

[How the Librarian influenced the architect and how the architect influenced the Librarian: The Lanchester Library, Coventry University England, UK](#)

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Introduction

The new Lanchester Library building for Coventry University was one of the centrepieces of the University's Estates Strategy in the early 1990's. The Strategy recognised that the university had too little learning and study space. One solution would be to create a new Library, which would liberate space in other buildings that could then be converted for teaching use. This is a case study on the development of the concept, and the design of the Lanchester Library and about how the main parties in the development, the architect and the Librarian were influenced by each other's vision and objectives.

In the paper I want to talk about

- Where we started from
- What we did
- What we ended up with
- The environmental design
- What the reaction/impact has been

Why a new Library

A new library was needed because

- Loans had risen 81% between 1986/7 and 1994
- Seat occupancy was up by 51%
- The existing building made inefficient use of space
- It had a very poor IT infrastructure leaving no scope for integrated learning resources provision
- We had 4 separate libraries all of which were tired and dated and full

Planning assumptions

We made a number of assumptions about the kind of building we needed. These were

- the book isn't going to die quietly
- neither is the paper journal
- the campus based student isn't going to disappear
- the demand for a study destination won't go away
- if we didn't have libraries we'd have to invent them

We also started from the assumption that what we were creating was more than just a Library. True it would merge our four existing libraries to produce a much more focused, efficient and effective service but it needed to be much more if it was to

reflect the changing trends in support for teaching and learning. So it would also have to become an integrated learning resource centre and include extensive IT facilities for students.

The Library itself would contain all of our existing collections. Many of which had previously been spread across the campus and the city. We would integrate for the first time our slide collection of 100,000 images, our 10,000 off air video recordings, our music CDs, and music scores together with our collection of books and periodicals. In addition to these services we also provided access to the staff facility the Teaching and Learning Support Unit which is managed by the University Librarian and which works with lecturers to improve teaching and learning delivery as well providing reprographic and classroom support

Wherever a new building went it was likely to be on one extreme edge of the campus. If we were to attract students we needed to ensure that we have enough attractions to make sure they found us and then keep them there once they had found us. To help this the plan we devised the concept of a new focal point for students, where as well as all the resources and services identified above we would also provide access in the same building to a café, the university bookshop and the Library managed Resources Shop where students can buy stationery, binding, copying and graphics support. All of these were planned as an arcade through which customers would approach the Library; a kind of shopping mall where the main attraction was not Marks and Spencer or El Corte Ingles but the Library!!

It was becoming obvious that the trend towards 24/7 access was going to grow and so we wanted to make provision for this in our planning.

We concluded that the best way to deliver the flexibility and simplicity for our users was to propose a four-storey rectangle with an extended entrance mall on the ground floor to accommodate the University bookshop, the cafe and the Resources Shop. Although these activities will be in the same building they would be completely discrete from the main learning and study activities of the Library itself. As the building was on a sloping site it would also be possible to accommodate a lower ground floor covering half the footprint. In the final plan this was where we located our 24/7 access service.

The intention of all of this was to provide an attractive student focal point for the university that combined a number of related student activities in a single facility.

As part of its Estates Strategy the university also expected to further improve its nationally recognised reputation for energy conservation. With this in mind the new Library was expected to set new standards of energy efficiency. The keys to energy efficiency were natural light and natural ventilation. The chief problem with a rectangular building is that the deep plan model makes it very difficult to provide these at core of the building. The consultants, Estates staff, Library staff and the architects spent a great deal of time exploring eleven separate concepts for the building until they eventually arrived at one where the interests of the environment and the need for effective Library service delivery were carefully balanced.

Most importantly of all we made the important assertion that in cases of dispute the needs of the Library and its service delivery must come first

The vision for the library

The architect had not worked on a Library before and had very stereotyped views of what a Library should be. To convince him of what we needed and wanted we developed a set of statements that became our vision for the Library. The vision was

- **to provide an exciting and highly effective centre for information access, study and learning, which will affirm the University's commitment to the student learning experience** There are many examples of award winning libraries where design considerations have seriously compromised library functionality. We expected the needs of the Library users to be the paramount consideration in planning and design. Our objective was a building that actively promotes and facilitates effective study and learning through its high quality ambience and service delivery. A building that is at the heart of the student experience
- **to offer the highest quality information service delivery, in support of teaching, learning and research.** A new building provides the university with a unique opportunity of ensuring that it can offer the widest possible access to the world's information, wherever it is held and in whatever format. It will then be delivered to our users wherever they are located. Our vision was not to build enormous collections of books and periodicals but to be certain that we can meet users need for information in whatever format and from whatever source. Getting the right balance between information available within the Library and from elsewhere will require very careful planning of service delivery, IT infrastructure and space allocations.
- **to develop an exciting focal point for students which will attract and delight users and in which staff and students will find it a pleasure to work.** Too many buildings have, in the past, won awards but also been impossible to work in. We wanted this building to offer an exciting, attractive, safe and supportive environment for all those who are associated with it.
- **to allow maximum flexibility within the building to enable services to respond easily and quickly to changes in demand and use .** A building designed to last for the next 20-25 years will be bound to change and that must be recognised at the outset. There is a general consensus that print will continue into the foreseeable future, but that the balance between print information sources and electronic sources will gradually change. This will have implications for the changing shape of the building layout over time. Flexibility can't be built in later
- **to produce a building of which the University and City can be proud.** Libraries have been highly successful in winning a range of design awards recently and there is great interest in the architecture profession over this new focus on public sector building design. As a university with a strong design commitment a major building such as this offers an opportunity for original work that demonstrates that form and function can be successfully integrated.
- **to produce a highly energy efficient building that does not compromise functionality.** Most buildings still rely on massive air conditioning plant to deliver a

reasonable working environment, and then not very well sometimes. They also incur enormous maintenance and running costs over time. Current advances in natural lighting and natural ventilation offer an opportunity to significantly improve on this performance and these approaches will be incorporated into the design wherever possible

Initial objectives

As well as a brief and a vision there were also a number of key objectives that we wanted to achieve with the new building. These were

- retain the strengths of the old library
- offer maximum simplicity for users
- provide maximum flexibility for the future
- meet changing expectations of the Library
- create an integrated learning resource service
- provide a new focal point for student activity

Retain the strengths of the old library

Although we were keen to create a very different environment for our customers we were also keen not to lose the strengths that we had developed as part of the old library provision.

One aspect of this was to retain the idea of subject specialist floors with discrete collections gathered together and supported by a dedicated subject specialist team of Librarians. This enabled students to identify with their sector of the Library and avoid it seeming a vast impersonal building. This had worked in the old building and we agreed it had to be retained.

We also wanted to maintain a spacious entrance and circulation desk area. We had seen many examples, of very good libraries spoiled by entrances that were too small to cope with the volume of traffic, caused log jams on the way out and in and made the whole book loan and return process less than happy. We created a spacious open area with wide thoroughfares that provide more than adequate space for length queues if necessary at peak times whilst still allowing for very heavy traffic flows in and out of the building that did not interfere with the loans queue or study activities on that floor.

Although an expensive mode of operation we also retained subject specialist information help points on all floors. This had been a particular strength in the old library and despite pressure of costs we were determined to retain this.

We also agreed to retain all of our print collections despite pressure to demonstrate that information was now all electronic and that books and periodical could be dispensed with. This was not a view we held and so the building, and the floors were made large enough to take all of our existing collections with room we hope for further expansion. We also integrated retained and enhanced our provision for audio and visual media

which had been spread across four different locations and which could now be brought together in a single location for the first time.

Maximum simplicity

There are many libraries where the layout is complex and seems to be for the benefit of the collections or dictated by the geography of the building. We chose a simple rectangle and insisted on simple navigation with wide easily visible and easily usable thoroughfares to all parts of the floor

We also chose simple floor layouts sticking to rectangles and straight lines despite the architect's love of sweeping curves. Study spaces were located where the daylight was and collections in the artificially lit areas, The layout was as far as possible consistent between floors to help students understand and navigate the building more easily. Help Desks were the first thing that students see when they enter a floor and we wanted extensive use of good quality signs to help students navigate by themselves

Maximum flexibility

The issue of flexibility for the future was raised in several books on library planning so we worked with the architects to produce a flexible plan. We used a minimum of internal walls and all internal walls were partitions not structural. Most importantly the architect in pursuit of our goal of future flexibility came up with idea of locating all staircases and the toilets and therefore most of the plumbing outside the rectangle of the library space in what they called "pods". This took away two of the biggest barriers to future flexibility and showed how sympathetic the architect had become to our vision.

We used simple furniture that worked in modules that could be used in any combination; there was no fixed benching so that all desks could be moved freely and with complete flexibility. The module we chose was a two seat unit measuring 900x1800cm which we believed gave scope for students to study comfortably with or without a PC and which gave us the best compromise between comfort of use and the our aim of maximizing study spaces.

We developed an IT strategy that allowed cabling to reach anywhere in the building if we needed it. This did not involve raised floors but uses a grid of channels in the floor covered with high tensile steel casing. Power and networking rise in all four corners of each floor, and the grid enables us if we wish to exchange shelves for study space or PC stations as we wish or extend shelving by removing study spaces if we need to do so. Finally the lighting strategy of installing lights at 45° to the right angles of the buildings enables us to move the bookshelves in any direction we want to whilst still enable high levels of light penetration into stack areas.

Integrated learning resource service

The building had to bring together all of our collections spread across five different locations into a single collection easily accessible to all of our users. And of course

there would be places to study. There were few guidelines on size but we planned for around 1200 study places a 20% increase on the previous library provision. These would be divided between group study, quiet and silent study areas

Our original modest plan for 150 PCs soon grew to 250 at the opening with a plan to move within a year to the present level of 400 publicly available PCs in the building; the largest concentration of PCs on the campus. We asked students about their preferences and from this agreed that we would open the Library until midnight during term time (services stopped at 9pm) but we would provide a separately accessed area that provided access to 120 PCs that would be available 24/7 the first area on campus to offer this genuine 24/7 service.

Finally the building would for the first time provide facilities in the shape of properly equipped teaching and computing space to provide an extensive programme of information skills across all subjects for students struggling to cope with the information explosion. A large 90-seater seminar room that is used for induction programmes as well as more advanced information skills sessions is complemented by a smaller room that accommodates 36 students and a 40-seater networked training room that enables us to deliver hands on skills sessions across all subject areas. All the rooms are fitted out with good specification projection facilities and network access

Focal Point for student activity

I have already made reference to the idea of creating a new focal point for student activity around the new Library. This included the other facilities to which I have referred, the café, bookshop and Resources Shop. It also included trying to accommodate all the different ways in which students would want to study. We made provision for group work so we do not expect some parts of the Library to be silent, but we also offer silent study rooms where silence is pretty much guaranteed and group study rooms for larger groups

Dialogues with the architect!

One of our most difficult tasks was communicating to the architect what a library was. We had to persuade the architects and our environmental consultants that some of the ideas we had for libraries were built on long experience and were not what they called our prejudices. We wanted a simple building but the architect said that green buildings are complex. We wanted a rectangular building but if the building was going to be energy efficient they said it had to be long and thin or possibly tall and thin and they could not produce energy efficient building to the deep plan design that we needed to provide the best service delivery Like everyone else the architects were quite clear that they knew what a Library was for; its prime purpose was storing lots of books. Our view was that the library was not about collections but about people, providing services for people delivering information to people and providing places for people to work and to study. These were points we emphasised in our Vision and in our brief for the architect. Despite their misgivings the architects understood that these were important concepts for us and responded positively.

The architect wanted task lighting because this was the best way to manage energy conservation but we knew students would soon damage them. Our staff wanted windows they could open to control the environment, our architects convinced us that we did not need this. They also persuaded us that we needed natural light in the heart of the building which meant an atrium. We insisted that these were enclosed instead of open atria to contain noise transfer. In response the architects conceived the idea of the lightwells which not only provided natural light but also provided the solution to the ventilation of a deep plan building as the lightwells because they were enclosed could be used to manage air flow through the building.

Our approach was that wherever there was conflict to be resolved the needs of the Library to deliver its services once it was opened would be paramount. The architect of course always insisted that he was right. To their great credit they invested a great deal of time in listening to our needs and overcoming their own misgivings and eventually came up with a plan that was an acceptable compromise between what we needed and what they were happy to deliver environmentally. We on the other hand found ways to accommodate the environmental demands of the building trading a significant amount of space in the creation of lightwells for example within the needs of our users.

Planning the building

The planning process was also characterised by a very close attention to detail by the Library staff who were involved in planning the Library. We had seen instances where after an initial brief the architect had been left to their own devices and the result had not always produced a result in the best interests of the Library. We stayed closely in touch with the planning process producing not only 11 options including the final one but endless iterations around that final option. We took a great deal of time to ensure that rooms were the right size, in the right place, that study spaces would fit and there would be adequate access for users with disabilities, that workflows and logistics would work effectively from the start, that the furniture would be of the right level of specification to be effective, attractive and student proof. All of this was iterated backwards and forwards between the architects and ourselves time and time again until we were happy that the result was what we wanted. Sometimes this bordered on the obsessive but it meant that what we delivered was as close to our understanding of what the customer wanted as we could manage.

A key part of this was the inclusion of as many Library staff as possible in the planning process. We had planning groups for every aspect of the building, for floor layouts, shelving layouts, shelving specifications, furniture, colour schemes, circulation and enquiry desks and for the IT strategy of the building. All of these plans were shared with full-scale staff meetings to ensure that we had met as many expectations as possible.

As well as ensuring that we took the fullest understanding of the needs of our own staff we also took great pains to ensure that we met the needs of the other important stakeholders in the new building. We talked to all of our academics Schools, to the Governors, to the City Council, and to all the major university committees. Above all we asked our students and our teaching staff as our most influential stakeholders. Although these were not always as illuminating as we might have wished in terms of

identifying new ideas it did at least help reassure us that our plans met most of the aspirations of these stakeholders and some ideas such as opening hours and the silent study areas were strongly influenced by the views we received.

Environmental design

What the building is most well known for is its environmental approach. This was the first time that this kind of environmentally efficient approach had been used on a deep plan building. The basis of the approach was to use natural light and a dynamic lighting system that responds to natural daylight and natural ventilation to replace the normal reliance on artificial light and air-conditioning. These are controlled by a sophisticated Building Management System. The impact of these measures was expected to lead to a reduction of around 80% in the running costs of a traditionally air-conditioned building and results so far indicate that this has been exceeded.

At the heart of this were the light wells that are a feature of the interior of the building and the chimneys that are the dominant feature of the exterior.

The main function of the lightwells is to bring in natural daylight to the core of the building. Light only penetrates about 5 metres into a building leaving the rest of the floor to be artificially lit. The lightwells enable light to penetrate right to the heart of the core significantly reducing the need for artificial light. This is one of the most significant energy savings

The lighting system for the building is highly sophisticated with individual lighting elements responding to the presence of daylight and increasing or reducing the level of artificial light depending on natural light levels. Considerable time and effort was also invested in minimising the impact of solar gain and glare around the building with each elevation of the building having different window layouts and profiles and even each window having different size sills depending on their position on the elevation.

The lightwells also act as the main agent for the buildings natural ventilation system. Air enters the building through a plenum below the ground floor level and is drawn in by the effect of the chimneys around the outside through which the air exhausts. The elaborate alloy structures on the chimneys are to avoid the effect of high winds preventing the building breathing. The air is drawn up the four lightwells in the corners of the building and passes on to the floors through vents controlled by the zoned building management system. It exhausts into the chimneys around the building. The central lightwell as well as bringing in daylight also acts as an exhaust. The BMS controls the temperature at which air enters the building. The only parts of the building to use mechanical environmental control are the 24-hour PC room, which is below the plenum, and the Primary Communication Room where all the servers and system controls for the building are located and kept in strictly controlled environmental conditions.

So far there have been very few complaints about the quality of the environment produced by this ventilations system. There are days when it struggles to cope with very high temperatures but this was known at the outset. There are also occasions when the building can be slow to respond to changes in ambient temperature and there are short-

term problems of heat or cold. Overall, however, the system has been an enormous success with staff and students finding it comfortable and a huge improvement on the environments in previous buildings.

The impact of the Library building

The building has had an enormous impact on the staff and students of the university. Some of these are of course not always positive. The Library is very noisy at times and in certain areas, it is further away for some academic staff who complain about this, and some will always prefer the old now matter how good is the new. And in every new library the lifts never work properly

But almost all impact has been positive.

In a survey by our building students we scored very highly on the effectiveness of this innovative ventilation system in producing a good working environment, and this was confirmed in a recent survey of Library staff.

Measured against our vision it has succeeded; it is new student focal point and it has produced a building of which the university is very proud. We have measured use of the building since we opened to enable us to compare this with usage of the former libraries. On all counts the building has been a tremendous success. Average daily visits have more than doubled to nearly 6,000 and this peaks at nearly 7,000 visits. Average seat occupancy has increased from 300 to more than 500 and loans, which have been generally in decline, have also increased for the past two years. Our Resources Shop continues to increase its sales to students

Demand for services	1998/9	2002/3
PCs	24	450
Ave seat occupancy	387	528
Ave visitors	2600	5500
Shop income	£60k	£85k

Student views have also shown how positive has been the impact of the new building. The Library has for many years now received positive responses in its biennial survey of student attitudes towards our services. In the survey shortly after opening the building there was a huge rise in the satisfaction with the building and the study environment and the results from this year's survey show our best performance ever in many categories. In satisfaction with key services such as enquiries and circulation and asked how well we respond to student needs we there was our highest ever level of satisfaction and our lowest ever level of dissatisfaction. More gratifying is the increase in the number of students who in these categories have given us an excellent rating rather than a good rating where this had increased by more than 20% in some responses.

Student Survey	03(%)	01 (%)	99 (%)
Library meets my needs	87(21)	81(14)	77(12)
Opening Hours	80(23)	72(19)	70(18)
Enquiry services	82(30)	78(20)	78(23)

Circulation	89(30)	85(20)	82(23)
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Perhaps more interesting than the direct impact on users has been the impact of the Library on the University itself. The seven prizes it has won including the SCONUL Building Design Award have all been warmly welcomed by the university and its Governors as a measure of the importance of the development and have raised the profile of the library considerably. All VIP visitors are brought to the library even after we have been open for nearly four years. For example we were include in a recent profile raising exercise involving all the major corporate and civic opinion leaders in the region. The building has hosted events for the VC and for local organisations with whom we work. Teaching staff and our marketing team now insist that the Library is included on all itineraries for open days for prospective students when in the past the Library was often ignored by lecturers unconvinced that the library had any pulling power. We have twice been invited to be involved in the local Heritage Open Days when buildings not always seen by the public are made available over a weekend. This proved a huge success with visitors. And of course it enable us to attract HRH The Princess Royal to officially open the building producing a great deal of very valuable local and regional publicity.

We have appeared in every university Annual Review for the past 5 years as an example of our commitment to the development and improvement of the student experience and the distinctive chimneys have now become so well known that they are one of the standard images that the university uses to market the university and rapidly becoming a symbol of the university, almost as well known as our logo.

Conclusion.

Although the building has broken new ground in terms of environmental effectiveness you will have realised now there is nothing very revolutionarily different about the Lanchester Library itself, but it is still quite different from what we used to offer students. Most of those differences were planned to improve and enhance the student experiences within the university and the feedback from both staff and student users as well as from other important stakeholders suggests that at least for the moment it has achieved that primary objective. Most of all the Library was a wonderful learning experience for everyone who was involved in the concept, the planning and the construction of the building, and for those of who are now delivery high quality services from that building which was the whole point of all that learning and planning