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The Typology of the School Building: its Importance in Educational Policies and Practices

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The typology of the school has never been easy to define. All kinds of buildings have at one time or another been used as educational establishements, and so many different parameters have been used to define the effectiveness or otherwise of these institutions, that the role of the school building itself has either been ignored or considered of secondary importance when compared to more direct concerns such as curriculum development, mass education, etc,. However, there are very clear indications that the building is of primary importance when it comes to assessing the effectiveness of a school, a fact recognised as early as the nineteenth century by an English Victorian headmaster when he wrote:

> *Whatever men may say or think, the Almighty Wall is, after all, the supreme and final arbiter of schools. I mean no living power in the world can overcome the dead, unfeeling, everlasting pressure of the permanent structures, of the permanent conditions under which work has to be done... Never rest till you have got the Almighty Wall on your side, and not against you. Never rest till you have fot all the fixed machinery for work, the best possible. The waste in a teacher's workshop is the lives of men.*[1]

The spatial and functional requirements of teaching are so complex that their identification has always posed serious problems; schools have been located in buildings intended originally for all kinds of functions totally unrelated to education and moreover the typology of school design has never been properly defined in a way as, for example, the design of dwellings. The rapid changes in educational theory and practice in recent years has been reflected in similar changes in what can be considered an acceptable school building and in general briefs for the design of new school buildings are either extremely vague of the type: *a stimulating learning environment, high quality facilities, spaces capable of flexible use, running cost minimisation,*[2] requiring a determined design team to sort out the client's requirements, or alternatively a rigid generic plan which the architect is simply expected to convert to an architectural solution. The latter has resulted in more successfull school buildings as can be demonstrated by the effect on school design of the publications of the Architects and Building Branch of the Department for Education of the United Kingdom[3] and a series of similar publications by the Scottish Education Department which provide an excellent analysis of school requirements, although within a very precise educational framework.[4]

The school environment itself is an educational experience.

> *In education, people respond to the character of an environment designed for its particular learning function; it can promote or even hinder the process. Even in very old buildings, some spaces adapted to new teaching methods by ingenious, sensitive teachers are models, not only of smooth working efficiency, but also in subtlety of their exposure of the children to varying light, colour and textures, and to many 'things' which exite curiosity and promote thought. Through all these, the teacher is able to speak to the children far more clearly than by any exposition she can offer.*[5]

It has to be realised that in many cases non-educational factors were given priority in school design. Schools are expensive to build; the individual school costs as much as any other building, but the number of schools required means that no authority anywhere can afford the building which does not satisfy its requirements. The design of the school reflects the priorities of the authority. Where economic and political factors dominate and the school has an important role in transmitting the political ideology of the state and turn out a well-educated workforce able to play a leading role in economic development, a clearly defined school typology developed as in the Franco-German model adopted in most European countries. It is much more difficult to define, and may actually be non-existent. in those situations where education is a spontaneous choice of the people in a specific period of their history. However, even in this situation, the financial burden of education and social pressures tend eventually to create a model, or at least a series of models for school design which gain acceptance and tend to be considered as the only form of correct school

building. A case in point is the American situation where despite the fact that education has always been considered to be of local concern with locally elected Boards of Education being responsible for educational provision in their locality there has been remarkable uniformity in the type of education and even school design. The liberal view of education as a means of personal development did not conflict with the utilitarian view of education as a means of political and economic well-being; in many cases the latter in fact dominated the former to the extent of creating a very uniform system of education with the demand to have *equal opportunities for all,* whatever that meant. A brief look at the Anglo-American model indicating the common sources for school building models and where social economic, and political pressures forced the systems to diverge provide a very useful insight into the development of school buildings, which to a certain extent was reflected elsewhere.

The development of the school building

Until the mid-nineteenth century education had been a slow expensive process carried out on an individual basis or in very small groups. Joseph Lancaster in the United Kingdom[6] was among the first to develop an educational system based on the principle of group instruction at low cost and to make people accept the idea of education for the many rather than the few which eventually paved the way for the free, public, tax-supported schools such as we have today. Several Lancastrian schools were built both in the United Kingdom and the United States. With the large number of children attending school, the ultimate organisational step came naturally - the sorting out and grouping of children by age and attainment and a system of promotion from one class to the next with a corresponding progression of subject matter. The course of instruction slowly expanded and new subjects were continuously being added to the curriculum, textbooks were being published, the school year became longer, and a new school design was needed. The Lancastrian school was manifestly inadequate; the grade school had replaced it.

We cannot however ignore the effect of the Franco-German model on English school design. E.R. Robson (1835 - 1917) architect to the London School Board[7] since 1870 had visited several European schools especially in Germany, and despite his insistance that his buildings reflect a genuine British tradition of education, the influence of the continental system was all to evident. The continental system of education owes its origins to Napoleon and under his political system tha plan layout of schools was very clearly laid out. Despite some early attempts to plan buildings based on the educational principles of Rousseau and Pestalozzi, the model eventually accepted was that based on the plan layout of religious institutions particularly convents and similar public building where some form of teaching had been carried out. The typology of the school was based on the corridor or an arched passageway which lead to a series of identical spaces - the classrooms. There is no doubt that the school made up of a series of classrooms placed on one side of a long corridor, and a large common space for assembling the whole school on special occasions and preferably with a monumental appearance in the tradition of the municipal buildings of the period, satisfied the need of governments in the nineteenth century. Moreover this model of the school building provided the necessary educational requisites: classrooms all of identical size able to accommodate a predetermined number of children, a very orderly arrangement of desks, ease with which educational programmes could be carried out with regular testing and selection of children as they moved up from one class to the next. This model wastherefore readily accepted by most countries including Britain and North America.

One of the earliest schools of this type was Quincy Grammer School, in Boston[8], (although it should be stated that the pattern had to some extent been already adopted in Germany) built in 1848 which eventually set the pattern for school design in the USA and elsewhere. The building, designed for 660 students, was built on four floors and a basement. The basic plan consisted of four classrooms each measuring 9.5m by 7.9m to accomodate 55 students opening onto a common corridor. Each room was furnished with fixed individual desks for students in rows of eight. The top floor of the building contained an assembly hall for the whole school. The design response proved so successful that it is by far the most common arrangment today.

The plan was somewhat modified in the English model set up by the well-known Board schools of the late nineteenth century. Robson, following his visits to the United States and Germany came up with a model of a school where the hall was the primary feature *"the whole pivot of the whole work"* around which the classrooms were grouped. The overall design was, however, influenced more by social and economic demands than educational theory. *"The four-decker elementary schools with high walls and high windows and inward-looking classrooms supervised from a central point on each floor are sometimes marginally reminescent of prisons in which children could be instructed, watched and punished."*[9] In the aftermath of the first world war, the need was felt for schools which

not only reflected the political changes but the school had to make up for the deficiencies of the child's home background especially in terms of hygiene. The central hall surrounded by classrooms was abandoned in favour of the pavilion school with classrooms single-banked along corridors to allow for cross-ventilation and choice of orientation.

The modern movement in architecture failed to dedicate more than a tiny fraction of its energy to school buildings - all the new ideas seemed to be directed towards such topics as housing and the production of buildings. However, inevitably the ideas which proved so effective in changing the appearance of other buildings did filter down to school design. *"The century-old alliance between a few progressive architects and educationists came into full bloom."*[10] In addition to the overall appearance which abolished once and for all the eclectic designs so popular with the nineteenth century school architects, functional considerations became paramount in school design ranging from the need to integrate internal and external spaces, more adequate forms of lighting, in particular daylighting, and greater freedom in the overall layout of internal and external spaces. There were even those who hoped that the modern architecture would by itself be able to create an environment which would permit an educational system able to develop the whole personality of the child and vindicate the educational theories of all the great modern educators from Rousseau to Dewey. They were disappointed.

There were a number of notable experimental school buildings which should be mentioned in this respect. The first school worth mentioning is the reformed school at Bornheimer Hang in Frankfurt, Germany by Ernst May[11], a pavilion type school with classrooms grouped together in sections and communal areas one side which were also meant to serve the local community. Another school worth mentioning is the open air school by J. Duiker in Amsterdam, Netherlands which can virtually be described as the first open plan school

These ideas eventually found their way to the United Kingdom. Once the system of training of architects in schools rather than by apprenticeship to established architects was accepted, which to some extent coincided with the influx of talented architects from Germany into the United Kingdom, a radical change in the design of school buildings was inevitable. The result was a number of seminal works including the village college at Cambridge by Gropius and Fry[12] and the winning designs of the *News Chronicle* competition[13] which were clearly in the tradition of of similar schools on the continent. Similar effects could be seen in the United States culminating in the design and construction of Crow Island Elementary School in Winnetka, Illinois where a design which *"offered a residential scale and an informal (but carefully considered) plan that divided classrooms into seperate wings, each its own identity"*[14]

The typology of the school

By the middle of the present century, the typology of the school had been fixed at a fairly small number of variants all based on the two original models: on one side the British schoolroom tradition and on the other the continental corridor and classrooms type. We can therefore classify school buildings on the basis of plan layout as follows:

1. Corridor and classroom type: consisting of a series of identical classrooms grouped along a corridor. Up to 1950 it was generally the only type of school building prevailing anywhere and several other types are actually derived from it.

2. The pavilion type: consisting of a series of pavilions each housing specific educational activities. Its origins are derived from the need to provide technical education and its plan layout follow that of industrial buildings, extending it to other activities. The individual *pavilions* can have various plan layouts as indicated in this list.

3. The finger plan: consisting of a series of spaces each consisting of a corridor and classrooms. The whole layout can therefore be considered as a combination of Types 1 and 2 above.

4. The school street type: consisting of a main circulation space *(the school street)* from which branch off secondary circulation areas which lead to the various teaching areas. In reality it is a modification of the previous type.[15]

5. The loft plan consisting of a modular space which is subdivided by movable partitions, the whole space being rooflit and airconditioned. It can be considered as a derivation of the pavilion type and finger plan combined and is generally used for secondary schools.

6. Schools without walls (or open plan schools) which are a derivation of the loft plan principle where the partitions have been replaced by screens and furniture. This system was extensively promoted by the Educational Facilities Laboratory of New York and extensively

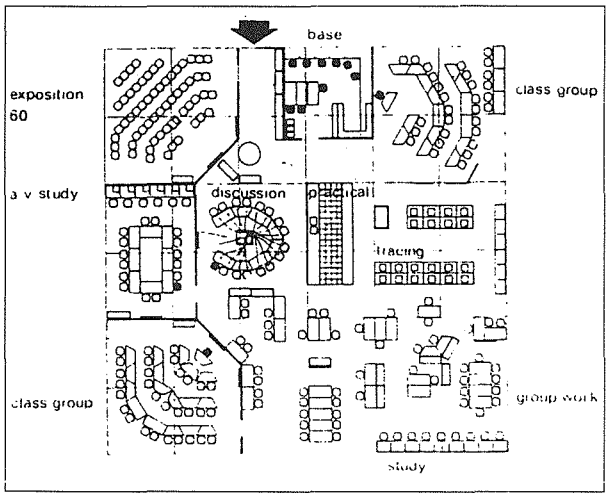

Figure 1:
A plan for the teaching of social sciences (history, geography, etc) in a secondary school based on the assumption that teaching will be carried out in an open teaching area shared by several teachers. A number of closed teaching spaces for exposition type of lessons are included. the open paln area includes storage for teaching resources.

Source: SED Academic Subjects in Secondary Schools

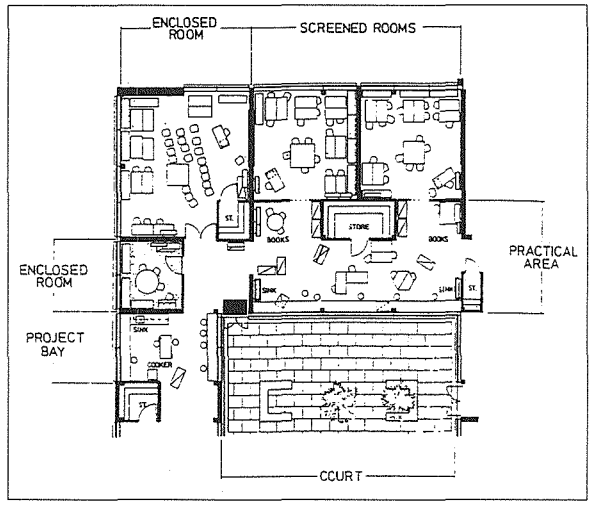

Figure 3:
Details from a middle school for 420 children aged 9 to 13 built in the late sixties in the United kingdom. The centre is designed to provide general teaching space for a year group of 105 children and include two fully enclosed rooms and an open teaching area with facilities for practical work.

Source: DES: Delf Hill Middle School: An appraisal

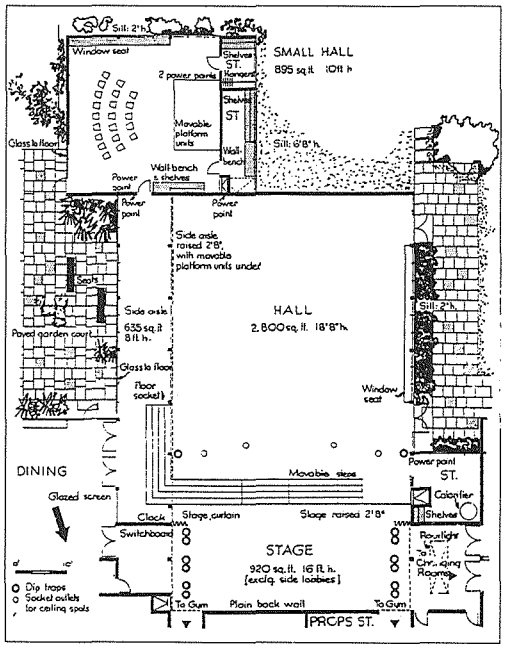

Figure 2:
The details of a school hall for a prototype secondary school built by the Architects' and Building Branch of the Ministry of Education of the Unityed Kingdom in the early fifties. The designs were given publicity to assist designers of other schools.

Source: Godfrey and Castle Cleary: School Design and Construction

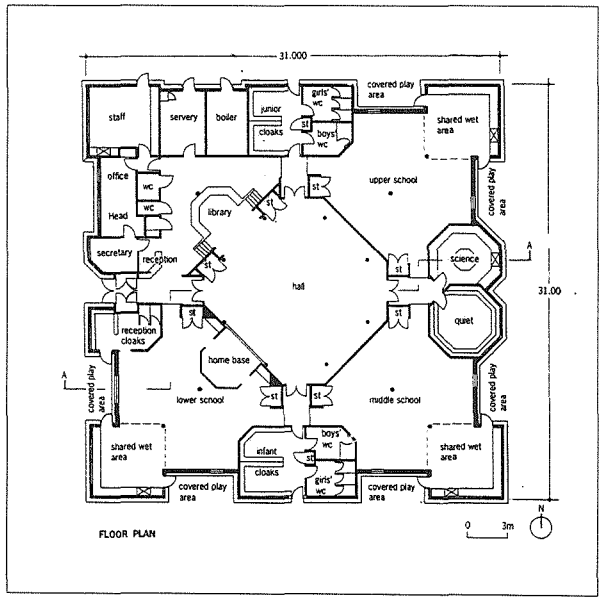

Figure 4:
Plan of a small primary school for a rural area built recently. The plan layout is very simple: three similar teaching areas each having a seperate entrance from outside and including an open plan general teaching area, a practicla area and an enclosed room with ancillary facilities.

Source: The Architects' Journal, 6 October 1994

adopted by schools in the United States in the sixties. It was never really accepted in Europe.[16]

7. Schools consisting of a variety of interconnected work areas which developed from the open plan schools where a certain measure of enclosure was required. These type of schools tended to suffer from the same problems as the open plan schools and frequently proved equally unpopular with teachers.[17]

Once the typology of the school had to a certain extent been defined, there remained the need to ensure that the resulting internal spaces satisfied the educational needs of the teachers and students. Designers and administrators had to answer several questions to render the buildings effective as educational establishments. Where to locate schools? What is the optimum size of a school building? What should be the relation of the school to the community it serves? What are you going to do with a large stock of existing buildings in need of refurbishing?

The location of schools

Although in theory the location of school building should be straightforward - *"new schools, including private schools, will be located in areas where demographic projections indicate that such a facility is required and on sites which are adequate for the provision of a full range of educational and sports facilities, and providing good accessibility and a safe environment"*[18] - several factors have prevented a neat, systematic plan to locate schools according to these principles. These factors range from the need to allow parents a choice of school, the cost (and hence availability) of land, lack of mobility in housing with the result that town centres end up being occupied by an aging population without children, etc. Several attempts have been made to assess the ideal location of a school building[19] on the basis of the quality of the physical environment its integration within a community plan, the availability of a site of adequate size safe and easy access by children and adults, the general site characteristics including such factors as proximity of utility services, characteristics usable for educational advantage, possibility of preferred orientation for teaching spaces and games areas, etc - and all within a clearly defined cost limitation.

The size of schools - school population

In assessing the optimum size of a school building, the criteria most commonly used is trying to find the best compromise between the conflicting requirements of the need to provide specialist facilities at a reasonable cost and the needs of adequate school management. In other words, a solution to the conflict between economic realities with limited budgets for school building, and the need to create a human environment for the children. Specialist facilities including laboratories, gymnasia, swimming pools and so on are not economical to provide unless they are capable of being used to a reasonable maximum extent, usually set at around 75% of the maximum possible. As children get older, the more demanding will be the need for provision of specialised areas, and hence secondary schools tend to get larger to allow for more provision of these facilities. Primary schools, on the other hand, can be much smaller as the demand for specialised facilities does not exist. On the other hand, the need to have establishments on a human scale, where each and every child can recieve individual attention, and the need to make schools pleasant places for both students and teachers has mitigated the economic pressures to have larger schools, and governments have come to accept that heavier expenditure on school buildings can be justified on these terms.

On the whole, teachers, children and their parents all tend to prefer the small school whether for educational or logistic reasons.[20] The community tends to feel a sense of belonging to the school as it is easy to integrate the school within the community, and hence the school can adapt its curriculum to the needs of the locality. The community can reciprocate by taking an active part in the life of the school, and contribute to improving the quality of the education provided. Small schools have small catchment areas, allowing most children to walk to school with minimum supervision. In turn this leads to the possibility of flexible hours and very close contact with the child's home environment. Small schools have been found to motivate teachers and students alike more than a larger establishment as it is impossible to hide behind the ceremonial of a large school. However, small schools may be less credible for some people than larger schools, as they tend to lack specialised spaces and equipment, the number of teachers specialising in specific areas of the curriculum is severely curtailed and the level of success in activities where talent is important might appear to be excessively low.

As a result, in most countries the size of schools in terms of student population has become fixed either by statute or by what is considered acceptable in general. Hence, Italy[21] using the first method fixes the minimum and maximum numbers for a primary school *(scuola elementare)* at 75 pupils and 625 pupils respectively. The equivalent values for a secondary school *(scuola secondaria superiore)* are 250 places (10

classes) minimum and 1500 places (20 classes) maximum. The British regulations do not set any size limits on schools but a combination of social forces ranging from what is considered acceptable educational practice to pressure from parents has prevented any attempt to allow schools to be excessively large. Primary schools are in general considered a form of community facility and are in general kept as small as possible. The practice of splitting them into Infants' and Junior schools has also helped to keep schools small. Secondary schools are obviously larger, but even so, most of them tend to have a school population of less than 1000 students. American practice, following the tradition of equating size with excellence, tends to accept much larger schools, and high schools with a populaion of up to 5000 students are considered viable. However, the serious managment problems involved in runnng these establishments has resulted in a tendency for small schools in recent years.

The size of schools - physical size

In addition to the school population, the actual physical size of the school needs careful consideration. The actual size of a school bilding involves three main consideration: (1) the actual site area, (2) the extent of this area actually covered by buildings, and (3) the number of floors to be erected. Education authorities have tended to look at this problem in two ways: either by actually requiring a certain minimum site area for a particular school taking into account the age of the children and the number of children, or by specifying in detail the requirements of the school in terms of accomodation and facilities to be provided for each specific activity. The latter method is used in the British School Building Regulations [22] which, while they do not specify any minimum area for the school site, go into detail in specifying minimum teaching areas for each aspect of the curriculum as well as areas required for non-teaching activities.

The extent of outdoor areas depends on two main factors. There is a contextual problem: the insertion of a relatively large institutional building in an environment which in many cases is purely residential. Attention to architectural coherence and attention to context is of primary importance even for a small establishment serving a local community. A building insensitive to the architectural heritage around it may seem alien to its users and this attitude may be reflected in their behaviour towards the building. On more practical terms the deleterious effects of a large child community within a particular neighbourhood with respect to such inconveniences as noise and traffic generation cannot be ignored and any school development is to be such as to reduce the overall impact of its presence as much as possible. This problem can be attenuated by the careful planning of the site, locating adequate parking on site together with coach loading bays, if necessary, and sufficient landscape areas to enhance the overall aesthetic quality of the locality. In this respect, for example, Italian regulations stipulate that not more than a third of a site for a school can be built and the rest be landscaped to provide ancillary educational facilities but also to provide greenery round the school.

The second aspect to consider are the educational input which outdoor spaces can provide for a school. The most obvious use is the need for adequate play space, whether for informal play during breaks in the teaching periods or organised games as part of a physical education curriculum. Incidentally this is one of main causes why the location of schools in very urbanised localities tends to be resisted by the residents - the so-called *bad neighbourlines* as described by planners. Regulations frequently specify the minimum play area requirements taking into account the age and number of children in the school. As an example, British regulations [22] specify $9m^2$ per child of outdoor play space for the first 600 children and $4.5m^2$ for each subsequent child. In addtion the same regulations stipulate minimum areas for organised games for all schools with children over the age of eight. Obviously the type of facilities of this nature would have to be related to the sports programme offered by the institution.

In addition outdoor areas can help to provide additional teaching areas such as facilities for biology teaching and similar activities. In good weather, other educational activities normally held indoors can easily be held out of doors.

The overall indoor area of a school can basically be divided into two parts: the actual teaching areas and the service areas. The latter do not provide any teaching space but are essential if the former can function properly, or if at all. The former have to satisfy very demandng requirments: *"The variety of provision, the variety of opportunity, the range of challanges that the school has to offer kills stone dead the notion of ranks of repeated rooms and circulation that still forms the popular image of a school."*[23]

Service area would include such spaces as offices, kitchens, sanitary facilities, corridors, storage space, staff rooms, etc. Ideally these areas should be kept to a minimum, but even under optimum conditions they never account for less than about 40% of the overall floor area of the school, and frequently much more than that. Indeed, in some situations

architects tried to reduce the amount of circulation space (the most "wasteful" of all service areas) by designing them to accomodate some form of teaching activity. In many open plan and similiar schools such a design decision is very frequent - although not necessarily popular with teachers.

The exent of teaching areas is frequently controlled by regulations either by actually stipulating the minimum area for each specific activity [24] or, more often, by giving the minimum size of classrooms, gymnasia, labortories, etc. Sometimes teaching areas are subdivided into general teaching areas where the predominant activities are reading, writing and similiar activities and specialized teaching areas, that is those spaces meant for a specific aactivity such as laboratories or gymnasia. The minmum teaching area can then be given either as the overall area of the particular space or by indicating the area required per child for each specific activity. The latter allows greater flexibility in the design of the school and as such is popular in those sitiations where education is the responsability of the local authorities and where considerable autonomy is allowed to different schools in the way they carry out their teaching programmes. Centralised systems where not only the curriculum but also teaching methods are generally indicated by central government usually prefer the first method as it is easier to prepare design briefs.

The actual number of floors which the school can occupy depends to a great extent on the problem associated with vertical circulation, which for a long time simply meant staircases in sufficient numbers to allow easy circulation without creating congestion at peak demand and taking into consideration the need for the rapid evacuation of the building in case of emergencies especially fire. However, the use of stairs has three major problems associated with it. First of all there is a practical limit on the overall number of steps you can expect an ordinary person to climb under normal circumstances and this sets a practical limit on the height of school buildings to three floors and maybe, occasionally, four floors. Secondly, stairs are designed on the ergonomic requirements of the average adult and they can be difficult of even dangerous for young children to climb. Finally stairs constitute an insurmountable barrier to any person with even the slightest mobility problem even if it is of a temporary nature, and that includes the need to carry heavy items from one part of the building to another. As such there has been a tendency to design school on one floor only and, maybe two floors, if to be used by young children and three floors otherwise. Lifts were introduced eventually to solve the problem of persons with disability and in other exceptional circumstances, but in general the rule in many schools is still that the lift may only be used by authorised persons only. A number of multistorey schools have been constructed in exceptional circumstances such as in heavily urbanised areas where land was not available and where utilities were reliable making use of lifts with large capacities able to transport a large number of students from one floor to another in a short period of time.

The local situation[25]

Locally the first attempt to organise education on systematic lines took place during the French occupation (1798). Napoleon had taken the decision to set up fifteen primary schools and an *école centrale* on the French model. In view of the political upheavals of the period this attempt never materialised. During the early British period, in 1819, Governor Sir Thomas Maitland again attempted to do something for the education of the lower classes, but with the same result.[26] An important landmark in local educational history was the Royal Commision of 1838[27] set up to inquire into the situation of education in Malta. The commision found a serious lack of school buildings - there were only three elementary schools which recieved Government support. The Commision sustained that the education could not improve unless new schools were built and it recommended at least ten new schools. By 1880 the Keenan report[28] found that there were seventy nine Government schools in the whole island with an attendance of 7746 children. But most of these schools were located in privately owned residential buildings rented to the Government for the purpose. Most of these buildings were overcrowded, badly ventilated and with only rudimentary sanitary facilities with the result that

> *it would be difficult to imagine any arrangement more repugnant to good taste, or more injurious to health, than those to which I refer. Frequently the odours from these closets were simply sickening; indeed in some cases more than sickening, intolerable such as for example at Cospicua and Senglea*[29]

Only one school (at Floriana) had some form of playground although some schools were found to be exceptionally good. Canon P. Pullicino, then Director of Primary Schools, and who was well versed with educational practices abroad, insisted on the need for new schools to the extent that he even drew up design proposals for them [30]. But the construction of new schools was hampered by the unavailability of funds, and a general lack of interest by the general public in education. However, by the turn of the century the first purpose-built schools were consructed. After the introduction of self-government in 1921 and the

enactment of the Compulsory Attendance Act (1923), many new schools were constructed. The plan layout adopted was similiar to that of schools in the United Kingdom of the period altough the architectural style tended to be more monumental: A series of identical classrooms adjacent to an open corridor and grouped round one or more courtyards which served as play areas.

In the post-war period two factors generated the need for a large number of school buildings: the increased number of children due to the increase in population and the introduction of compulsory education. The Ellis report (1943) [31] had already made recommendations to the effect and the availablity of funds for war damage reconstruction meant that work on new schools could start. About twenty new primary schools together with the first purpose-built secondary schools were built. Although the corridor and classroom type of layout was retained there was a marked change in the overall design characterised by the norms of the modern movement in architecture. The monumental entrances, vertical windows with cornices, etc of the pre-war schools were gone. Instead a more open layout based on the finger plan with extensive fenestration (which frequently led to gross overheating due to lack of protection from the intense sunlight) became popular. In the case of secondary schools, the pavilion type of layout was also tried out.

The next major educational development, however, failed to have any real effect of school buildings. In 1970, senior classes in primary schools were abolished and all children were transferred to secondary education at the age of eleven. However no new school buildings were erected. A number of primary schools were converted, at least in part, to secondary schools. The Government having now at its disposal a number of buildings vacated by the British armed forces including some which had been used as schools (although not really built for the purpose) decided to use this vacant accommodation instead. Unfortunately, in many cases the conversation of the building simply consisted in placing some school furniture inside and renaming the building.

A number of developments, may in the future prove to be significant in the field of school construction. The Education Act 1988 authorised the Minister of Education to set minimum requirements for school building. In fact in 1990 a legal notice[32] stipulated minimum requirements for school buildings. These regulations when compared to similar ones elsewhere are far from satisfactory, but at least for the first time, the need for minimum standards in schools has recieved official recognition.

In the same year, and for the first time, a Structure Plan for the Maltese islands was published. The Structure Plan, approved by Parliament and thus having the force of law, requires the Ministry of Education to *"prepare a 20 year development plan based on the Structure Plan... to ensure the optimal siting of new facilities:and will safeguard sites for new schools and expansions."*[33] In 1988 the Education Department[34] had already indicated in a planning paper that 18 new primary schools will be required and although no secondary schools have been indicated, recent decisions indicate that at least three new secondaries are to be constructed in the near future. The structure plan also requires policies *"aimed at optimal use of existing sites and buildings in relation to forecast demographic characteristics, and in realising higher standards of provision on new sites of classroom and specialist uses, playing fields, and servicing / parking."*[35] Other policies encourage the use of school facilities for community use and the requirement that schools be built on *"sites which are adequate for the provision of a full range of educational and sports facilities, and of providing good accessibility and a safe environment."*[36]

The Explanatory Memorandum[37] (considered for statutory purposes a part of the Structure Plan provisions) indicated land requirement standards for schools which compare favourably with national standards elsewhere. This requirement is also the first attempt to fix minimum standards on site requirements for schools.

Moreover, the Planning Authority, set up by the Environmental Planning Act, 1992 and with a responsibility to ensure that the Structure Plan provisions are in fact carried out has published two documents related to school buildings. These two documents, published as a result of the demand for private education, are primarily aimed at making planning provisions for these types of buildings but indirectly have a major impact on the type of educational provision. The first one deals with minimum requirements for kindergartens[38]. Following attampts by various individuals to set up private kindergartens in all sorts of buildings, the Planning Authority has fixed minimum provision including area of site, maximum number of children, the need for outdoor play space and the need for adequate facilities. The second document which deals with the provision of sites for private schools[39] has possibly its most important provision in Annex 6 of the document which gives a list of information required in order to *"formulate a comprehensive policy approach encompassing both educational and land use planning aspects"* and moreover insists on a survey of private

schools to indicate not only the educational and planning parameters, but also includes socio-economic aspects. Since this document was prepared following a cabinet decision and was formally endorsed by cabinet, it indicates that government policies in the future will be directed at a systematic approach to the problems of educational provision.

Therefore the needs for the future can be summarised as follows:

(a) An urgent need for implementing the policy SOC 10 of the Structure plan which requires an Education Development Plan for the next twenty years.

(b) A need to update the minimum requirements for school buildings to ensure that new schools and the refurbishment of the existing stock of building will be according to established standards both as far as educational provision is concerned but also in terms of hygiene requirements and the comfort and safety of the users.

(c) A systematic programme of new school building and refurbishment of existing schools to be implemented to ensure, within a reasonable time, compliance with minimum requirements.

Do schools have a future?

The demise of school buildings has been predicted several times during the recent decades. Anyhow schools are, at least for the majority of children, a very recent innovation in history and even if they had been considered desirable on educational grounds, the prevelance of infectious diseases would have made them impossible. Grouping a large number of children in very restricted enclosed spaces would have meant a death sentence for most of them before the developments of modern medicine in particular mass immunisation. To this day the level of absenteeism at primary level due to illness is still excessively high to the extent that there has been suggestions, sometimes actually carried out, of designing primary school classrooms as *clean rooms*, that is, the fully airconditioned classrooms would be equipped with high quality filters to exclude all particulate matter of diameters as low as 1 micron. The educational problems associated with the traditional pattern of schooling are too well-known to be repeated: children develop at different rates and come from different socio-economic backgrounds, etc. Yet schools group them according to chronological age and abilities measured by standardised tests. The development of information technology and mass communication has made it possible to tailor educational programmes for each individual child, without the need to build and run expensive structures where hundreds of children have to attend daily with all the logistic problems that it involves.

Yet schools have never been held in higher esteem than now. There is almost universal recognition on the need of formal education and schools are being increasingly seen as a major community asset in educational provision not just for children but for the whole community.[40] The school is

> *no longer an institution isolated from the rest of society and open only six hours a day, nine months a year. Today some schools are open 14 hours a day - offering adult education classes in the evening, library and meeting facilities for the entire community, and recreational activities year-round.*[41]

> *Every educational building has to be considered as part of an educational continuum, inserted in a social and urbanisatic context, and not as an autonomous entity.*[42]

However, certain basic assumptions may have to change as technology will inevitably affect school design. We may easily revert to a situation where schools with large population (to allow for investment in expensive facilities and equipment) would cease to be essential for economic reasons. Individualised learning programmes may solve the problems associated with the grade system and its off-shoots such as mixed ability teaching, selective examinations, etc, which would bring about a revaluation of the spaces required within school buildings. The design of the building will have to respond to these changes and the school of the future might in fact be just a part of an extensive educational set-up to provide those facilities needed for the personal development of the whole community and not just its juvenile section.

It would, however, not be difficult to predict an emerging trend which can lead to an important development in educational facilities. It has been observed for a long time that people tend to identify themselves with schools more than with any other type of building, except, maybe, their own dwelling. A community is unique, not only in its social set-up but its historical and geographical location and this diversity has to be reflected in the architecture of schools. The school

> *has to be conceived as a homogeneous architectural organism and not as a simple series of spatial elements, thereby contributing to the sensitivity of the pupil and thus becoming*

itself a means of communication and of learning for those who use it.[43]

The mass produced building located anywhere irrespective of the social needs of the community and with complete disregard to geographical location rarely, if ever, leads to a satisfactory educational facilities. It is too anonymous for people to identify with it and does not satisfy their aspirations. *"Culture climate, geography, and traditions differ greatly from town to town and state to state. The best school design celebrates these differences"*[44]

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1. Thring, Edward *Theory and practice of teaching* London 1885 (2nd edition)

2. Mitchell. Jim "A lesson in geometry" *The Architects' Journal* 6 October 1994, p 32. *(The article appraisal of the design of a rural primary school in Cumbria, UK. Jim Mitchell, the Property Client Unit Manager for Cumbria County Council was responsible for the client's account. The building was actually appraised by Dan O'Neill.)*

3. The Architects' and Building Branch was set up by the Ministry of Education of the United Kingdom initially to ensure that local authorities complied with the Ministry's specifications for school buildings. Under the leadership of Stuart Johnson - Marshall from 1948, it took up a proactive role in the development of the design of school buildings. Its prototype buildings and,in particular, its series of publications produced regularly over a number of years publicised the need for better schools and the means to achieve them.

4. A number of generic plans for various types of spaces for educational purposes can be found especially in the publication of the Scottish Education Department. See, for example: Scottish Education Department *Educational Building Note 17: Academic Subjects in Secondary Schools,* HMSO, Edinburgh, 1981, pp 15-20.

5. Pearson E. *Trends in School design* Macmillian Education Ltd, London, 1972, pp 10-11.

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7. Ringshall R et al. *The Urban School. Building for Education in London, 1870-1970* The Architectural Press, London, 1983, pp 17-24.Seaborne M and Lowe R *The English Sits Architecture and Organisation. Vol. 2 1870- 1970* Routledge and Kegan Paul, London, 1977, pp 8-17.

8. Graves BE *op. cit. p. 25*

9. Ringshall R *et al. op. cit. p. 8.*

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11. This building is described in Cicconelli C "Evoluzione dell'organismo architettonico della scuola"in Carbonara P (ed) *Architettura pratica* Vol 3, Part 2, p. 863. *"A Francoforte nasce, nel 1927, per opera de Ernst May la prima scuola a padiglioni."* (In Frankfurt, in 1927, the first pavilion type school, the work of Ernst May, was constructed.)

12. Seaborne M and Lowe R. op. cit. pp. 134-135 Saint A *Towards a Social Architecture: The Role of School Building in Post-War England* Yale University Press, London 1987, pp. 41-44.

13. Anon. "Senior Schools" A series of articles on senior schools were published as part of a series on school buildings in general in *The Architects' Journal.* Description of this school are found in the issue of 6 January 1938, p. 50, 20 January 1938, p. 52 and February 1938, pp 68-69.

14. Graves BE *op. cit. pp. 33-35.*

15. In recent this plan layout has become very popular for the design of secondary schools with the main school street being in the form of an atrium to allow for daylighting and controlled temperature variations. Examples of these types of schools can be seen (among many others) in the following publications Weston R *Schools of Thought: Hampshire Architecture 1974-1991* Hampshire County Council, Winchester 1991, pp. 94-95. (A description of Crestwood Secondary School,Eastleigh). Lam WMC *Sunlighting as a Formgiver of Architecture* Van Nostrand Reinhold Company, New York, 1986, pp. 305-315. (A Description of Soddy Daisy High School, Tennessee.) Slavid R et al. "Benefits beyond the Curriculum" *The Architects' Journal* 20 October 1993, pp 37-47. (A description of Swanlea Secondary School, London.)

16. The Schools Council of the United Kingdom commisioned a study on open-plan schools in the late seventies, which gave rather ambiguous conclusions as to their viability. See: Bennett N *et al. Open-plan Schools* NFER Publishing Company, Windsor, 1980.

17. For examples of these type of schools see: Department of Education and Science *Building Bullettin 53: Guillemont Junior School, Farnborough, Hampshire* HMSO, London, 1978, and Department of Education and Science *A & B Paper 3: Delf Hill Middle School: an appraisal* DES, London, 1978.

18. Planning Services Division *The Structure Plan for the Maltese Islands* Ministry for the Development of Infrastrucure, Malta, 1990, Policy SOC 15, p. 38.

19. An example of a checklist for assessing the suitability or otherwise of a school site can be found in: de Chiaia J and Kappelman LE *Site Planning Standards* McGrow-Hill Book Company, New York, 1978, adapteed from Englehardt NL *Complete Guide for Planning New Schools* Parker publishing Co. Inc. N.J., 1970.

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34. *ibid. section 9.9, p. 37.*

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43. "...sia concepito come un organismo architettonico omogeneo e non come una semplice addizione di elementi spaziale, contribuendo allo sviluppo della sensibilita` dell'allievo e diventando esso stesso strumento di comunicazione e quindi di conoscienza per chi lo usa." *ibid. p. 102.*

44 Graves be *op. cit. p. 11.*