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THE MOVING OF GAUDI'S SAGRADA FAMILIA PARISH SCHOOL IN BARCELONA

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ABSTRACT

The Sagrada Familia or Holy Family School was built by Gaudi in 1909 at the foot of the Templo Expiatorio de la Sagrada Familia in Barcelona. The building was only intended to be a provisional structure within the parish grounds though it now obstructs the normal expansion of the Expiatory Temple and it is, subsequently, necessary to demolish or move the building.

The building is some 24 m long, 12, m wide and 6 m high with both walls and roof being built entirely in brick.

The unique nature of this building lies in the slender 2 leaf brick walls with the bricks set on their header face, bed side outward, creating an undulating façade which gives the wall the stiffness and stability to support the weight of the wavy roof of the same thickness as the wall.

The proposal presented for the movement of the building is simple, safe, economic and original and will provide a new location and use which will set off the building in the surroundings of the Sagrada Familia so that it may be visually appreciated and functionally employed as a "jewel" of Modernist Catalan architecture".

In order to move the building the BUILDING TRANSFER AND RELOCATION SYSTEM has been invented and is described in this presentation.

Key words: Restoration/heritage, masonry, clay, brick.

The system consists of isolating the building's foundations from the supporting soil and setting the foundations on a platform which is suitably arranged to support the building by flotation on a liquid mass. As such a channelling basin shall be established between the initial position of the building (A, in the Temple grounds) and the final relocated position (B, in the square adjacent to the Sagrada Familia), crossing the intermediate street, and filling the said channel with a liquid, so that the building may be raised and then lineally relocated and/or gyratory relocated, after which the liquid shall be removed and the building will automatically descend into the new position (B) established for the building.

1. INTRODUCTION

The importance of Gaudi's work within the framework of Modernist Architecture is well known both in Barcelona and Catalonia as well as in Spain, Europe and world-wide and, subsequently, locals and visitors alike should be free to enjoy this "jewel of Modernist Architecture" which obtains maximum expression with a minimum of material.

One of the main features of the building is the curious wave of the roof which is formed by a series of conoids which alternately drain the rainwater to the front and rear façades.

The lines of the building are simply formed on the basis of a straight central longitudinal directrix from which a series of generatrices are rotated at different angles from the centre and by the employment of brick which is corrugated in plan and elevation.

The small size of the building when compared to the grandeur of the Temple often means that it goes unnoticed by visitors and that it is little known even to researcher's of Gaudi (Fig 1.a.b).

The building initially served as an infant school with three classrooms but it was long since converted into a sculpture workshop for the Sagrada Familia and finally to its current use as offices of the Parish Centre.

The fact that it was conceived as a "temporary" building to educate the children of the masons working on the Temple (when the area was just open ground, as it would be inconceivable as a school today), does not detract from the value of the building and, in fact, gives it the added characteristic that it managed to achieve "maximum plasticity with minimum material". This initial purpose subsequently explains the building's location within the site of the Temple and justifies the need to relocate the same.

The author has spent many years investigating the Gaudi School (1) (2) (3) (4) (5), and the results of this research have been gradually filtered to those in char-

Figure 1 a. Front view of the Gaudi School.
b. Side view of the Gaudi School.



ge of the Sagrada Familia Temple and the author has expressed his interest and support for the relocation of the School. As such he has organised a self-financing system and developed an original and specific method of transport for the School in accordance with the nature of the building and the surrounding conditions.

The originality of the Temple should not override the unique nature of the School nor justify the "involuntary demolition" of one building by another particularly when the author is in the possession of a technical and economically viable solution to prevent the same.

While it is logical that the episcopate do not consider the restoration of the School as a priority object within the broad view of Gaudi's work, it has accepted the technical and economical support offered for the relocation of the same.

The proposal for the relocation is simple, safe, economic and original and considers a new location and use which will allow the building to stand out within the surroundings of the Sagrada Familia so that it will be both visually pleasing and functional in terms of the presumed use of the building after restoration.

Professor Adell has been collaborating with the Architect Jordi Bonet, Director of the Construction Board of the Sagrada Familia, in order to achieve the transfer of the School in a discretionary manner.

The public organisations responsible for art and culture could undoubtedly contribute by giving their tacit support to the restoration of the Parish School as a visitable building once it has been relocated.

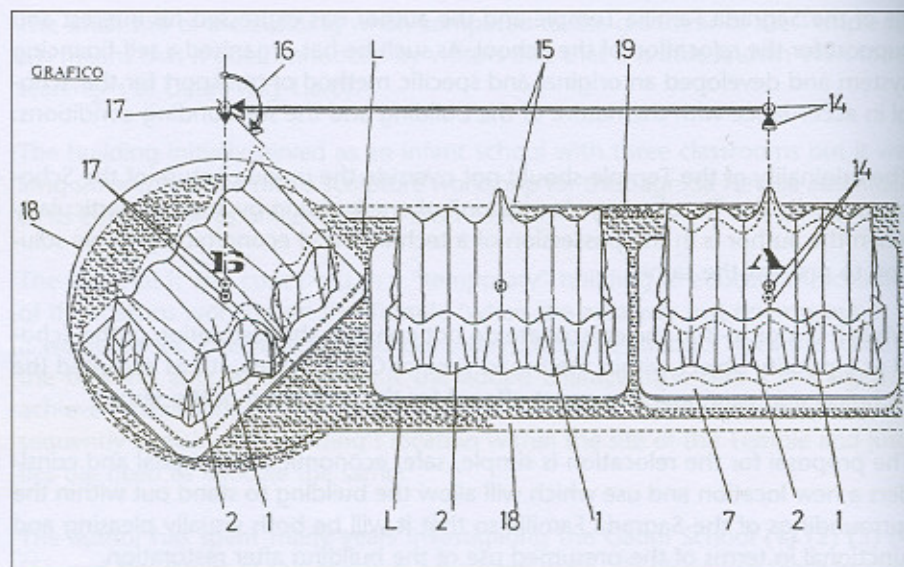
In October 1993, Professor Adell proposed the need to transfer the building "in one piece" in view of its architectural value, and offered the following proposal:

- I. PRELIMINARY VIABILITY STUDIES OF RELOCATION
- II. SPECIFIC PROJECT FOR TRANSFER AND SETTLEMENT
- III. PROJECT ON RENOVATION OF BUILDING AS A "GAUDI" BOOKSHOP
- IV. NEW LOCATION IN THE SAGRADA FAMILIA SQUARE
- V. "GAUDI CENTRE" BELOW THE SCHOOL

In the IV Conference on Gaudian Styles of Barcelona, the author presented the paper "The Gaudi School or the Synthesis of Technique and Art" (4).

The conclusions of this investigation clearly established the importance of this building within the context of Gaudi's work and that of masonry architecture and particularly brickwork, by revealing that the Parish School was the "lightest" of all those masonry buildings built with traditional materials such as stone, brick or adobe.

Figure 2. Original system for the movement and relocation of Gaudi's Sagrada Familia Parish School.



2. PATENT-INVENTION SYSTEM FOR THE MOVEMENT OR RELOCATION OF BUILDINGS

In the light of this particular discovery regarding the lightness of the School building, and in view of the reticence to come to any decision regarding the date of transfer which had been proposed to conclude in 2002 to coincide with the 150th anniversary of the birth of Gaudi, this author decided to patent the proposed invention for a transfer system in order to protect the same until the time of receiving support from the Sagrada Familia Construction Board.

The system (fig. 2) consists of isolating the foundations (4-5) of the building (2) from the supporting soil and setting the foundations on a platform (7) which is suitably arranged to support the building by flotation on a liquid mass (L), establishing a channelling basin (18) between the initial position (A) and the final position (B), filling the said channel (18) with a liquid (L) so that the building is raised and then lineally moved (15) or gyrotory repositioned (16), and finally proceeding to remove the liquid (L) to allow automatic descent (17) shall be removed and the building will automatically descend into the new position (B) established for the building (Plan 9).

The development of the patent contains the following plans:

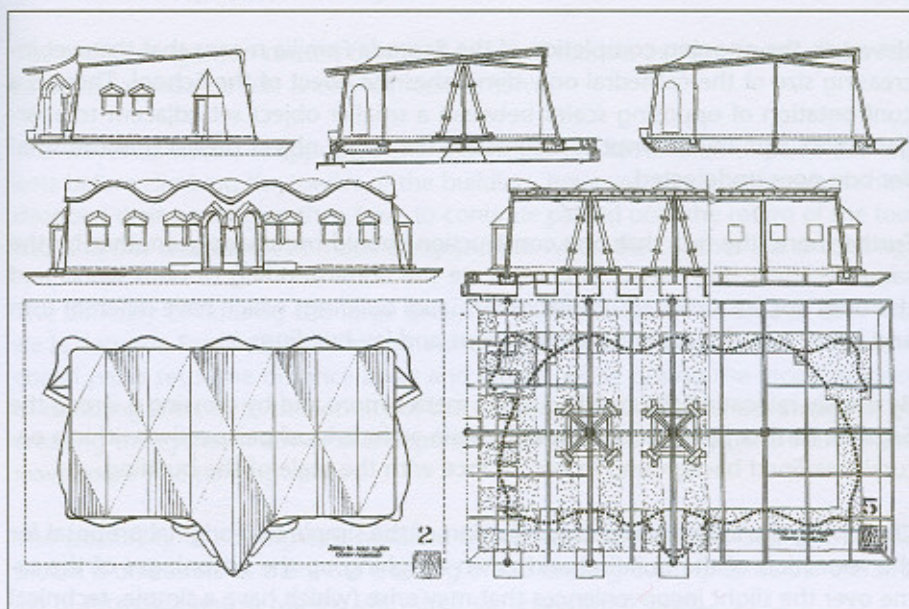
- Building of any type to be moved by the invention system.

Figure 3. Elevations and plan.

Figure 4. Cross-sections.

Figure 5. Construction phase of the lower platform.

Figure 6. Gaudi building.



- Front elevation, side elevation and plan of the School (Fig. 3).
- Longitudinal cross-section, transverse cross-section and sectioned plan at roof level of the School (Fig. 4).
- Stage of execution of lower structure isolating the building from the soil: longitudinal section, cross-section and foundation plan (Fig. 5).
- Flotation mat or platform for the School, longitudinal section, cross-section and plan of platform (Fig. 6).
- Start of flotation process above the basin. Initial position, intermediate position and final position.
- Movement of School to new location with the grounds of the Sagrada Familia: movement and 90° turn.

3. NEW LOCATION OF THE SCHOOL

As a result of the need to relocate the building in another position, there arises the problem of where to position the building.

While there is no doubt of the need to begin relocation there may be a whole host of opinions regarding the best possible location.

From the owners' point of view the Parish School should remain on the same grounds.

However, the ongoing completion of the Sagrada Familia means that the ever increasing size of the cathedral only diminishes the effect of the School. There is a confrontation of opposing scales between a smaller object set adjacent to a larger object and any attempt to appreciate the larger object means that the smaller one goes undetected.

Furthermore, the fact that one construction should overshadow another by the same architect only serves to complicate the understanding of both works and this does not favour an accumulation of Gaudi buildings which have different uses and form, as is the case of these religious and lay buildings.

By merely relocating the building a few metres more and by crossing a street, the Sagrada Familia Parish School would obtain an individual perspective within a natural tree-lined background in accordance with the scale of the building.

On solving the initial involuntary rejection of the simple and original proposal for the relocation of the building and when weighing up the advantages of the same over the slight inconveniences that may arise (which have a simple, technical

solution), we would then be able to observe two of Gaudi's works within the area of the Sagrada Familia, which may be perfectly appreciated and evaluated in their own individual right. The School for its formal nature and construction technique and the Temple in its religious capacity, and one strongly adhered to by the devout spirit of Gaudi.

4. THE PROBLEM CAUSED BY VISITORS TO THE SAGRADA FAMILIA

It is clear that in spite of the difficulties entailed by the moving of the building of the Sagrada Familia Parish School to a new location, this will have an important urban effect.

Nowadays, the Sagrada Familia Cathedral is Barcelona's biggest international modernist attraction.

In less than 100 years, the opinion regarding the Cathedral has changed from one of an architectural anachronism to that of an urban landmark and a symbol of Christianity and art.

When anyone conjures up an image of Barcelona it is that of the slender needle-like towers of the Sagrada Familia overshadowing its surroundings.

From an urban point of view, the grid system of the Cerdá Plan never envisaged that one of its squares would receive such universal attention and, subsequently, such a huge concentration of visitors, as the system is set out in a regular fashion and only contains a few main streets in terms of width, location and arrangement, such as the Avinguda de la Diagonal.

The traffic congestion caused by coach loads of tourists in the vicinity of the Plaza de la Sagrada Familia is very difficult to solve.

The waves of visitors dropped by the coaches in the block then disperse like tiny ants before climbing the towers of the building, however, the coaches which have dropped their passengers then have to continue parked until the return of the tourists and this creates just as much congestion as when the coaches are circulating.

The difficulty of housing this large group of tourist buses in the area of the Plaza de la Sagrada Familia has been somewhat offset today by the use of alternative coach parks set some distance away and which, while posing the inconvenience of doubling the trip to the vicinity of the Cathedral, do have the advantage of increasing the cycles of arrival and departure of visitors to the Sagrada Familia and leave more free parking spaces.

The possibility of solving this problem by subways around the Sagrada Familia blocks is unfeasible as there is a crossing of the underground lines below the streets of Provença and la Marina with their corresponding exists.

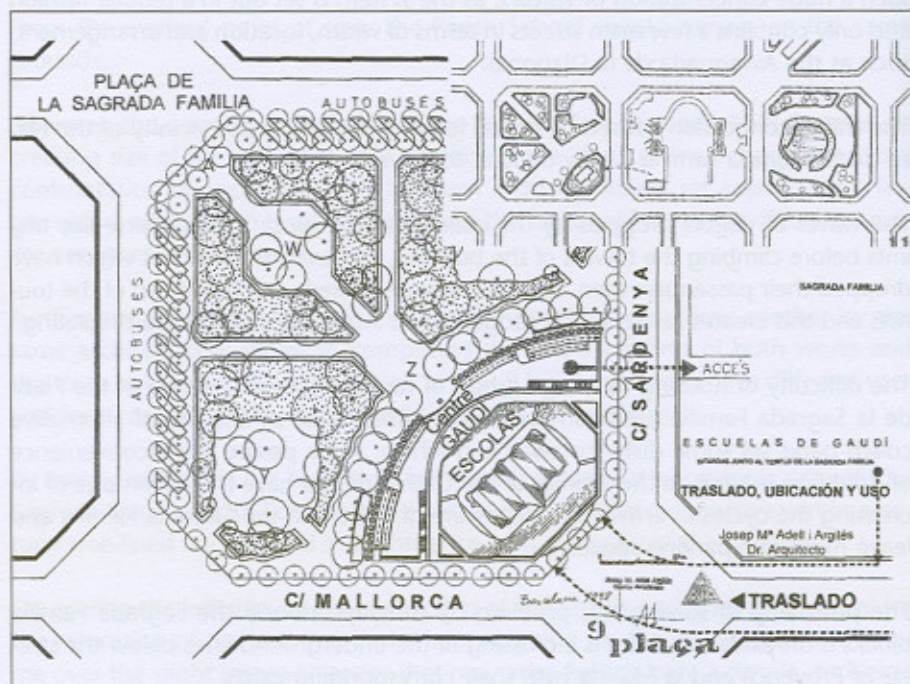
The recent decision to make calle Mallorca the underground axis for the Spanish high speed train AVE has now put a stop to any chance of building tunnels in the Sagrada Familia and so the continued circulation of coaches in the streets appears to be inevitable.

Another important problem caused by the attraction of the Sagrada Familia is the impossibility to meet the needs of the visitors in spite of the episcopate's good intentions. This problem arises from the nature of the building itself and the space available. The site which contains a small museum can barely house the necessary offices (currently located at the Gaudi Schools) and the sculpture workshop and still allow the progression of construction work.

The inevitable open air queues of hot tourists which meander around the block of the Sagrada Familia up to the corresponding ticket offices is somewhat improper for a modern country, and also causes great inconvenience to the people living in the area, though of course benefiting those with tourist concerns or those employed in the hotel or catering trade.

In view of this situation it is necessary to take advantage of the circumstances of the Sagrada Familia School in order to provide a solution to these problems and to offer a better urban layout in the Sagrada Familia area for visitors, though without having any negative consequences on the established environment of the district (Fig. 7).

Figure 7. The Plaza de la Sagrada Familia with the new settings of the Gaudi Centre and School.



An aggressive solution to the number of problems faced would be to knock down one of the two squares in the vicinity of the Sagrada Familia in order to serve as a coach park, but this would not be widely accepted by the local inhabitants even though it might well solve the immediate problems of the area.

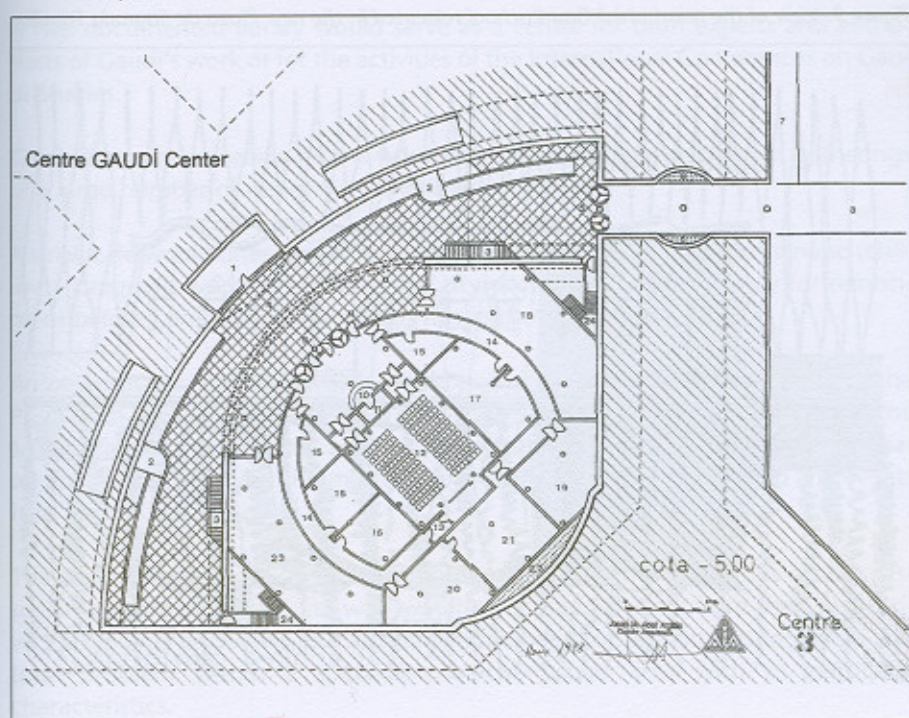
5. GAUDI CENTRE

The opportunity provided at this moment in time enables us to pose an intermediate standpoint which will satisfy the different sectors involved (Episcopate, City Council, neighbours, tourist sector, etc). This logically with all the possible rejections implied in any action requiring common consent, and with the aim of obtaining benefits on the whole.

The possible transfer of the Schools from a private site to a public one (even though it would continue to be of private Episcopal use) can only be made in the light of corresponding counter benefits, which serve all of those implied, even when it be necessary to partially abstain from personal prerogatives.

In view of the need to join and supplement the Episcopal and municipal efforts for the continued success of this tourist attraction, it would be possible to use the

Figure 8. Gaudi Centre below the Sagrada Familia School, channelling the visitors to the adjacent Cathedral.



area below the refurbished and relocated Schools as a "filter" to organise and solve the problems of the area caused by the large number of visitors to the Sagrada Familia.

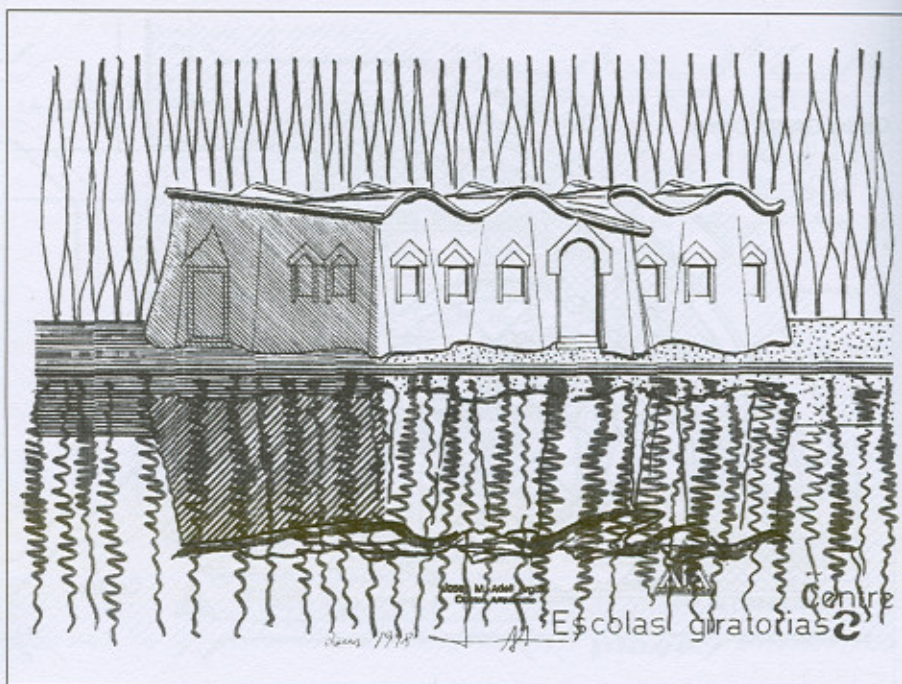
This then implies the changing of the current approach to the Cathedral on the public road to a narrower area with more services and more suited to the needs of the tourists.

The plaza de Sagrada Familia is arranged in the form of radial tree lined paths leading towards the centre of the square. By relocating the School in the corner bound by the Sardanya and Mallorca streets, this will then serve as a focus of attention within this urban area.

The tourist coaches circling the square via the Sardanya, Mallorca, Sicilia and Provença streets will gradually drop off their passengers on a broad perimeter of pavement bays (over 400m). These bays, with only minor adjustments to the current vegetation, will allow 20 coaches to park at an angle to the kerb along the streets of Sicilia and Provença, and to remain parked during the visit. The space left by these bays may perfectly accommodate the Christmas stalls which are traditionally set up in this area during this time of less frequent tourism.

The visitors will easily gather around the new "landmark" of the School and will then find the curved access to the Sagrada Familia formed by passage-

Figure 9. View of the refurbished Gaudi school relocated in the new Plaza de Sagrada Familia.



ways leading towards the Sardenya and Mallorca streets and which will serve to channel the visitors and leave the square and its surroundings free of crowds.

The idea is to arrange the ticket offices, accesses and queuing zones in broad, climatized and covered areas which will make the wait more bearable for visitors to the Sagrada Familia. The location of the ticket offices will offer a sufficient view of the cathedral which will broaden the sense of urban space and heighten the grandeur of Gaudi's work.

The plan considers the possibility of making a subway below calle Sardenya which will directly connect with the new inner square set below the Gaudi School, which will prevent crowds of people crossing the road. In order to make this passageway it would only be necessary to deepen the drain running down the centre of the street and as a result of the slope of this street the drain could easily operate a few metres below the street.

The Gaudi Centre would be built below the School and offer all the amenities necessary to attend those interested in Gaudi's work and could house suitable municipal and Episcopal offices.

The Centre is planned to have an exhibition room which could take groups of visitors from 2 or 3 coaches (in 20 minute cycles) and provide an audiovisual history of the Sagrada Familia and the School.

A well documented library would serve as a centre for both experts and enthusiasts of Gaudi's work or for the activities of the International Conferences on Gaudi Studies.

Conference and meeting rooms would provide a suitable setting for gatherings of a large number of researchers and intellectuals.

A small café would offer respite to those who for reasons of age or otherwise (children, pregnant women, etc) required to make a halt in the journey for refreshment before continuing their visit to this and other Gaudi works.

An underground car park which would not affect the existing vegetation of the Plaza de la Sagrada Familia, would ease visits for those travelling by car along the Mediterranean coast as well as providing suitable parking areas for the Episcopate, qualified technicians or famous visitors to the Sagrada Familia or to any events held at the Gaudi Centre.

The Gaudi Centre does not attempt to compete with the numerous groups, associations, organisations, etc who watch over Gaudi's work from their respective standpoints and views, but arises from the need to solve an existing socio-cultural problem within a specific, physical, urban area with its particular characteristics.

6. RENOVATED AND RELOCATED GAUDI SCHOOLS

The Sagrada Familia School in its new location at street level will be enclosed by the gardened areas of the Plaza de Sagrada Familia which may or may not be further enhanced by tree lined areas.

In this new location an ornamental lake could be set beside the building to provide it with more privacy and be accessed by specific walkways or, instead, the building could lead on to a lawn or gardened area.

At the outset the School with its three classrooms was dedicated to the teaching of infants and had small playgrounds set behind it. In its new location its use will be different and there is no direct need to reconstruct the original playgrounds and, as such, the building may be reoriented (in accordance with the square) in order to offer greater urban presence on the corner of the square.

7. CONCLUSIONS

It is hoped that the relocation will be made during 2002, which coincides with the 150th anniversary of Gaudí.

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