

The New Library of the University of Aveiro

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INTRODUCTION

The new library of the University of Aveiro¹ was inaugurated in 1995.

The architect selected to put the new library project into practice was Álvaro Siza, an internationally recognised Portuguese architect.² The project was assigned in 1987.

Construction began two years later. The engineering works of the building had three phases (1988 - 1995). The first engineering stage started in 1988 and the second in 1991. During the last period there were problems with the construction firm that affected the continuity of the process; in order to solve the problems, in 1993, the university decided to manage the task by direct administration. However, the architectural team retained control of the design and the inspection of the work. The total amount of these three stages of construction was approximately four millions, five hundred thousand Euros.

After the building construction, the university agreed that the architect would also elaborate the garden and parking project.

In fact, these works involving the green garden, the side-walk and a ramp access to the library finished last year and the parking lot construction will only begin in 2001.

The new building holds the bibliographic resources of the former departmental libraries (1974³ - 1995).

The new university library has a multidisciplinary collection of scientific-technical subjects from interdisciplinary areas in science and engineering to humanities, arts and communication, management, economics and planning. At the moment, it serves a population of about 8,500 students, including 550 postgraduates of master and PhD and 650 academic staff. It also serves about 1,000 external users, particularly from polytechnic schools.

The New Library of the University of Aveiro

THE BUILDING

The building is a homogeneous monumental example of architecture, covering an area of 6,500 square meters, on four levels, and situated centrally to the university campus which has an area of 69 hectares.

The campus is a good show of modernity, functionality and harmony extending alongside Aveiro Lagoon⁴, where different departments are bordered by green spaces.

A good interdepartmental access all over the Campus of Santiago is a key factor towards quality of life of the academic community. It is in this context that the new library is integrated.

The library building faces the main canteen and the Computing and Communications Centre; near there is a bookshop, a banking facility, a post office, kiosks and snack-bars.

The architect wished to dialogue with the natural surroundings and particular attention was given to the points of contact between materials, buildings and landscape. Red brick and limestone were the selected materials to cover the external walls. The building was designed according to an integrated model in a style coherent to the university campus.

The Façades

The library presents different façades, two of them are very special for their characteristic design:

- The western façade, towards the Lagoon, is characterised by a free-standing curving wall that reinforces the building and offers an excellent visual connection with the global structure. A continuous horizontal opening cuts this façade, at second and third levels, allowing natural light to penetrate (Fig. 1).
- The southern façade, completely in limestone, is formed by a platform in S, with a special aesthetic aspect. Carved on this platform, there is a puzzle-like drawing spelling *Universidade de Aveiro*.

On this south side, there is the main entrance to the library. A ramp access, in the eastern side, leads directly to the central square at a first floor level (Fig. 2).

The Lighting

Special attention was given to lighting in the design.

The central areas in the reading-rooms receive light from the ceiling, by twenty four roof clerestories, that look like magic circles illuminating the library and that reflect diffused daylight to the lower floors, through large central voids (Fig. 3). Direct sunray never occurs, because the roof clerestories are conic shaped and set on a special angle of inclination (Fig. 4). The light diffuses inside the building giving it a sense of unity.

The western façade is protected from the sunlight by the free-standing curving wall which, like a lampshade, reflects the light. Readers sitting close to the lateral horizontal opening benefit from a very attractive view of the Salinas and the Lagoon extending to the horizon.

In the northern façade, three windows, that look like natural pictures, illuminate the central area of the reading-rooms on the first, second and third floors.

The platform in S, in the southern façade, protects the sunlight's direct entry and diffuses light in the inner space.

The architect gave much thought to sun protection and to indirect and channelled control of natural light.

Artificial light is brought into the building by various methods. In the reading-rooms, the lamps enclosed over the shelving blocks reflect diffused light. In the open central area, small lamps in the reading tables individualise working places.

Some Details of the Equipment

The building is equipped with:

- total air-conditioning and electrical system, integrated into the perimeter shelving units; „maintaining spatial continuity between walls and ceilings“⁴⁵, in the public area;
- controlled air-conditioning with independent temperature control, in each room, in the service area;
- fire-alarm protection system: an intrusion alarm system, covering the entire building, with direct connection to the security department;
- 10 megabytes Ethernet that will be changed to 100 megabytes Ethernet with interfaces to the campus backbone, using high-bandwidth tech-

The New Library of the University of Aveiro

nologies such as ATM and gigabytes transfer rates. This would grant enough growth to the higher demands of new communications technologies;

- public lift; books lift; service lift.

THE LIBRARY

The library inner space was designed with a simple, artistic and aesthetic feeling. It is a pleasant place to use and work.

The library is made up of the following areas:

- reading-rooms;
- service areas;
- closed stacks;
- room for cultural events.

The reading-rooms are on the first, second and third floors. The service area and the large closed stacks room are on the ground floor; a small storage area containing valuable books and special collections exists on the third floor.

The furniture follows the architect's design. There is a clear interplay between space and materials.

The materials used were:

- wood - in the reading-rooms: for flooring, shelves, reading-tables, chairs, book trolleys, display stands and in all the furniture of the service area. The window and doorframes are also in wood;
- marble - in access areas and toilets;
- linoleum - covering floors in service areas;
- metal and steel - on the closed stacks of the large storage.

Organising the Public Space

The reading area, on the first, second and third floors, follows a uniform pattern and is organised by:

- reading tables in open space, in the central area (Fig. 5);
- basic units, formed by reading tables, eight seats each, surrounded by fixed shelving blocks and a book trolley, that define semi-autonomous areas of study (Fig. 6).

The users also have the following facilities:

- individual reading tables;
- benches that define individual reading places around the large central voids, on second and third floors;
- individual and double rooms for research, on each floor, in the north-west façade;
- individual rooms for audio-visual materials, on the second floor;
- group-study rooms, on the second floor; sometimes these rooms are used as teaching and seminar rooms for small groups;
- self-service copying facilities.

The total amount of reading places in the library is about one thousand.

The books and periodicals are classified according to the *Decimal Classification*. The books are on the left side of the main entry and the current periodicals collections are on the right side. This order is put into practice on first, second and third floors.

The Ground Floor

On the northern ground floor, there is a particular area, the informal reading-room, accessible via a stairway from the first floor. This exhibition room has comfortable armchairs, where users can read the latest acquisitions:

- newspapers;
- magazines;
- periodicals;
- books;
- pamphlets about cultural programmes;
- programmes about seminars, etc.

Sometimes this room is used for receptions or special events. It is an open and multi-functional space.

The New Library of the University of Aveiro

The First Floor

On this floor, the main entrance leads to a hall. There the visitor finds lockers, cloakrooms and toilets to the left, and a room for cultural events (exhibitions, conferences and debates) to the right.

The Room for Cultural Events

Some of the cultural activities regularly promoted by the university (as part of the university's cultural programme) and open to the community take place in this room.

Human interaction is facilitated in this space by the building design: the cultural events room is an independent space that can be used when the library is open and also when the library is closed, for example, at weekends.

The library's mission is not only to provide a rapid and efficient service to the users, but also to co-operate with the university in social cultural development, by creating and disseminating culture.

The Reference and Circulation Desk

Having crossed the entrance hall, a glass partition, where the same puzzle as that of the external platform in S is carved, separates and protects the reading-rooms from the outside noise. The doors on either side of the glass partition are provided with the electronic book detection system, in front of which the reference and circulation desk is located. This is the busiest area in the library. In the near future, a new electronic self-check lending system will be available.

On the right side of the circulation desk, the visitor finds the OPAC access terminals and some PCs. The library database⁶ is accessible both inside the library and elsewhere across the university campus and also via Web.

On the left side of the reference desk, the user finds the self-service copying room.

At the reference and circulation desk, the books and service lifts circulate between floors.

The strategic implementation of these equipments allows for a good human interaction between all the reference/circulation desks, the closed stacks and the service area.

The shelves on this floor contain:

- short loan collection;
- reference materials;

- basic journals covering science in general;
- monographs for undergraduate students in the following areas:
 - biology;
 - chemistry;
 - economics and planning;
 - engineering;
 - management;
 - physics;
 - tourism;
- general and interdisciplinary books.

The Second Floor

On the second floor, there is a reference and circulation desk as well to answer the users' requests.

The shelves on this floor include all the collections (monographs and periodicals) for undergraduate and graduate students in:

- humanities;
- music;
- arts and communication.

Since students need non-book materials as support to their study, there are eight individual rooms specially designed for reading, listening or watching CD-ROMs, records, audio- or videocassettes, microfilms, microfiches and television programmes. These materials are not on free access, they are in the audio-visual storage, a room with controlled access in front of the individual rooms. As non-book materials are fragile and require special shelf conditions, as well as careful handling, they are only available through the staff.

There are also eight group rooms: six of them are for seminars, teaching or study; one is for group study (with PCs) and copying (with scanner and photocopier) and the last is reserved for distance learning.⁷ All of them are protected from noise by a special system included in the building construction.

The library has the opportunity and competency to co-operate in the teaching process, upgrading students' knowledge, with the use of non-book items and new information and communication technologies.

The New Library of the University of Aveiro

The Third Floor

On the third floor, there is a reading-room, like those on the other floors, with collections of:

- science;
- technology,

for graduate students, post-graduate students, teachers and researchers, including specialised monographs, reference books and periodicals that occupy the largest physical area of this floor. Periodical collections are bound after six-months/one year of use, in order to preserve them.

If privacy is required, the user can choose an individual room.

Another separated room, a special reading-room for rare and valuable books and special collections is available on the south side.

These materials are in closed stacks next to this room and have controlled access. Some of these special collections were offers from private families owners of important bibliographic funds. Here we also find our professors' dissertations and books or periodicals about Aveiro and its region.

A container to preserve valuable documents and our database magnetic tape backups, from potential catastrophic situations, for example fire, is included in this room.

This separated area also includes an information room with specialised information service, to guarantee better quality of learning and research. There, a reference librarian or specialist provides daily personal assistance to individual readers in search of information.

The users have at their disposal:

- access to 50 databases on CD-ROM, on several fields of knowledge;
- access to local and remote electronic information (Ethernet and Internet) such as:
 - online catalogues;
 - electronic journal (contents of articles, full text and image);
 - digitalisation of parts of monographs most required by students, of which printed texts are on short loan collection;
 - digitalisation of special collections about the city of Aveiro or other specific areas of interest to the university.

This special reading-room was projected only for rare and valuable books and special collections. Nowadays, it is also a room with a specialised information service, and equipped with some PCs for the users.

The change brought about by IT will continue to have impact on organisational structure, working relationships and services.

The versatility of the library building, evident in this reading-room, is very important to the reorganisation of space in this public area.

Organising the Service Areas and Closed Stacks Room

On the ground floor, apart from an informal reading-room, a separated public area, there is the training room, the closed stacks room and the service area.

The Training Room

The training room situated on the northern side of the ground floor is equipped with some PCs. This space was originally intended only for staff room; later it became a continuous staff training room. Nowadays it is also used for users' training. It was possible to give flexibility to this room because it is located close to the informal reading-room and access to users is easily controlled.

Here the students receive a comprehensive introduction to the library and information services. The librarians established a programme to aid the undergraduate students understand the use of the library and how to access Internet or library information resources. Students develop a range of skills including direct access and online search.

A *computer library video guide* was produced to introduce new students to the library.

Another useful learning experience for postgraduate students is their bibliographic training in doing specific searches for their work. After that, they have a better understanding of library service and they improve their learning.

The librarians are developing programmes to help teachers use the available online resources in a more efficient way, not only by local access but also by remote access.

The New Library of the University of Aveiro

The Service Areas

This space includes technical services and the administration (Head Director, secretary, administrative archive), the meeting room for staff, the room for main server and CD-ROMs towers, the bookbindery, the microform machine room, the staff cafeteria and the toilets.

Two offices for the Library Divisions Head open directly to the technical service area.

The main technical room was designed as an open space. The furniture is an element of individualism but also an element of integration.

The technical function procedures⁸ aim to ensure that materials are accessible to the users as quickly as possible.

The library sends SDI to regional enterprises.

The services produce an online bibliographic list to inform the users of the latest books received.

The Closed Stacks Room

The closed stacks are located on the ground floor near the service area.

Collections of older periodicals and books that are no longer in circulation are shelved in this room.

The storage has 6,770 linear meters of compact bookshelves, selected to allow air penetration from the top and the sides. The air circulation is very important for the collections' preservation.

CONCLUSION

When planning the library building, the architect devoted much attention to the aesthetic features and to the harmonious framing of the building in the surrounding landscape, including the Lagoon.

The light is one of the most studied aspects. The building was designed to put users in contact with knowledge and nature. The architect's idea to create an environment with favourable conditions to concentration and study was achieved.

The inner space was designed with a simple, artistic and aesthetic feeling.

Groups of European architects and students of architecture frequently visit the building.

Unfortunately, the reading space is not as flexible as it should be, since the bookshelves are fixed and the implementation of more shelves in open space would collide with the good visual connection between floors and would change the concept of unity.

Although the library's dimension fits today's needs, the book collection has increased about 50 % in the last four years and it is not difficult to anticipate the inevitable need of more storing space.

Therefore, an extension of the library is already in mind, to be equipped with infrastructures that support the massive use of IT, the access to the digital collections and Internet resources, with particular attention to be given to learning and information services (LIS) and distance learning.

Now and in future, librarians' aim is to use research, knowledge and experience to create good human interaction, providing an environment of positive attitudes and actions between users, staff and suppliers. In this context, co-operation with other university libraries should be developed at all levels.

Our mission, at the moment, is to take full advantage of the functionality of the present space to develop, with the staff involvement, the best services possible, without colliding with the building characteristics.

In conjunction with the well-designed building, we expect our library to be an inviting place, where the display of bibliographic materials is organised and easily accessible. We also wish that the information provided is relevant to the user's needs and interests, efficiently determining the quality of learning and research of the university.

Some Figures

<i>Activity</i>	<i>Year(s)</i>	<i>Cost (€)</i>
Building project	1987-1988	177,815
Building construction	1988-1995	4,512,400
Furniture	1994	455,160
Furniture	1999	9,800
Computer equipment	1993-1995	309,880
Computer equipment	1995-1999	134,866
Other equipment	1994-1995	98,765
Ramp, garden and parking project	1995-1996	57,370
Ramp construction and garden	1997-1999	653,860
Parking	2001	—

The New Library of the University of Aveiro

<i>Facilities</i>	<i>Numbers</i>
Reading seats	1,000
Individual rooms	32
Audio-visual individual rooms	8
Double rooms	6
Group rooms	8
Open shelves	3,250 m
Closed stacks	6,770 m

<i>Some bibliographic materials</i>	<i>Items</i>
Books	150,000
Periodicals titles	5,100
Videocassettes	900
Music CDs	750
Database on CD-ROM	50

<i>Human aspects</i>	<i>Numbers</i>
Students	8,500
Academic staff	650
External users	1,000
Library staff	41
Groups of architects visiting the library	35

Figures of 1999

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- 1 Aveiro is a city located 250 km north of Lisbon, the capital of Portugal, and 10 km from the Atlantic Sea. It has about 70,000 inhabitants and it is the main city of an industrial region undergoing fast economic development.
- 2 „Álvaro Siza’s emergence as a pre-eminent architect affirms architecture as a mental activity... Siza’s syncretic design approaches points towards the future and his architecture will undoubtedly inspire and influence the development of architectural culture in the 21st century“. In: TESTA, Peter - *Álvaro Siza.* Basel: Birkhaeuser, 1996, p. 7, 12.
- 3 The University of Aveiro is a new university established in 1973.
- 4 The Lagoon is one of the most beautiful along the Portuguese central coast, extending over 11,000 hectares.
- 5 TESTA, Peter - *Álvaro Siza* ... p. 146.

The New Library of the University of Aveiro

- 6 The library uses the integrated management system ALEPH 500-12.2.
- 7 The university has been engaged in a distance learning programme based on Internet and Web CT technology, that involved the creation of a functional unit, the Multimedia and Distance Learning Centre (CEMED).
- 8 At the service area, all the bibliographic routines are put into practice, for the documents of the library and also for:
 - *Mediateca*, a library with a collection of books, periodicals and audio-visual materials in education and related matters. This is located, near the library, in the Teacher Training Centre, since 1986.
 - *Library of the College of Technology and Management of Agueda*, (located 30 km from Aveiro). This polytechnic school was integrated within the University in 1997/1998 and has a small library.

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Figure 1: The western façade



Figure 2: The eastern façade



Figure 3: The large central voids in the reading-rooms



Figure 4: The roof clerestories



Figure 5: The reading-rooms in the central area



Figure 6: The semi-autonomous areas of study in the reading-rooms



Figure 7: The ground floor

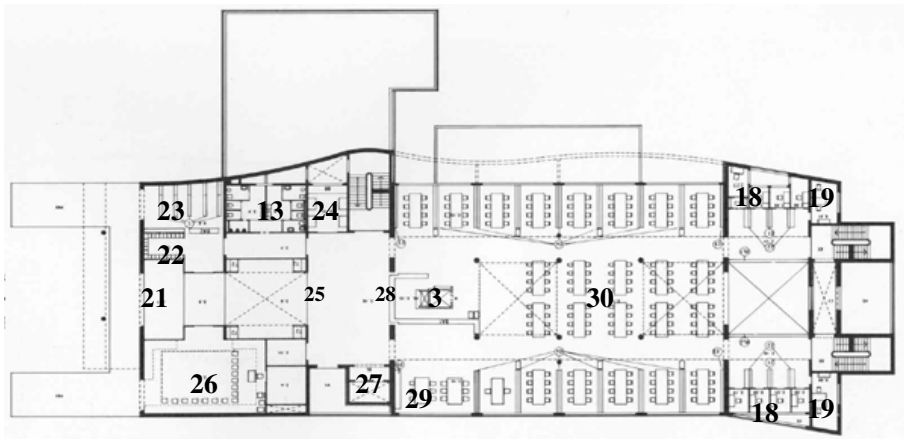


Figure 8: The first floor

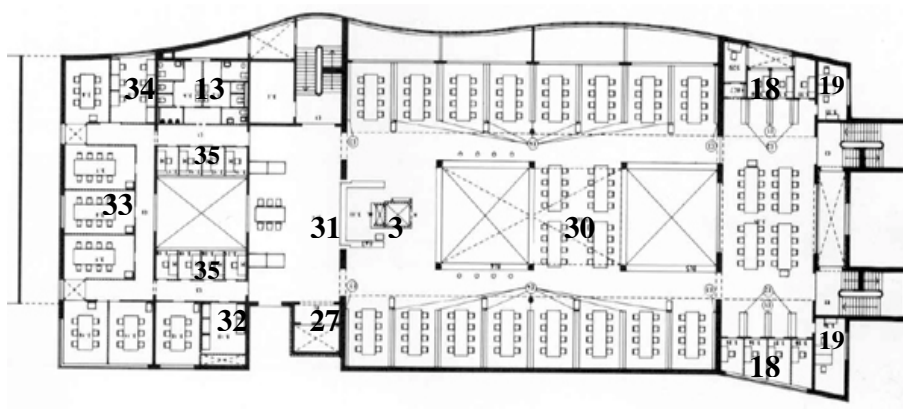


Figure 9: The second floor

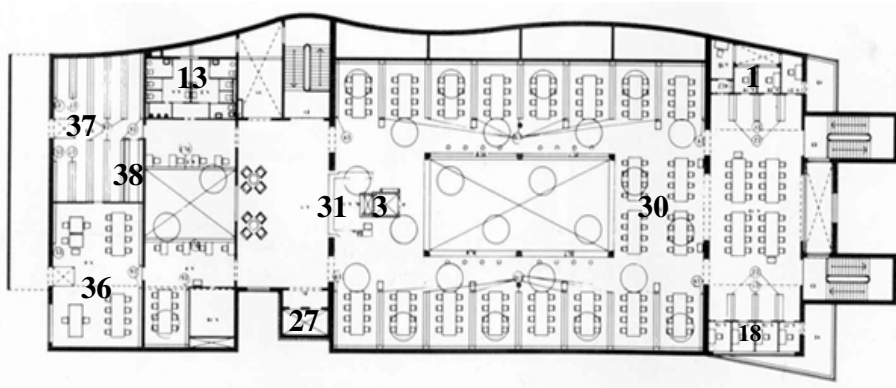


Figure 10: The third floor

1 – Machines room	20 – Informal reading room
2 – Staff entrance	21 – Entrance
3 – Books lift and service lift	22 – Lockers
4 – Technical services room	23 – Cloakroom
5 – Library Divisions Head office	24 – Main copying room
6 – Head Director office	25 – Electronic book detection system
7 – Secretary	26 – Cultural events room
8 – Meeting room for staff	27 – Public lift
9 – Administrative archive	28 – Main reference/circulation desk
10 – Staff cafeteria	29 – OPAC terminals and PCs
11 – Bookbindery	30 – Reading area
12 – Computer services room	31 – Reference/circulation desk
13 – Toilets	32 – Audio-visual storage
14 – Microform machine room	33 – Group rooms
15 – Main server and CD-ROMs tower room	34 – Group room with PCs and scanner
16 – Closed stacks	35 – Audio-visual materials rooms
17 – Training room	36 – The special reading room
18 – Individual rooms	37 – Closed stacks
19 – Double rooms	38 – Valuable documents container