architecture and are present throughout the creative process. These criteria concern:

- Flexibility
- Accessibility
- Possibility of enlargement
- Organization
- Sustainability and maintenance

FLEXIBILITY

It is difficult, if not impossible, to know how these buildings will evolve in the future. The only thing we can be sure of is that evolve they will.

Advantages of designing a flexible building:

- An open, flexible library facilitates saving on staff: it is easier to oversee and attend to users on a diaphanous floor with unrestricted views than it would be if the space were fragmented.
- The librarian can easily make modifications and try new experiments: all that needs to be done is to change the position of a few pieces of furniture.

Measure to obtain flexibility:

- Structure and constructional systems.
- Organization of the spaces and circulation space.
- Installations.
- Furnishing.

Structure and constructional systems

The structural elements of the building must not create difficulties for the installation of the different items of furniture.

- Rectangular bays with generous spans are more advisable than an irregular or curved distribution of load-bearing elements.
- Solid internal walls adversely affect the flexibility of the spaces as well as visual control of them. The possibility of achieving a variety of distributions is much more feasible if they are

reduced to a minimum and concentrated around immovable parts of the library, such as the stairs and lift shafts, the toilets and the vertical installation ducts.

- It is best if other internal divisions, where they are essential for reasons of security or privacy, are not structural, and if the constructional system employed will allow them to be dismantled easily.
- In view of the variety of ways the library may be organised during the course of the useful life of the building, is recommended to calculate the whole structure on the basis of a uniform live-load of 500 kg/m².
- Only the areas with high-density book-stacks have different structural requirements. The load is much greater than in the rest of the library, and in this case the overdimensioning of the structure makes it advisable to relegate considerations of flexibility. Hence, the definitive location of these areas needs to be decided during the earliest phases of the project. Since the density of paper ranges from 600 to 1,000 kg/m³, the calculation must be based on the type of shelving and the number of levels of it. However, the following live-loads can be expected:
 - High-density stacks 150 cm high: 1,000 kg/m²
 - High-density stacks 225 cm high: 1,500 kg/m²

Organization of the spaces and circulation space

- Grouping the toilets and the vertical communication together frees the remainder of the space.
- It is desirable for the floors to be entirely on a single level, without steps or ramps that would impede the free movement of equipment as well as of users.
- Consultation areas should not be designed according to a specific programme; rather, it should be possible to combine them and also to divide them.

Installations

The installations must be adaptable and must allow for a degree of mobility of the different zones and functions.

- Air-conditioning that is capable of adapting to readjustments, without this having an adverse effect on environmental comfort.
- Artificial lighting, bearing in mind the advantages of installing it independently of the furniture. A uniform lighting system may be chosen, or different types of source may be installed to provide environmental diversity. In the latter case, a good solution is to install a grid of electrified rails. This allows both the type of sources and their location to be changed, with the consequent increase in flexibility and the variety of lighting conditions.
- Installations fed by a cabling system that allows for readjustment. The system must be dimensioned so as to leave enough space. Vertical circuits present few problems as they occupy little space and can be grouped together around the vertical communications. The organization of the horizontal network, on the other hand, is more complex. The most flexible solutions are achieved if the installations pass beneath a raised access floor or over a false ceiling, which can be readily dismantled in either case. Another option is to provide for a network of conduits, generally embedded between the paving and the floor-slab, with a series of inspection covers.

Furniture

A type of furniture and distribution of it to allow for mobility and adaptation to new needs.

ACCESSIBILITY

When an architect undertakes the design of a library, the site for the building and subsequent management are matters beyond his or her control. Nonetheless, there are a number of factors to be borne in mind in order to plan a library that is as accessible as possible.

Accessibility measures:

- General criteria.
- Exterior of the building.
- Interior of the building.

General criteria

- Library located at street level, with access connected to the main routes used by users.
- An organization of the openings in the facade that creates a visual relationship with the interior and the exterior of the building, so that the more public of the activities going on inside are visible from outside.
- Absence of architectural barriers.

When we refer to architectural barriers, what comes to mind are the problems concerning users with reduced mobility, but the strict interpretation of these regulations sometimes makes us forget the reality. There is a significant percentage of the population who suffer from disabilities that most legislation does not cover, such as blindness, deafness or other physical problems that impede their access to libraries.

At the present time, in which such a high value is set on the image, this group of people is particularly disadvantaged. Hence, special attention needs to be paid to them when creating a library, in terms both of the suitability of the spaces, and of the type of information and the systems for consulting it.

To these must be added others in a situation which incapacitates them or reduces their mobility:

- The elderly.
- Users with push-chairs or shopping trolleys.
- Pregnant women.
- People who have suffered accidents.

There are ways in which the architecture and equipment of a library can help these sections of the public to integrate. It is worth considering some of these:

- The increased cost of adapting a building to their needs is not significant when it is considered right at the beginning of the project.
- Very many disabilities do not imply total incapacity. Hence, simple but effective solutions can be incorporated for a high percentage of them.

Exterior of the building

- An attractive, easily-identifiable building.

Whether it is desired to give the library the appearance of commercial premises, or whether it is conceived monumentally, the public nature of the building and the fact that it is a library service that is open to everyone must be reflected in its external image. This is a characteristic that must be insisted on when the library forms part of a larger complex in which other activities take place.

- An organization of the entrance that invites people to go in:

There are several aspects that can help to give the building an image of accessibility:

- External space connected with the library for parallel activities.
- Benches and other items of street furniture to form an area for rest and social relations.

Interior of the building

- The reception areas, such as the lobby and the social spaces, form a gateway to the library. As such, they have to have the dimensions and symbolism that these public buildings need.
- An arrangement of the building that allows immediate understanding of the main spaces from the access lobby. This "visual unity" to a large extent determines the circulation spaces and the functioning of the whole library.
- The user must interpret the library as a service to which access is unrestricted, with the only control in the lobby. This solution means that as people move around the library they do not encounter sudden changes in the environment or feelings of restriction.

- Special emphasis on the concept of “passage”. The user must be able to use the library freely, and the building must allow circulation between the different areas in a natural way.
- Absence of obstacles and convenient communication both vertically and horizontally.
- Furnishings that facilitate vision and access to the documentary material, as well as comfort and easy searching for information.

POSSIBILITY OF ENLARGEMENT

There are those who say that a library is a living organism: if it does not grow it dies.

The “specification of requirements” must contain information about prospects in this regard: it is desirable to state the surface area it will need at a certain future time and the approximate date of enlargement.

Options for growth are very closely related with the choice of site and phase-by-phase execution.

Choice of the site

If the site allows for it, the architect should make provision for possible enlargement at the sides, upwards with the addition of more floors, or downwards with the incorporation of basements.

This operation should be possible without serious architectural interferences, unnecessary expense or serious disruption of the library service. Hence, it is advisable for the library project to be complemented with a study of the organization and volumetrics that would one day serve as the basis for an enlargement project.

Phase-by-phase execution

Quite often the promoter commissions from an architect a library which is to be executed in phases.

The usual reason for this is the desire to open a library on a budget that allows only for the construction of a building with the minimum necessary surface area.

Even if there is a schedule for works that calls for a continuation of the construction of the remaining phases, it is desirable for the architect to resolve each phase as a unit, as an apparently completed building.

Otherwise, any excessive delays will result in a library that is frozen in time, with a constant sensation of temporariness that adversely affects the functioning of the service.

Provisions for enlargement:

- Choice of constructional systems.
- Type of furnishing.

Choice of constructional systems

- Materials:

The materials used on the exterior and interior should be such as to make enlargement relatively easy.

A priori, it seems advisable to use repeating, modular units, but in general it is necessary to choose materials that will ensure a formally-correct solution of the possible enlargement.

- Structure:

If it is expected that the height of the building will be increased, it should be sufficiently dimensioned. If it is to grow horizontally, a modular solution would be appropriate.

- Installations:

The installations that are associated with the building itself, as well as those which are specific to the library service, must be extensible. This consideration chiefly affects the dimensioning and accessibility of the areas through which installations pass and where they are centralised.

Type of furnishing

Shelving for books and other media must be designed so that either they can be added to or so the same model can be used again.

Furthermore, when organising the furniture the architect should distribute it in a way that allows for future growth.

Most of the above recommendations mean an increase in the cost of the works. Nonetheless, the final cost of the extended building will clearly be lower if the initial phases are executed with these factors in mind.

ORGANIZATION

The library should bring users and the documentary resources together.

The multiplicity of items on offer can even cause the user to suffer visual fatigue. Hence, there needs to be compensation in terms of good organization of the spaces, the furniture and the collection.

It is desirable for the architect to approach the project with the following recommendations in mind:

- Arrangement of the spaces:
 - Promote spatial fluidity between all the areas.
 - Make it possible to alternate functions and enable independent usage at different times.
- Vertical communication cores:
 - Stairs and lifts identifiable by users.
 - Vestibules on the various floors that enable users to relate well visually to the spaces and which avoid unnecessary detours.
 - Clear differentiation of areas for the public and those for internal services.
- Location of toilet facilities:
 - Accessible from all parts of the library, particularly from areas that might also be used in a different way and at different times from the library service properly so called.
- Number of floors:
 - When the site allows for it, the advantages of organising the programme on a single level are evident:
 - Improved accessibility.
 - Flexibility in organising the circulation.
 - When the dimensions of the site make it necessary for the facilities to occupy more than one level, there is a series of criteria that must be borne in mind:
 - The spaces that are most compatible with noise, those that are most attractive and which are more frequented by the public should be located on the ground floor.
 - Organization of the floors according to activity, so as not to disturb readers with noise caused by users moving around.
- Organization of the furniture:

The different items of furniture are used to structure areas of passage, the shelving for lending, the reading areas, etc.

As for the information desks, the number and location of these are a direct consequence of the architectural solution. A wise organization of the spaces should make it possible to:

 - Reduce the number of information desks to the minimum in order to optimise the work of the library staff.
 - Facilitate surveillance of all the spaces.
 - Position the desks where they are visible and accessible to the public from anywhere.

SUSTAINABILITY AND MAINTENANCE

The basic characteristics of the materials that make up a building change over time, with respect either to their initial shape or their physico-chemical structure, and sooner or later they lose their original specifications.

Degradation can occur at different stages of the construction process. The percentages are as follows:

- Project: 40%
- Manufacture of the materials: 15%
- Installation on site: 35%
- Maintenance: 10%

Hence, 75% of cases of degradation occur because of professional error, shared almost equally between those who conceive the building (40%) and those who actually construct it (35%).

Strategies for a sustainable architecture

We shall mention here some that are related to architectural decisions:

- Understanding of the climate at the site in order to decide on the materials and constructional systems. Water and temperature changes are factors that are present in almost all cases of degradation.

- Energy control:

Energy is a key aspect in sustainability. Given that 50% of the energy consumption in Western countries takes place in buildings, we need to think about making them more energy-efficient.

Energy-saving measures:

- Systems to control high exposure to the sun.
- Natural cooling techniques.
- Incorporation of renewable energies.
- Low-consumption artificial lighting.
- Water-saving systems (use of rainwater and grey waters for WC cisterns and for irrigating the area round the library, timer taps, mechanisms to regulate consumption in the WCs, etc.).

- Provision of a system for cleaning the windows.

There must be a direct relation between the cleaning system for all the windows and the resources of the body that owns the library. Buildings that are hermetic or that have inaccessible openings make it necessary to contract specialised companies to do the cleaning. The financial cost of this is often reflected in a lack of cleanliness.

- Maintenance.

30% of problems can be avoided through preventive measures.

It is desirable to have the "Maintenance Programme" available; amongst other things, it contains information about the use, functioning, cleaning and maintenance of the building.

Possession of this document helps the owner establish an annual maintenance budget.

The word "freedom" is one that springs to the lips of a user when asked to describe an ideal service. Freedom to move around, to read, to look things up. Users want to do this when they like, how they like and for as long as they like.

In the reading areas they also like to feel comfortable and protected from aggressive or indiscreet behaviour.

The spaces must become fluid, they should allow strolling and chance discoveries, but they must not be impersonal spaces in which people may feel lost.

Security, flexibility, fluidity, intimacy, large numbers of members of the public, silence, proximity to the collections. All this is asked of architects. But it is their judgement that must help them to discern the importance of some concepts above others in each specific situation.

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