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A New Library for the Exact Sciences at the K. U. Leuven

by RAF DEKEYSER

The Katholieke Universiteit Leuven (KUL) is the Dutch speaking part of the old university that was founded in 1425. In 1968 it was officially divided in two parts, and the French speaking part hence moved to new dwellings in Louvain-la-Neuve. The KUL is now with 25,000 students the largest university of Belgium.

A. The Present Situation

The university library of the KUL is organised in a rather hybrid way. The Central Library plays a key role with its majestic facade on one of the most important town squares. The collections in this Central Library consist of general reference publications in all fields of science and of the works related to the cultural heritage of the university and the region; it also acts as depository library for the humanities. Here you will also find the general library administration, where care is taken of general matters important for all library branches (the common catalogue, external relations, etc.).

The more specialised faculty libraries are divided in four campuses, each with its own campus library service (Humanities, Behavioural Sciences, Biomedical Sciences and Exact Sciences). Each campus consists of several sectional libraries (in faculties or departments). They are quite independent in as far as budget, acquisition policy and opening hours is concerned.

The group of Exact Sciences consists of three official Faculties: Sciences, Applied Sciences (or Engineering) and Biotechnology (or Agronomy), each of them consisting of several departments. Up to the sixties, all these units were supported by a whole set of small laboratory libraries and a few small faculty libraries. Around 1970 the university got more structured into departments (many in new buildings) and most of them started with a departmental library. Simultaneously the campus library service was founded, making, e.g., deals for avoiding overlapping journal subscriptions. In many places, however, impor-

tant book collections remained in individual laboratories, most often without adequate access for the broader university public. Over the years a few concentrations took place. First there was a merger between the libraries of Mathematics (Faculty of Sciences) and of Computer Sciences (Faculty of Applied Sciences). Next came a merger between the already unified library of the Faculty of Agronomy with the library of Botany (a part of the Department of Biology in the Faculty of Sciences). At present day, this leaves us with the following library units:

- Mathematics and Computer Sciences,
- Physics,
- Chemistry,
- Botany and Agronomy,
- Zoology,
- Geo-sciences (part of geography and geology),
- Social and economical geography,
- Chemical Engineering,
- Architecture, town planning, construction,
- Electronic engineering,
- Material Sciences and Metals,
- Mechanical engineering.

These are only the official library units, each staffed by a single librarian. In addition, there are still many unofficial laboratory libraries without library staff (at best the collections are supervised by a secretary). All these libraries are co-ordinated by a dynamic Campus Library Service, which takes care of the acquisition administration (the selection is still done by the individual units!), of the cataloguing and of the Interlibrary Loan service. It disposes also over a couple of extra people that can be sent to the smaller units in case of illness or vacation of the regular staff. Most of these libraries are situated in the Heverlee subcampus of the university, within a 1 km distance of each other, with exception of the libraries of zoology and of the geosciences: these are a few kilometre away within the old historical city centre.

A few numbers may give a better idea of the total size of these libraries:

430.000	volumes
3,050	journals
7,500	incoming ILL-requests/year
6,500	outgoing ILL-requests/year
20	km layers
445	seats
3,670	m² surface
6,000	students
1,500	academic staff

B. Towards Centralisation

Within the academic campus library commission (composed mostly of professors, acting as representatives of their departments) a discussion started in the beginning of the 90's about the desirability of a more centralised library. A special commission was created in 1995 with the task to investigate all arguments against and in favour of the centralisation.

The arguments that were still heard in favour of a continuation of the decentralised situation were mainly the following:

- The short walking distance between library and office: In the present situation almost each researcher can find most of his documentation in his own building. They are afraid that a central library will automatically mean larger walking distances.
- Personal engagement for the acquisition budget: The financial policy of the university is very decentralised. Most research groups have furthermore considerable additional and more personalised income, from scientific research grants or from industrial collaborations. The rising subscription prices for scientific journals have led to a strong dependency of the libraries from these decentralised budgets. It is a natural reaction from these research groups to keep a strong hold and close control of their own library. They are much less inclined to subsidise a centralised faraway library.
- Familiarity of the librarian with his customers: Close contacts grew in each department between the librarian and his customers. He knows the professors and senior researchers, and he is aware of their personal interests in matters of documentation. These people are afraid that the service will be much more impersonal - and therefore less efficient - in a centralised situation.

- Facilities for access: In order to alleviate the restrictions coming from the limited opening hours of a small library staffed by a single person, special facilities (like private keys to the library door for the academic staff) have unofficially been introduced in many places. It is obvious that these people are not looking forward to the cancellation of their privileges.

Arguments in Favour of Centralisation

In spite of the above considerations, it was nevertheless felt that there were so many more arguments in favour of a central library:

- The interdisciplinarity of sciences makes it necessary for many people to go up and down between several libraries. Since interdisciplinary research is encouraged, it would be much more efficient if all scientific literature could be put together within the same premises.
- Up to now, all existing libraries within the Exact Sciences were strictly research libraries. This is strongly reflected in the collections, where very little material is present that can be of interest to the undergraduate students. Rising journal subscription prices led often to a neglect of book material. The libraries forgot their didactic mission and undergraduate students seldom visit the library. This problem was explicitly noted by the so-called *visitation commissions*, which evaluate the departments on a national level.
- The fact that at present all these small libraries are understaffed has the following disadvantages:
  - limited opening,
  - often closed due to absence of the staff (meetings, illness, extra holidays, …),
  - no specialised services: the single person staffing each library has to be an all-round man.
- Better services towards the community at large (alumni, industry, …).
- Smooth implementation of modern media. For an individual librarian, it is much harder to follow the fast evolution in ICT-technology than for a specialised team.
- The larger walking distances between research buildings and central library will in the future be compensated by a decentralised electronic information delivery. Setting up such a service, however, requires a specialised staff, which cannot be realised by an individual department.

- More possibilities for expansion. For the moment, most departmental libraries are filled to the brim, with no prospect for expansion. Construction of a new building will, if large enough, allow for some expansion for all branches.
- Improved „visibility“ of the campus. This is a local problem: the collection of new buildings that were erected at the Science campus in the 60‘s now form a rather anonymous group of grey blocks without a face. A new library building, if well conceived, could play the role of meeting place and become the heart of the campus.

A Concept for the New Library

Apart from summing up all arguments in favour of this new building, the commission set also up some guidelines for its construction.

- Clusters: In order to prevent the anonymity of a very large library, the new building should be divided in a number of large clusters. Each cluster consists of a number of related subjects and a specialised librarian should preferentially staff it. The following clusters are considered:
  - a didactic cluster with books for undergraduates and general reference works,
  - biosciences (agronomy, botany and zoology),
  - mathematics, computer sciences, electronic and mechanical engineering,
  - chemistry, physics, astronomy, material sciences, geology,
  - architecture, construction, geography.
- Disposition of the collection: Since the total budget for the construction will certainly be limited, the idea was raised to divide the collection in layers with decreasing accessibility. The most recent works should be accessible in open stack. Less recent books and journals should be stored in a compact system. Even older documents may be stored in a deposit library, which was installed in the stacks of the previous library of a now almost deserted Jesuit convent, about 1 km from the science campus. It can contain approximately 400,000 volumes. The idea would be to work with a continuous flow system: when more new books are bought, this should be compensated by a shift of some older works from open stack to the compact system, and from the compact to the deposit. The total net surface required for the library (without deposit) was estimated around 7,000 m².

- Further requirements for the building and its operation were expressed:
  - An extension of the total number of seats (with the undergraduate students in mind!).
  - An instruction room with multimedia applications.
  - Differentiation and specialisation of staff.
  - Late opening hours and weekend service.

C. LOCATION: THE OLD CELESTINE CONVENT

Most of the exact science buildings of the KUL are situated south of the city centre, in the so-called Arenberg campus. The name is derived from the dukes of Arenberg, who possessed a large domain around the Arenberg castle of Heverlee. Guillaume (or Willem) de Croÿ – an ancestor of the Arenberg family – built the castle in the beginning of the 16th Century. The whole domain was transferred to the university after the First World War. Today the castle houses the administration of the Faculty of Engineering and the Department of Architecture. To the domain of this castle belonged also a monastery of the severe French Celestine order (founded by Pope Celestine V).

There are many historical documents that represent this monastery with its 72 m long church and square courtyard, although they differ substantially in the form and relative size of the buildings. We see them, e.g., in an etching by Joost Vander Baren from a book by Justus Lipsius from 1610, which also includes the castle and a view of the neighbourhood. The convent can be seen as a building with two floors in a painting from around 1600 (attributed to the same Joost Vander Baren, and hanging today in the Arenberg castle), with a single floor in an engraving from a book written around 1610 by J. Debye, and again with two floors in a wooden model made in 1782 for the blind duke Engelbert of Arenberg. The most detailed view was given by Lucas Vorstermans in his engraving from 1727 (from a book written by A. Sanderus). We clearly see that the three wings of the convent have two floors, and a gallery with a lower roof surrounds the square inner courtyard. The northern side of this gallery flanks the church.

The convent was suspended in 1783 by the emperor Joseph II., and the buildings were sold to the duke of Arenberg in 1786. In 1796 the church was severely plundered. What remained was in such a deplorable state that the duke of Arenberg decided in 1816 to completely break down the church building, together with a part of the western wing. Today, only the remaining part of the west wing and the east wing are standing up (although not in a good shape), but three sides of the courtyard gallery with very nice vaults are almost intact. The south wing of the courtyard has completely disappeared. To the north, instead of the church there is just a large red brick wall. The most

impressive remaining building is the eastern wing (the so-called *refectorium*), which over the centuries clearly underwent many restaurations. Around 1900 it was used as a stable for horses.

Since many years, the university was looking for an occasion to restore the old Celestine buildings and to give the site a new destination. The search for a site for the new science library offered an excellent opportunity to fulfil this old dream. A competition was organised in two phases. In a first phase, architects were invited to declare their interest in the project. On the basis of their engagement with respect to several criteria, a small number of architects were selected to work out (for a fee) a detailed proposal for the construction of the new library, incorporating the restored remains of the Celestine convent. We have seen a variety of interesting ideas: some tried to reconstruct the old church by way of a massive entrance building, others concentrated more on the well preserved courtyard and gallery. An international jury finally selected the proposal by the Spanish architect Jose Rafael Moneo, on the basis of its simplicity and respect for the original buildings. His emphasis lies entirely on the courtyard, where he substitutes the missing fourth side of the gallery by a modern two-level construction. In order to accomodate the need for additional surface space without hindering the view upon the existing buildings, he constructs a large but low annex with two floors, one of them underground.

Rafael Moneo (born in 1937) received in 1993 a Ph. D. honoris causa at the Leuven university, but he also built himself a solid international reputation through a variety of important buildings (museums in Madrid, Merida, Palma, Stockholm and Wellesley, Mass., a train station in Madrid and an airport building in Sevilla, a hotel in Berlin and a Cathedral in Los Angeles, …). He received several important international prizes rewarding his achievements.

D. The New Building

Preliminary Investigations

The whole project was prepared through a couple of preceding investigations. A historical investigation of the original design of the buildings was performed in preparation for the restoration. A technical company performed a series of restoration-technical measurements. Archaeological excavations discovered - as expected - the foundations of the previous southern courtyard gallery. A part of the foundations of the southern wing was also exposed, and this undertaking exposed an intact old brick well, flanked with two arched constructions, exactly at the site where the architect had planned the information desk! This gave rise to some haggling with the service for the

preservation of monuments, which finally allowed removing these archaeological remains, after a careful measurement and description.

From the beginning, the University also made contact with the official organisation for „Monuments and Landscape". They had a strong impact on the evolution of the project. They requested, e.g., that the old dilapidated wall at the side of the street be conserved in its present state. They also put severe restrictions on the accessibility to the domain for cars and trucks.

An Overview of the Plan

When the competition was finished, detailed discussions were organised between on the one side the architect and on the other side the library staff and the technical services of the university, but also with the safety and fire-brigade services. This has led to numerous alterations of the original design.

In the plan of the ground floor, we remark the entrance from the South side of the building. Immediately to the left of the entrance hall is a small self-catering cafetaria, and to the right a room for a bookshop and further on the lavatories. We further remark the cloak-room and an open space for temporary exhibitions. The large information desk has one side open to this entrance space, whereas the other side opens towards the controlled interior of the library. Left of this information desk is a space for a return robot for lent out documents.

The registered customer who enters past this information desk, will automatically walk into the eastern vaulted gallery. The three remaining galleries will indeed be fully renovated and equipped with working places, but they may also be used as an exhibition space within the controlled zone. A modern walking gallery in the didactical wing will complete the original square. Through the restored windows, this gallery will give a view upon the courtyard with a preserved tree, but a part of this courtyard will also be available for outside reading in the summertime. The architect saw a symbolic library-related value in the contrast between the austerity of the convent gallery and the playfulness of the modern glass wall of the didactical wing.

The ground floor of the eastern wing of the old convent will serve as a large reading room with the most recent issues of all the journals. Towards the southern end of this wing, an elevator makes a connection with the other floors of the library. The southern tip of this wing will contain a small seminar room, which can also be made accessible from the non-controlled entrance area.

Between the old east wing and the street, a new low annex building will be constructed, containing the open stacks for the clusters, spread over two floors. On the ground level we see the stacks, reading places and booths for

the reference librarians and for copying machines. A special room is reserved for an important slide collection from the department of Architecture. Natural lighting will come through pyramid-shaped cupolas in the ceiling and through an open shaft near the refectorium it will also stream into the basement floor. In the basement we find a set of group carrels, where small groups of up to 6 people can discuss in relative acoustical isolation.

The basement will also contain some rooms with special drawers for the storage of large maps and a room for consulting those maps. A large part of the basement will be reserved for closed compact stacks, directly connected by means of a book elevator to the information desk at the ground floor.

Let us however come back to the didactical cluster on the ground floor. Apart from reading places and stacks, it will also contain facilities for the consultation of classical video and DVD film material. A winding staircase leads to an upper floor with an extension to this didactical cluster. Extra reading space is available both in the west and in the east wing, whereas a small projection room for multimedia applications is present.

The west wing of the old buildings will be completely renovated, and mainly assigned to administrative functions. On the ground floor its southern section contains several offices for the library staff. Here it was impossible to keep the present partitioning of the existing buildings, but the architect reorganised the spaces, taking into account as much as possible the most important elements of the construction. The northern part of the wing contains here an instruction room for PC-applications. The level of this room is slightly higher than the level of the rest of the ground floor; access to handicapped persons is guaranteed by means of an inclined plane. On the first floor of the west wing is more office space for the staff, together with the reading rooms for the didactical cluster which we already met. On the basement level is a small stack space for precious volumes; access to this room will be restricted.

In order to be complete, the second floor of the east wing should also be mentioned. This existing space is mainly seen as a possibility for future expansion. Initially, it will only be summarily equipped as a series of seminar rooms.

Technical Concept

The new annex with the open stacks will be constructed on a supporting concrete floor with round columns. A fixed partitioning of the stacks according to the clusters was rejected, in order to increase the flexibility of the building. For the compact stacks a similar construction will be used, although the top floor of the didactical cluster will be built as a light metallic structure.

All new buildings will receive a flat roof. In contrast to the historical buildings, the new ones will receive large glass panels, some of them curved. The foundations of the historical walls will be reinforced with supporting masonry, and some sections of the old buildings will receive additional reinforcements.

The building will be equipped with most of the standard installations for a modern library: fire detection, intercom system, two elevators and a book elevator, automatic lending-out system and return robot, theft detection, a combination of floor- and convector-heating, air-treatment system (but no cooling). In the floor and walls of the open stacks and reading rooms there will be a system of cable channels for data connections; the other spaces will only have wall connections.

Some numerical data about the new building:

Total gross floor area	10,350 m²
Open stacks:	238,170 vols.
annex building	212,415
preciosa	9,000
general reading room	9,180
didactical cluster	16,575
Closed stacks (compactus)	427,170 vols.
Remote closed stacks	400,000 vols.
Seats:	662
reading rooms and stacks	494
seminar rooms	152
carrels	16

Access

The entrance to the library has for architectural reasons been placed at the south side of the complex, whereas the north side faces more directly the centre of gravity of the campus, with the *Celestijnenlaan* as its main artery. A natural entrance can be found in the gate of the wall in the *de Croÿlaan.* However, due to the heavy traffic in this street, the city will not permit cars to enter through this gate; it will thus be restricted to pedestrians and to the numerous students on bicycles. A special bicycle parking will be constructed. Furthermore, for esthetical reasons, the landscape commission does not allow

a large car parking space in the immediate neighbourhood of the library. The main access for cars will be farther along the *Celestijnenlaan*, at the entrance to the present institute for Mechanical Engineering, whose parking space will be enlarged. Only staff members, handicapped persons and delivery cars will be allowed to come closer to the library up to its small parking lot.

CONCLUSION

Actual work on the construction site should begin in april 2000, and it is expected that the library will be finished by may 2002. If everything goes as anticipated, the Katholieke Universiteit Leuven may have constructed a beautiful and efficient modern library, prepared to make the bridge from an old university to the new information technology age. At the same time, with the restoration of the Celestine convent it will have resurrected an important piece of its historical heritage.

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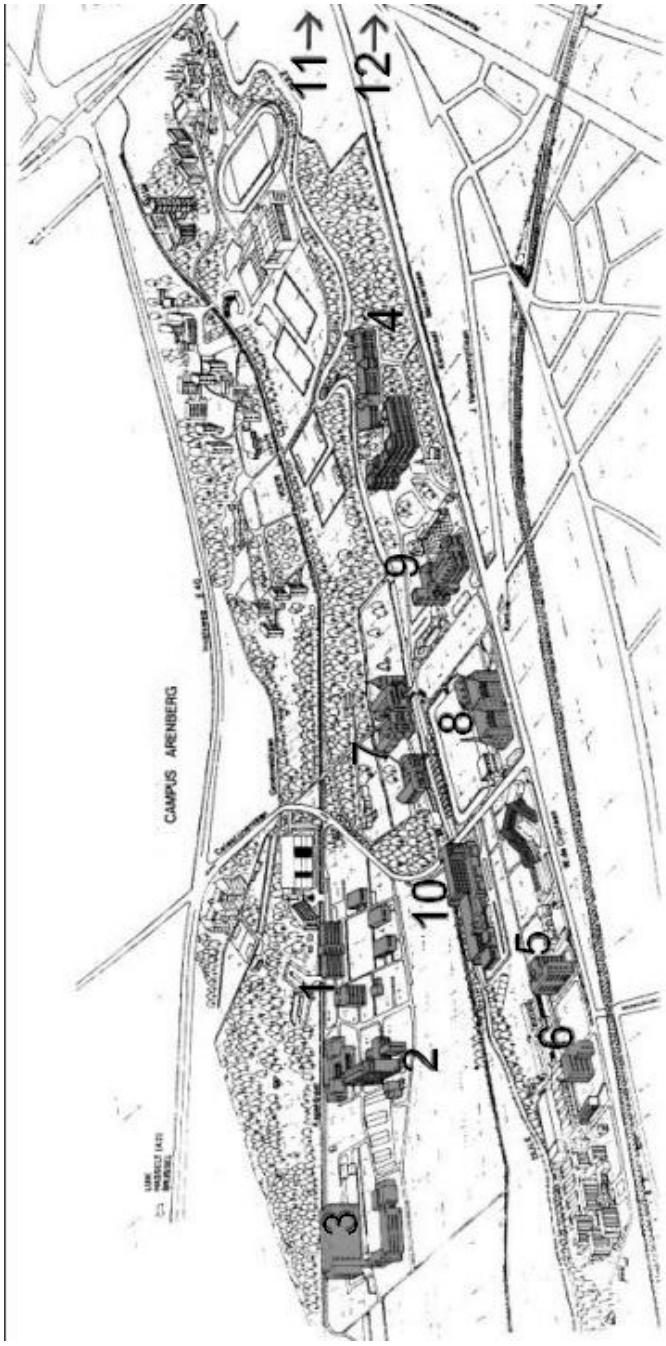
Figure 1: Outlay of the Campus of the Exact Sciences. The numbers indicate the present branch libraries of the following departments: 1: Mathematics and Computer Science - 2: Physics - 3: Chemistry - 4: Botany & Agronomy - 5: Social & Economical Geography - 6: Chemical Engineering - 7: Architecture and Planning - 8: Material Sciences & Metals - 9: Electrical Engineering - 10: Mechanical Engineering - 11: Zoology - 12: Geology & Geography. The numbers 11 and 12 are in the town centre at about 2 km of the campus. Between buildings 5 and 8 one sees the ruins of the Celestine convent, projected site of the new library.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CAMPUS ARENBERG

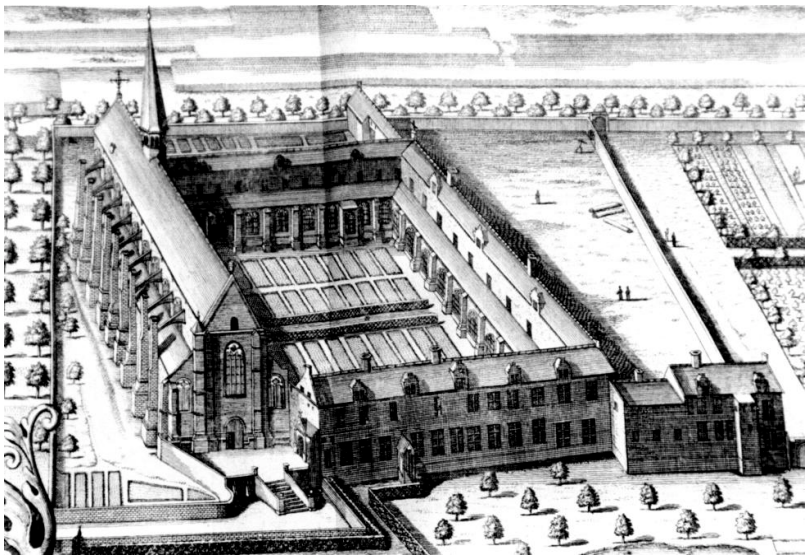


Figure 2: The Celestine convent in Heverlee, according to a copper engraving by Lucas Vorsterman, from: Antonius Sanderus, *Chorographia sacra Brabantiae,* vol.2 (The Hague, 1727).

Figure 3: Present day view of the vaults in the courtyard gallery of the Celestine convent.

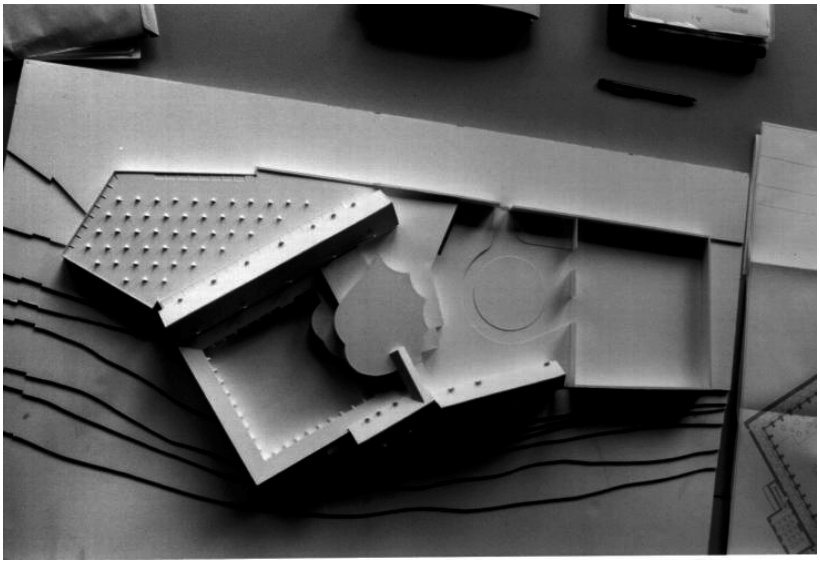
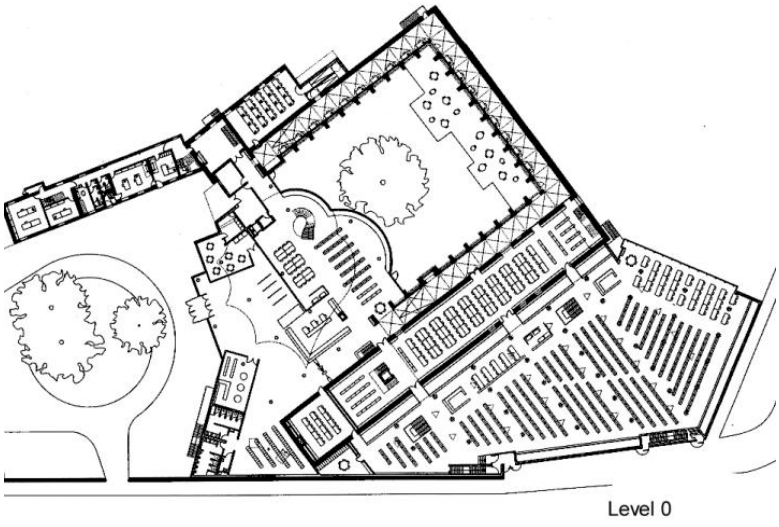
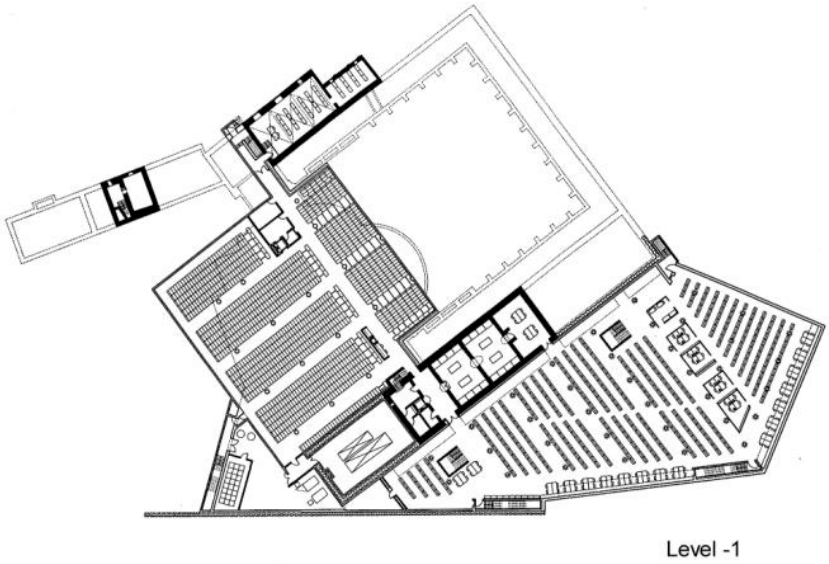
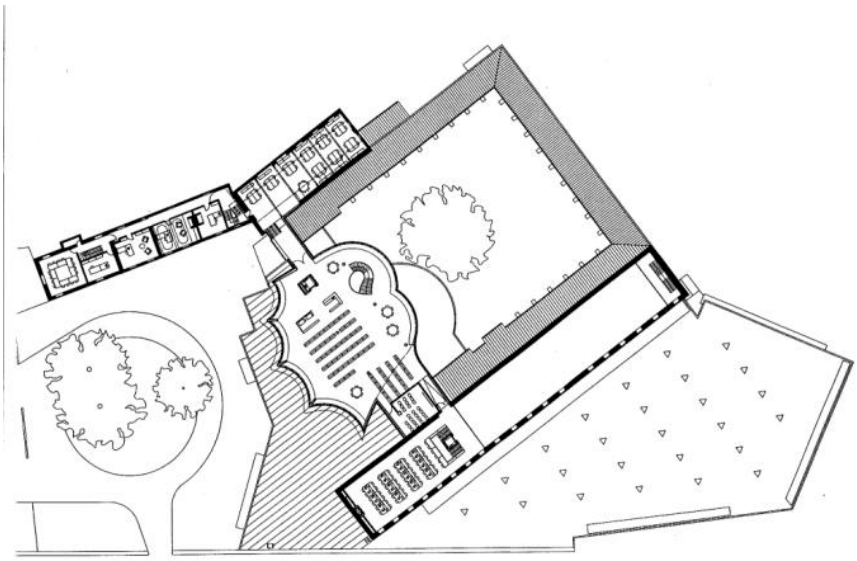


Figure 4: Model of the projected new library building, incorporating the remains of the Celestine convent.





Level -1



Level 1

Figures 5 - 7: Plans for ground level, lower floor and first floor.

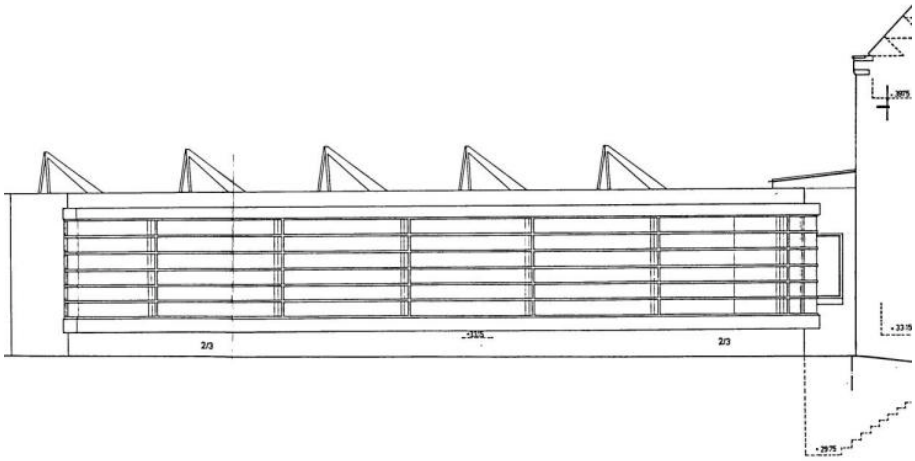


Figure 8: View from the North side towards the new annex building with the open stacks and reading places.