1. Introduction

1.1. The challenge of automation

Only a few years ago librarians were hotly debating whether computers had any place in libraries, just as they discussed - in the beginning of the century - whether typewriters had. Today the library community as a whole is realizing that apart from the immediate practical advantages, computers and information technology in general are the tools of a new information era, just like the printing machine with movable types was the tool of an information era which started with Gutenberg and lasted until the middle of this century. Thus the important question is no longer whether to use the computer or not, but how to use it well, that is in accordance with its own logic and with its own full potential.

Most librarians have seen samples of literature printed in the first generation after Gutenberg. It is striking that the printers not only used types for letters but also for the numerous abbreviations developed by the medieval scribes in order to ease the copying of manuscripts by hand. For the new reading public, however, these abbreviations were a totally unnecessary complication, and consequently they were no longer used as soon as it was realized that printing was not a practical method of making manuscripts, and that the age of the manuscript was over.

In the same way, many libraries first used computers for automated production of catalogue cards, later for printed catalogues on paper and later again for microform catalogues. Gradually, the potential of computers as the instrument of a totally new type of catalogue was understood, and the hard-copy catalogue was replaced by online catalogues.

These examples go to show that the computer is not used well if librarians just harness them to the traditional library and then try to go on as if nothing had changed.
For libraries to make optimal use of automation a number of conditions must be fulfilled: basic are, of course, a profound understanding of the new tool and a fresh look at what the information process is all about - it does not seem to be about books, after all, even if books may always be there. Among the other conditions is a restructuring of libraries to make a better framework for an information service which fully exploits the potential of the new information technology.

1.2. Libraries as organisations

For years a major topic of social science research has been the human organisation. An abundant literature describes the varieties of organisations, their definition, goals, effectiveness, management, structure ect. etc. It will surprise nobody that scholars seem to delight in using different and often conflicting theoretical and methodological approaches and terminologies when studying organisations.

Moreover, as most literature on organisations deals with commercial, industrial organisations, which manufacture products, there is a question of how it can be applied to libraries which form a subspecies of public service organisations. Though there are sufficient similarities between the two types of organisation to warrant the transfer of research concepts and methods from one to the other, the differences are so great that it must be done with caution. For one thing public service organisations are not to the same degree as industrial organisations dependent on their ability to perform efficiently and according to well defined goals and strategies. In the past, academic libraries seemed to be able to survive indefinitely giving mediocre and even poor service. The difference between public service organisations and industrial organisations in this respect may be lessening, though. The loss of a virtual monopoly on certain types of information to efficient, commercial information agencies as well as the development of extremely competent information providers in the library sector, is a challenge which must be dealt with by libraries. And due to economic problems the public authorities are beginning to take a keen interest in the efficiency of the public service organisations.

As an example, the Danish ministry of Education is proposing a reform of the system for allocation of funds to its academic libraries in which a part of the personnel allocation will be dependent on the number of books lent: if your lending rate falls or rises less than the average rise in the academic libraries, you will get less money the next years. On the other hand, the libraries as well as other public service organisations are now allowed to earn
money by performing fee-based services and to spend the money they earn, except for an overhead to the state. The only condition is that the pricing structure for services does not constitute unfair competition with private enterprises performing the same services.

The main point of this is that academic libraries may have to stop defining objectives and standards on their own terms and instead switch to the terms of the customers. Thus the gap between academic libraries as relatively market-independent service organisations and the market-dependent industrial organisations may tend to fade away.

1.3. Scope of the paper
The structural aspect of libraries is double: firstly libraries have an internal structure of their own, secondly they are part of a larger, external structure of libraries, sometimes connected through formal networks, or they may belong to the structure of an academic mother institution.

The internal structure, too, has a double aspect: the aspect of structural differentiation and the aspect of integration as expressed in a spectrum reaching from formal mechanisms of coordination to informal patterns of mutual adjustment and communication.

The present paper deals specifically and exclusively with certain problems of structural differentiation in relation to automation and more generally to the new information technology. External structure and internal structural integration are highly relevant too, however, and should be dealt with in any comprehensive treatment of library structure.

2. Academic library structure before automation
2.1. Organisational structure
An organisational structure results from two processes: one is a process of differentiation (or division of labour) in which the organisation is divided into parts responsible for different tasks. This process may be called departmentation. The second process ensures the coordination of the different parts, or departments, and may be termed integration.

Though the total organisational structure is dependent on departmentation and integration together, usually only departmentation is reflected in the organisation charts.

One type of organisation structure is the functional structure in which the various departments perform different functions. In industry it might be functions like research, production and marketing.
The other major type of organisation has a variety of names. Most precise would be non-functional structure, since the basic principle of departmentation seems to be anything but function, as the departments perform the same functions but in relation to different products, geographic areas or whatever. This structure is sometimes called divisional. A third type of structure is the matrix structure in which a functional structure is systematically integrated with a non-functional one. A fourth structure is the hybrid structure mixing the various structuring principles (DAFI'1986, c. 12).

Other structural typologies than the one used above may be found in the literature and may be useful for analysing library structure (e.g. MINTZBERG 1983). However, the more specific they are the less they seem applicable to academic libraries, and it is therefore preferable to use a more general typology.

Maladjusted organisational structures cause the organisation to respond slowly and inadequately to environmental changes (e.g. development of telecommunications), managerial decision making may be delayed or of low quality, too much energy is used in conflicts, departments may pursue goals that are at cross purposes, and finally the organisation does not achieve its objectives.

The important thing is to perceive that organisation structure does not have the inevitability of divine or natural law: it is a tool, it may be adjusted and changed in order to make the organisation perform better.

2.2. Library structure

2.2.1. Preliminary remarks

Certainly every library considers its organisational structure from time to time, and there must be hundreds of internal reports and memos dealing with organisational matters like structure and projects of structural reorganisation. Not much of it has filtered through to the library periodicals, and a search in LISA only results in a handful of references to articles dealing specifically and primarily with the internal organisational structure of academic libraries.

The question of library structure seems formerly to have been a matter for prolonged discussion in the British library community. At the 1987 IFLA conference it was one of the themes for discussion in connection with a symposium on the Reorganisation of University Libraries arranged by the Liber Association. In view of the pressure on academic libraries
to adapt to radical changes in their academic mother institutions, to severe budget cuts and to the rapid development of information technology it is important for the academic libraries to maintain a continuous discussion and exchange of experience on library structure as a tool for institutional change and development.

2.2.2. Types of library structure

In academic libraries a typical structure is a functional one based on a division of the library into departments of acquisition, cataloguing, classification/subject indexing, physical preparation of books and circulation. Apart from the circulation department these departments form a group of internal departments or processing departments, each occupied with a discrete function in an assembly line procedure for processing new materials.

As for the non-functional or divisional structure two main types are seen, one based on collections or form of material and the other one based on subject.

An example of the first type of divisional structure exists in many large, old libraries, having departments for printed books, manuscripts, musical scores and maps.

An example of the second type of divisional structure is seen in a number of university libraries in Scandinavia and elsewhere, having branch libraries each serving a department or faculty of the university. As faculty structure is usually based on subject division a library structure modelled on faculty structure tends to be a subject structure, but in this case the structure may primarily be considered as a structure based on a division of user groups and only secondly - and incidentally - as a subject structure.

In some national libraries a third type of divisional structure is found, based on country of origin of printed books, and separating books published in other countries from books published in the country of the library. Thus the Royal Library in Denmark has a Danish Department and a Foreign department, and this pattern is known in several other libraries. Incidentally, history may play havoc with this structure. In the Royal Library Norwegian books are still placed in the Danish Department although Norway has not been under the Danish crown since 1814.

In actual practice there are rather few examples - at least among larger libraries - of clearcut structures based on either one or the other principle of division. Most libraries have hybrid structures mixing the principles. Structural development moreover often
seems not to be by general, systematic reorganisation but by accretion of new structural elements on an adhoc basis.

2.3.2. The predominance of functional structure

Even if the structural picture is confused it seems that a major feature of library structure today is for the processing of new materials to be performed by structural units working on the books in succession, and with little or no personnel overlap between these units and those responsible for direct user services. In other words the functional structure is predominant.

Moreover it seems that in comparison with the service departments the internal processing departments dominate the total structure of their library and dispose of a rather large share of the manpower of the library, easily more than half of it.

There are two advantages to a functional structure for the processing of books: first, individual staff members may develop a high degree of expertise on isolated parts of the total process. Processing staff thus tends to become a college of specialists each in a rather limited field of work. Secondly, there is or ought to be a certain economy of resources connected with a system where one individual performs one type of function only, but for a large amount of units. This is of course the rationale behind the assembly line structure of manufacturing industries.

However, there are disadvantages to this structure as well as advantages. One is that the flow of books is impeded or stopped every time the capacity of a given working unit is diminished due to absences of personnel.

Another is that the various processing units tend to develop objectives and standards which may not be consonant with the overall objectives and standards of the organisation.

Five years ago, a major Danish university library introduced online cataloguing in the MARC-format. It was the explicit goal of the library that the level of cataloguing should be rather low, close to the minimum requirements of the computerised union catalogue of the Danish research libraries. Over the years, however, the staff of the cataloguing department gradually increased the level of cataloguing until it almost reached the level of national bibliography. As a result the capacities of the department were strained to the breaking point and huge backlogs of uncatalogued books developed. At one stage in the development an attempt was made to eliminate the backlogs of unprocessed books through a regime of quick-and-dirty cataloguing. Significantly, the users in general did not
notice the difference in cataloguing level, which nonetheless after some time rose again, inexorably.
This example seems to reflect a rather typical phenomenon: librarians in cataloguing departments often maintain different and higher standards than those to which the library as a whole is committed. The result is an imbalance between resources used for cataloguing and resources used for other functions in the library, for example the service functions.

Thirdly, the fact that a great part of the library staff works only in internal departments and do not participate in direct user services means that the organisation as a whole tends to become less aware of the users, their needs, frustrations and satisfactions. As the user is invisible to large parts of the staff the formal objectives and standards of the library and especially the informal ones are defined without sufficient consideration of the user and, and therefore do not form the basis of an efficient service organisation.

A major symptom of this state of affairs is, as in the example above, the development of large backlogs of unprocessed books and the acceptance of unreasonably lengthy processing time. High and resource-intensive professional standards coexist with unacceptably low productivity, and libraries excel in explaining why it takes half a year from new books arrive until they reach the shelves. They sincerely believe that everything is fine if it only takes two months. Budget cuts are referred to in extenuation constantly, but often without just cause.

In the absence of genuine user awareness the work in internal processing departments tends to lose its urgency. Books passing through the internal system become units in an endlessly flowing stream, and cease to be experienced as relevant information to be made available to the user as soon as possible. The internal process becomes sluggish as librarians get more obsessed with technicalities than with efficiency. Indeed efficiency becomes an ugly word, in opposition to "quality".

2.2.4. The movement towards subject structure
The predominance of a functional library structure has not gone unchallenged.

2.2.4.1. The British discussion
In the UK the traditional division of departments by function or by form of materials was discussed and criticised as early as the middle of the 60es. The functional structure was
seen as a reflection of the "rather conservative and custodial role of university libraries" (TUNLEY 1979) and a movement towards subject specialisation began to take shape. This movement, however, seems to have had greater consequence for staffing structure than for departmental structure as such. A new system of subject specialists, that is of members of the library staff appointed to organise library services in a particular subject field, was in many cases grafted on to the traditional function structure rather than introduced to replace it (Ibid.). However, in such a hybrid structure, as James Thompson has observed, functions still come first, and the subject system does not function adequately in times of stress and pressure (THOMPSON 1975).

A more radical approach has been taken in a number of very large university or polytechnic libraries, often operating on different sites, where the overall structure consists of a central department and a number of subject-oriented branch libraries at the service of single department of the mother institution. The branch or subject libraries are typically so large that they retain an internal function structure and are difficult to distinguish from autonomous function structured libraries of the same size.

If the librarian of the British Library of Political and Economic Science, C. J. Hunt, is typical of the general trend in the UK concerning this matter, the discussion of subject structure as against functional structure may be out of fashion today. He writes: "The subject versus functional division argument is not worth pursuing: this debate has been based on fashion rather than fundamentals" (HUNT 1986).

It may be symptomatic of the same trend that Brenda E. Moon in her paper presented at the IFLA conference last year and dealing with the reorganisation of UK university libraries - contrary to her colleague who spoke on the reorganisation of Swedish university libraries - did not seem to be much concerned with internal structure but more with overall organisational issues resulting partly from new government policies and partly from budget cuts, leading to mergers of academic libraries and new structures of interaction between libraries and their mother institutions (MOON 1987).

2.2.4.2. The Swedish case

In Sweden the pattern of development is to a large extent determined partly by the pressure exerted by the government to integrate department libraries as branch libraries into the general library structure of the universities, and partly by a new system for the financing of universities and their libraries. This system implies that university libraries get
their money from their mother institutions and no longer directly from the government. It creates an urgent need for the libraries to make themselves and their services visible and useful to the universities and faculties which they serve (SANNER 1987).

As a result of these pressures a number of libraries have developed a hybrid structure in which subject-oriented library departments coexist with central, function-based departments for acquisitions, cataloguing etc. The subject specialisation is in this case limited to the service sector of the library while the internal processes are still organised in a functional structure.

Some university libraries, e.g. the one in Stockholm, have gone a step further and radically divided their structure into subject based departments, which perform not only service tasks but also the internal processing of new books. In Stockholm there is moreover a tendency towards integration of functions within the subject departments, but this development is connected with the question of automation which will be dealt with below.

In 1973 the Swedish Agency for Administrative Development recommended a simplification of library structure based on few relatively large organisational units. The ADD model to some extent corresponded to the dual library structure consisting of an internal department occupied with the processing of new books and an external department occupied with direct service functions including circulation, which is known from a number of small and medium sized libraries (SANNER 1987).

To combine the processing functions in one internal department does not necessarily mean, however, that the functions are integrated. The results are often that a number of small processing subunits are formed within the internal department, each concerned with one function only. The dual internal/external library structure is in these cases still a functional library structure, even if it points in the direction of function integration.

2.2.4.3. Conclusion

To conclude this brief sketch of library structure before automation: firstly, all major types of organisational structure are found in libraries though functional structure seems to be the basic one; secondly, functional structure often leads to predominance of internal processing functions over external service functions; and thirdly, the need for libraries to become more serviceoriented is leading to an increased dissatisfaction with function-based structure and to the development of alternative structural models.
3. Automation and library structure

Automation basically changes the conditions of structural development.

3. 1. Automation and organisational structure

Many organisations have been using computers and advanced telecommunication systems for some time and many more are implementing such systems these years. Not surprisingly a great number of published studies deal with the new information technology and its impact on organisations and organisational structure.

Concerning the impact of information technology on organisational structure in general, Paul E Burton of the Strathclyde Business School has recently listed a number of major questions around which the relevant literature revolves: 1) one has to do with the degree of centralisation and authority. Will information technology lead to a more centralised authority function in the organisation, or will it rather favour the development of decentralised authority? 2) Another one concerns the access to and control of central management information: will it be restricted or liberalised? 3) Thirdly, how will it affect middle management, especially in its role as summarisers and filters of information up and down the hierarchical pyramid? 4) Also the conditions of employee participation are naturally affected by the new information technology. Will it increase or decrease? 5) More generally: will organisational structure change at all, or will information technology rather cement the structure? 6) Will job satisfaction increase or decrease? 7) And finally: will capital be consumed or put to work?

It appears that there is no consensus between authors on these questions, except that few today challenge the assumption that information technology will change organisational structure, or at least provide the opportunity for change (BURTON 1988).

One issue which has been debated for a long period is whether the organisation, as Thomas Whisler predicted in 1970, will become flatter as a result of the introduction of information technology. Having studied a number of cases Arthur Francis concludes that there is no consistent pattern of flatter structures (FRANCIS 1986). However, Peter Drucker in a recent article on The Coming of the New Organization maintains that when companies shift from using computers for processing data to producing information, then organisational structure will change and the number of managerial levels will be sharply reduced (DRUCKER 1988).
Another, more fundamental issue is whether it is the information technology which - due to some internal logic or structural force of its own changes organisations or whether organisations are changed by management using information technology and organisational structure as optional tools for larger strategies.

Among the proponents of the second view are Niels Bjorn-Andersen (Copenhagen Business School), Ken Eason and Daniel Robey who have studied the management of computer impact in 8 organisations of various types. On the basis of their empirical data they reject the notion of a causal relationship between computer systems and organisational structure. The important determinants of structural change are the design objectives for the computer systems and the organisation. The computer systems can be designed to support almost any type of organisational structure (BJORNANDERSEN, EASON & ROBEY 1986).

The work of Bjorn-Andersen and colleagues is an important empirical and theoretical contribution to the discussion on new technology and organisations. It allows for a more complex and sophisticated formulation of the problem than is often found in the literature and it stresses that just like structure the computer is a tool.

Some may feel however that the authors understate the structural force of automation in organisational development. Even if the computer system may be designed to fit any organisational structure, it may have to be done at such cost and loss of potential advantage that excessive organisational energy and resources are wasted in maintaining a fit between the old structure and the new technology, resources which might be better and more productively used if the structure was adapted to the new technology. In libraries, for example, it is evident that computers may be used as a tool for traditional library functions if this is the strategy of management. This was done in the beginning of the history of library automation when computers were used for the production of traditional catalogue cards and thus to maintain the traditional catalogue systems and the existing organisational structure. However, when the transition is made from card catalogues to online catalogues, then new pressures are released in the organisation which will eventually lead to structural changes. True enough, the structural changes are ultimately dependent on organisational design objectives, or should be, but the computer makes them possible, desirable and sometimes necessary. Thus, if it is true that the
computer systems may be designed to fit any organisational structure, it must at least be added that it would often be a stupid thing to do.

A balanced position on the question is taken by M. E. Porter from Harvard School of Business who says that "if new technology is introduced into firms which do not adopt new structures, then the cost of implementation will be high and the potential benefits diminished" (PORTER 1985). It may not really be possible to say more on the question at this time.

3.2. Automation and library structure

3.2.1. Automation and restructuring

It is striking that whereas automation is today accepted by all parties in the academic libraries, the possibility of new organisational structures in connection with automation is often viewed with mistrust and diffidence, if at all acknowledged. Library managers will usually and correctly wish to enter into the automation process on the basis of a large consensus on the fundamental issues in the library. They therefore do not wish to engender ill-feeling and animosity towards the process by introducing anxiety provoking ideas of new organisational structures into the discussion.

In existing library structures it does seem sensible to acquire some actual experience with the automated processes before the structure is changed. There is a risk that the library may not want to change the structure after automation has been assimilated into daily work routines and that automation may therefore be functioning inappropriately. This risk may reasonably be run, though, since total automation of library functions is still such a new phenomenon that most of us do not understand its consequences sufficiently to introduce sweeping structural reforms before the automation takes place and effect. Besides, there may be practical wisdom to the principle formulated by P.G. W. Keen, that "Change in organisations is only possible through limited, tactical moves that overall may add up to strategic redirection. No one step can appear radical." (KEEN 1981).

3.2.2. The computer as an instrument of functional integration

An initial step in the examination of the relationship between automation and structure may be to analyse changes which result directly from automation and which have immediate structural consequences.

A first result of library automation is the merging of all catalogues into one. How it is organised in the computer system is irrelevant in this context. The point is that the total set
of library catalogues, registers and indexes become one integrated system which is
directly accessible to everyone everywhere in the library, and moreover that it may be
used by many people at the same time.
This development is in agreement with the increasingly prevalent viewpoint that "much
traditional structure derives from the requirement to structure job domain, functions, and
even whole departments around the availability of information" and that information
technology "increasingly provides the capability to place the information where the user is
rather than require the user to go or be where the information is. The consequence of this
is that information technology enables rather major changes in the structure of
A second result of automation and a consequence of the merging of catalogues into one is
that only one record pr. book is needed for all purposes. The various processing activities
connected with each book need not result in new records, but may simply consist in
changes in the basic record.
When different people in different places can perform the same tasks at the same time,
and when the same people in the same places can perform different tasks at different
times, the traditional rationale for functional differentiation disappears. Functional
differentiation is still possible, functional integration becomes possible too.

3.2.3. The merging of acquisitions and cataloguing

A first and obvious instance of functional integration is the merging of acquisitions and
cataloguing.
The reason for this is that in both cases a bibliographic record is created, usually less
complete in the process of acquisition, but otherwise containing information identical with
the essential cataloguing data.
In quite a number of libraries the catalogue record is created independently of the
acquisitions record, and the cataloguer does not re-use data from the acquisitions process.
In other libraries the acquisitions data are corrected and supplemented by the cataloguer.
In both cases the data are retyped in the final version as catalogue cards or matrices of
such and they may be written once again as acquisitions lists.
As described above, computerisation makes it possible to do with only one catalogue,
common to the acquisitions process and the cataloguing function. In the acquisitions
process a record is created which is corrected and supplemented in the cataloguing process, without the creation of yet another record. Moreover, telecommunications now make it possible for the library to a large extent not to create the initial record itself but to download it from external bibliographic databases produced either by the book trade, e.g. Electre in France and the Menzies base in Nottingham, or by national libraries. In this case it becomes advantageous to apply the trained cataloguer's knowledge not after the books have been received but in connection with the transfer of the record from the external database to the library's own. The extent of correcting and supplementing the record after the book has been received depends on the quality of the external database used. In the case of the British National Bibliography there should not be a great need for corrective cataloguing.

On the basis of such considerations a number of libraries today are considering or even implementing a structural fusion of the cataloguing and acquisitions departments in which generally qualified staff perform either function. Books presenting special problems with regard to bibliographic description will of course be referred to the local experts, and these will often be trained librarians. However, in the case of records downloaded from national bibliographies or union catalogues, experienced clerical staff should usually be able to perform all the processing functions in connection with acquisition and cataloguing. At the New South Wales University Library the percentage of downloaded cataloguing records is as high as 80, a figure which does not surprise libraries from the US and elsewhere connected with OCLC and others. The Technological University Library of Denmark has merged the acquisitions, cataloguing and periodicals departments into one in 1987. There is no downloading of externally produced records, partly due to the fact that the library does not want to use the MARC format and finds that the editing and reformating of re-used bibliographic data is more resource demanding than the cataloguing from scratch. The bibliographic records of the library, containing acquisitions data as well, are created in connection with the ordering of books, and acquisitions and cataloguing functions are performed indiscriminately by personnel which was formerly employed in only one of these processes. A similar arrangement is contemplated at the second largest library of Denmark, the State Library in Aarhus.
Yale University Library has decided to reorganize the previous structure consisting of an Acquisitions Department, a Cataloguing Department and a Preparations Division, and to establish a Processing Services Department divided into 11 teams based on subject, language/place of imprint or type of material handled (e.g. a social sciences team, a humanities team). Each team is responsible for the acquisition, authority control, barcoding, cataloguing and eventually labeling of all materials within its subject area. All form and types of materials will be handled within each team (LOWELL 1988).

3.2.4. Despecialisation of staff

Even if a department performs more functions than one, it does not follow that individual staff members must perform more than one of the functions. Functional differentiation may be maintained on the level of individual staff members even if functions are integrated on the departmental level.

However, the physical properties of computer terminals make it impossible for one person to work with the same, computer-based task all day long. A person, who has formerly been occupied full time with ordering books, can no longer do so when the ordering process goes online. Other tasks may of course be found in the acquisitions department, but it will prove increasingly difficult to find acquisitions tasks or other internal processing tasks which are not computer-based and terminal-linked. The obvious solution is to distribute the terminal-intensive tasks between staff members so that all participate both in terminal-intensive work and work not based primarily on terminal use. The effect of this will be a move away from the present function specialisation of staff towards a situation in which to a much greater extent they will perform a number of different functions in the library. Because of physical conditions alone the computer will force staff away from internal processing functions. The result will eventually be a move of personnel across the structural boundary between internal processing functions and external service functions, and in both directions too. This will demand a certain amount of flexibility on the part of staff, a will to perform more varied functions, and general versatility. It may not be to the liking of everyone, nor may everyone be able to do it, but for many librarians it may provide the basis for a more satisfying work situation and a more adequate use and development of knowledge and skills acquired during formal training and education.

4. Towards service structure
Some organisation practitioners think that structure is unimportant - the important thing is to change it from time to time.
A less radical and more widespread belief is that structure is important, but that there is no ideal structure for all organisations (DANIEL 1983).
Though libraries constitute a rather clearly delimited group of organisations, they are so different, have such different specific objectives, such different user groups and situations that the same applies to them: there is no ideal library structure.
Library structure is therefore an organisational tool which should be shaped and reshaped as a flexible framework for concrete strategy to obtain the particular objectives of any given library.
The significance of the computer in relation to structure is to free structure from the bonds of function. Functional structure was and may still under certain circumstances be an appropriate organisational framework for the work of a library. However, automation seriously undermines the traditional rationale of functional library structure by providing real opportunity for functional integration across departmental boundaries, and by creating a need for the individual staff members to be engaged in a certain amount of non-automated functions. As all internal functions will be automated, this can only be done by giving staff in internal departments a part to play in direct service tasks.
To adjust to this situation it is necessary for libraries to develop a new service structure. By service structure is not meant any particular type of organisational structure, but a structure which is fully oriented towards service. Depending on the circumstances of the library it may be a subject structure, a user group structure, a structure based on collections or even in some cases a functional structure. But as a service structure it must fulfill one of two conditions: either that all departments have both internal and external functions, or that the boundaries between internal processing departments and external service departments should be permeable and allow all individual staff members to participate in direct service functions.
Moreover, a service structure will allow for the easy formation of ad hoc or more permanent task forces working across departmental boundaries either to solve internal problems or to develop and offer special services to the user community or various user groups. It would be useful, for example, if a librarian or a group of librarians could be
temporarily assigned to an important new research group or a special project at a university and act as a specialised information unit within the framework of the project. In the beginning of this paper a distinction was made between departmentalization and integration as two fundamental aspects of structure. Service structure as outlined above is one in which the type of departmentalization in itself facilitates integration in all its aspects including the important mechanisms of informal communication and mutual adjustment. These will be intensified when staff members habitually cross the departmental and functional boundaries.

It is a demanding structure. Despecialisation and shifting between various types of function may be experienced as stressful. Moreover, for such systems to function properly there is a greater need for continuous staff education not only of the formal kind, but also in a broader sense of opportunity for developing personal and professional abilities, confident relationships at work and task enjoyment. As for rewards of a more tangible kind the civil service systems do not offer many or large ones, and those which exist are closely connected with rising in the professional or administrative hierarchies. This makes it particularly difficult to reward materially those special and temporary assignments and responsibilities which should be part of the normal pattern of service structure.

Another problem is how to avoid that staff members get too many different job assignments and group attachments. Despecialisation should not mean that staff may be shifted around from job to job according to the necessities of the moment or the whims of managers. It does mean a broadening of the job profile of individual staff members, but the job situation should be sufficiently stable to allow for the development of real competence without which it is difficult to develop job satisfaction.

Ultimately the important thing about service structure is that it allows all staff to engage frequently and confidently in direct service functions. Only thus will it be possible to ensure that both individual staff members and the global library organisation relate primarily not to books, but to users.

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