Academies and Vocational Schools

As a distinctive and relatively new school form, academies and vocational schools are an attempt to bring progressive change to the secondary school traditions within the state sector. The Academy School programme, which is particular to the UK, takes elements of the semi-privately run Charter School movement in the USA and mixes them with a more vocational curriculum form, which is relatively common in Europe. In this category secondary schools in mainland Europe, which illustrate a progressive or radically different approach to the traditional comprehensive educational umbrella, are also included; to the extent that they are specialist schools, however the terminology should not be confused with special schools for students with more extreme educational difficulties. Definitions are not strictly consistent across national boundaries, however we have grouped those institutions together, which reflect a culture of change within this final category.

The secondary school sector is notoriously conservative and resistant to change even where it is seen to be failing. What is clear about this section of case studies is the extent to which architecture is used to make grand statements about the significance of a specialist educational institution, largely state funded, yet outside the mainstream secondary school academic tradition. Progressive thinking acts as a catalyst to new and innovative practice, with the emphasis on architecture as well as education to promote new ways of thinking in the secondary school sector.

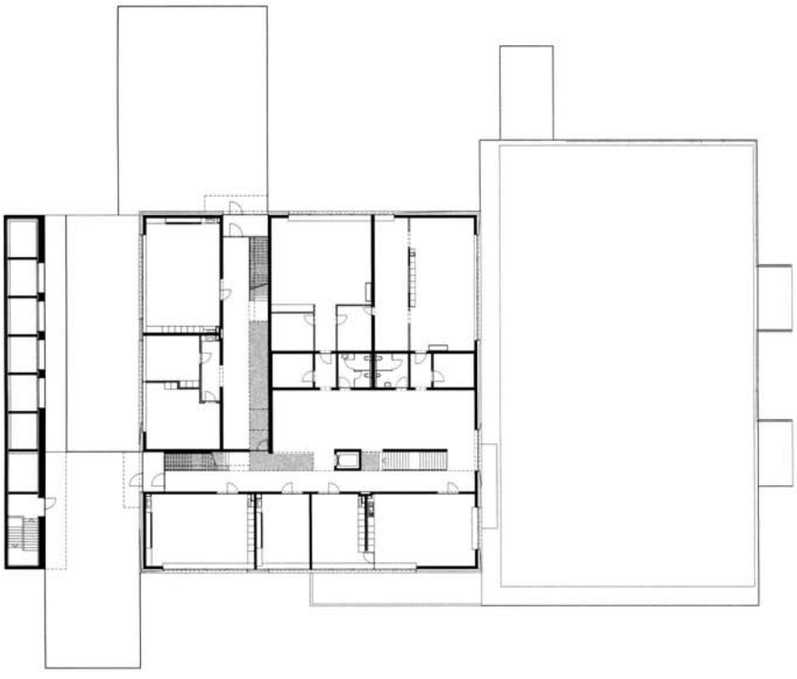
In the UK the Academies programme aims to challenge the culture of educational under attainment and to deliver real improvements in standards. Most academies are located in areas of deprivation with high levels of family unemployment and poverty. They either replace one or more existing schools facing challenging circumstances or are established where there is a need for additional school places. Perhaps the most contentious aspect is the semi-private ownership of essentially state funded schools, which is described as 'sponsorship'. The context for this is that a faith group, a commercial organisation or even a local authority can submit £2 million in sponsorship in return for a degree of control of the institution. The key idea is that private management strategies will help to bring efficiencies into the system and connect education more readily with the needs of the commercial world. Huge investment has been underway over the past five years, however the success in academic terms is open to question. The jury is out, as they say.

For example, the Bexley Business Academy is sponsored by City of London institutions to provide special support for children in this traditionally deprived part of southeast London (pages 234-235). Designed by Foster and Partners, it uses the architectural language of the contemporary office building to illustrate its specialist qualities and appeal to its often disaffected pupil intake.

The Charter School movement in the USA is an attempt to free publicly funded elementary or secondary schools from some of the bureaucracy that applies to normal public schools. This is in exchange for some sort of accountability for producing certain results, such as an educational experience which is qualitatively different from what is available in traditional public schools, hence, the term 'charter'. The idea here is that new and creative teaching methods can be replicated in traditional public schools for the benefit of all children. In 2006-2007 the number of charter schools was up by 11% with schools in 40 states educating more than 1.15 million children. Often a progressive form of environment signals the schools agenda of change. For example the Perspectives Charter School (pages 202-203) in Chicago eschews the traditional modesty of low-key secondary school architecture. Instead it states its support by the city fathers for lower-income students with a landmark building which has a city wide profile in this most architectural of cities.

Dutch education is characterised by a system in which both public and private education facilities enjoy equal governmental funding while being subject to some national regulation. For several decades the Netherlands has implemented policies aimed explicitly to address the needs of children with educational disadvantages. Traditionally these were geared towards disadvantaged Dutch pupils. However, due to large increases in migrant groups from the 1960s, they have become the main focal point for change strategies, with an increasing emphasis on a vocationally orientated curriculum. The Montessori College Oost in Amsterdam (pages 236-237) offers practical job training, with workshops, kitchens and a small sports hall to provide vocational training for the students who come from 50 different countries. Many of them are from unstable family backgrounds, and the less academic, more practically based curriculum options enable skills to be learned for a highly competitive workplace. However, the most important features of the building are proving to be incidental elements such as generous circulation spaces outside the classroom, which like village streets, with exciting balconies and staircases traversing the open atrium spaces below, make chance encounters between students and staff part of the enriched social experience.

In Germany the tradition of a vocational stream from the secondary school level is well established. It is system to which the British and US systems aspire. One of the most distinctive new specialist schools is the Marie Curie Gymnasium in the suburbs of Berlin (pages 240-241). Its architecture is very much of the moment, modernistic and utilising cutting edge sustainability technology. However, it is not a specialist building for deprived students; rather it is for those students who are gifted academically in science subjects, with an intake from throughout the state. Here the response has been to address the needs of gifted children, those who may find mainstream secondary education too slow to cater for their educational requirements. Again the architecture is more contemporary high tech office building than what we are used to seeing in normal run of the mill secondaries.



Ground floor plan

First floor plan with furniture

Site plan | Elevation to the south | Third floor view along corridor with bridge link connecting across to teaching spaces | View into gymnasium, the interface between the lower and upper schools

Flims Comprehensive School

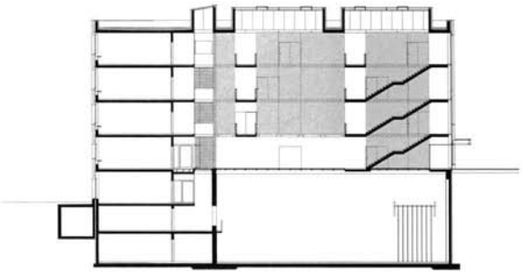
Flims, Switzerland

Architect	Werknetz Architektur, Zürich
Pupils	320 aged 6 - 16 years
Building area	3,580 m²
Average classroom	75 m²
Parking spaces	approx. 30
Build cost	15.5 million CHF
Completion	2003
Year group system	Traditional 2 form entry classbase system

A community school combining primary and secondary school students in one compact and economical multi-storey block

The Flims Comprehensive School is a five-storey block building located in a semi-rural mountainous area. For cost and construction reasons the architects have rejected the usual fragmented departmental approach to school design instead combining the lower and upper school into a single unified form. On each of the main teaching levels there are seven classrooms with WCs and a common room space with an open community room. The circulation space is articulated as an L shaped 'cut' with a lift and two staircases which run through the entire five-storey block to provide a clear and legible organising device. Stairs are positioned at right angles to the external walls providing dramatic views to the landscape beyond. Natural light filters down by way of rooftop skylights; the lower levels of

Longitudinal section



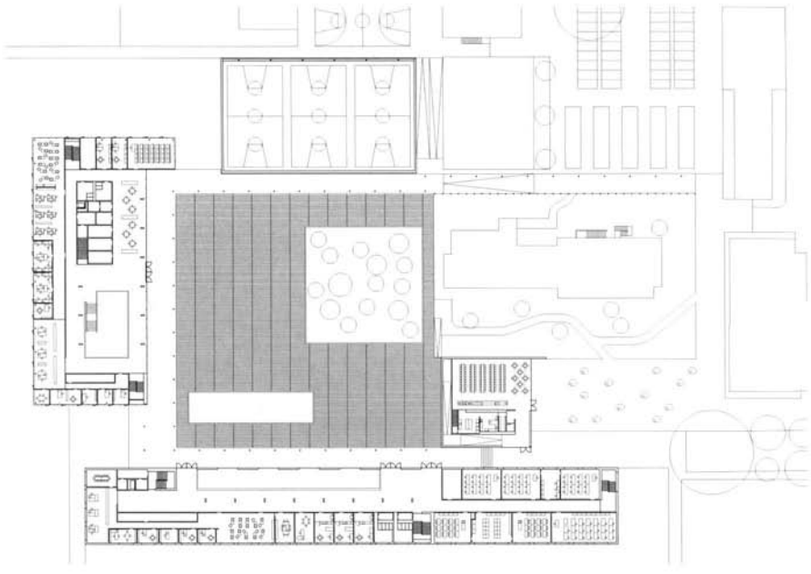
Cross section

accommodation are ventilated by way of gallery cuts in each floor plate.

This unusual and modern school structure combines the lower and upper schools in one compact block. Rather like a contemporary office structure, it makes little use of traditional school iconography or scale references to the widely varying age of children using it; rather a sense of belonging comes through the subtle play of structural grids and the use of modern cladding materials on the highly reflective façades, both internally and externally. This is a grown-up piece of architecture which bestows on the children a sense of their own significance within the adult world. Ultimately its users, a close knit village community, have three buildings in one: a lower school, an upper school and a gymnasium, each of which is connected internally, and each with its own entrance. The sense of community is enhanced without losing the intimacy of the individual teaching spaces by way of this 'magic cube'.

On the outside it appears like a solid shimmering block floating on the hilly landscape, inside it is all lightness and space with dramatic views up and down. This allows the users a real sense of what is going on in other areas as they move around the building from the inside to the outside. As the bell sounds at the end of each lesson period the atmosphere transforms dramatically, as students from all parts of the building circulate. Movement and colour is suddenly reflected via the matt black and grey façade glazing on the inside. Visual and physical contact between different year groups is encouraged in this social mixing pot.

The mix is enhanced by the way in which the younger and older students share classbases on each floor. Thus from floors 1 to 3, there are classes for both 13-16 year olds and for 7-12 year olds. With a common room dedicated to integrated age activities on each floor, the developers have managed an interesting mixed age range system, which maintains order but subtly breaks the convention of only permitting similar age students to come together in a school setting. It is a lesson in its own right.



Ground floor plan

Rear façade of vocational school building | View towards the grammar school across the upper deck with the lower courtyard | View of lower courtyard | Link bridge across one corner of the lower courtyard

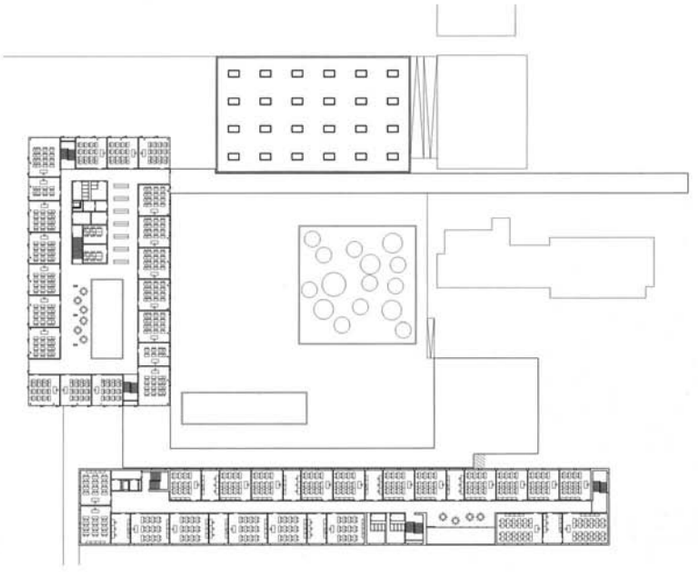
Gymnase et École Professionelle

Marcelin sur Morges, Switzerland

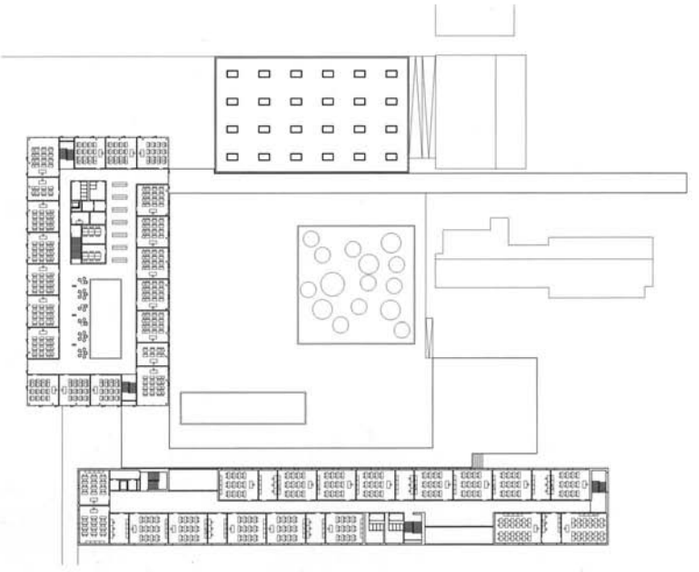
Architect	Geninasca Delefortrie, Neuchâtel
Pupils	1,600 aged 15-18 years
Building area	31,000 m²
Average classroom	60-80 m²
Parking spaces	150
Build cost	87.7 million CHF
Completion	2003
Year group system	Age-related classes

A vocational and academic school are integrated in a sophisticated architectural form

The new school is located on a high plateau overlooking the city of Marcelin sur Morges in the Swiss canton of Vaud. Because of its history and its setting, the new school cannot be separated from its specific context. Marcelin also has an agricultural school and thus a long tradition of working with the land's own unique agrarian culture. This is an area which is extremely close to the land. One of the most obvious features, which establishes this theme, are the gardens and cultivation areas which surround the new building. They are distinctive school features within the region which link the culture of the land directly to the educational curriculum of most local schools. You approach the school through these green areas, a rustic threshold for the modern yet sophisticated architecture of



First floor plan



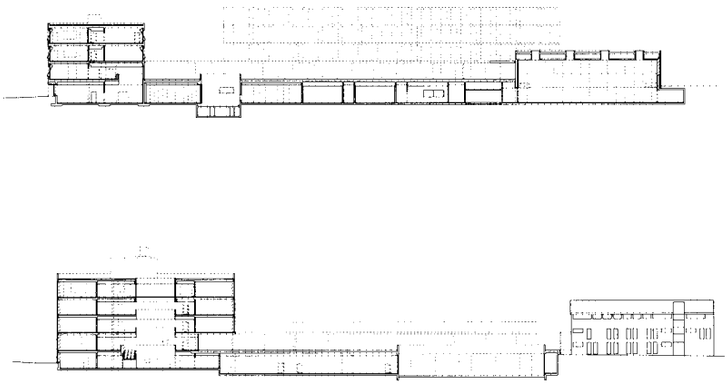
Second floor plan

the new building. The most dominant element on the site is a triple-height sports hall and a double-height multi-functional hall for assemblies and other community uses which reflect each other across the campus. These two spaces form a shared community zone for what is effectively two schools in one, an agricultural vocational school and a long standing secondary grammar school housed in the more glazed wing of new accommodation dedicated to academic subjects. There is a traditional turn of the century arts and crafts building, which engages the main courtyard on its fourth side. The new vocational school comprises a centre for training in agricultural science and management with approximately 40 classes and associated support spaces, offices, a dining hall and kitchen.

Within the small village community of Marcelin, it is like a new town quarter.

The structure of the new development has a strong architectural presence, with buildings organised around a lower open courtyard, which acts as a kind of sheltered interface between the different wings of accommodation. It has a hard formal spatiality, almost urban in quality, and stands in stark contrast to the surrounding residential settlements. There is a horizontal hierarchy to the new structures with lightweight glazed pavilion type buildings which appear to float on top of a more solid single-storey base or podium. The roof of this podium provides a large roof top deck at second floor level as the classroom blocks step back from the inner edges of the small courtyard to form this larger rooftop courtyard. It is a clever play of scale and form variation to create a sophisticated urban architectural language which is dense yet never over-bearing. Each part of the form is articulated in a slightly different way to provide a rich and varied contemporary environment.

The building's functions are articulated externally in three different fenestration types: firstly a more solid 'hole in wall' type of architecture, which is predominantly ground based and utilised within the internal faces of the building. So the ground and first floor courtyard accommodation encloses lounge and recreation areas, private rooms for tutorials and meet-



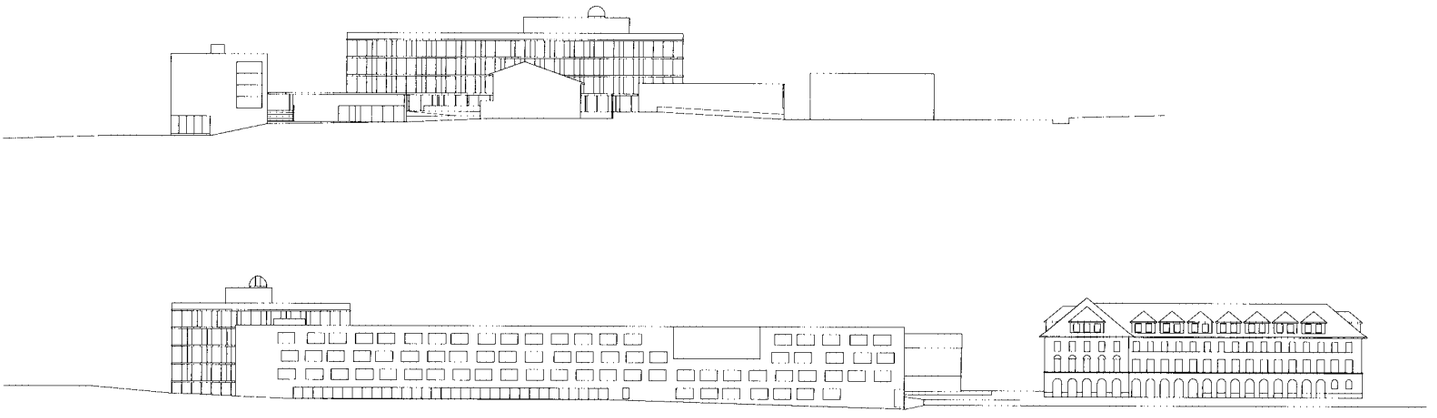
Sections

Interior of student refectory | The library with view into lower courtyard | The sports hall with high level clearstory light | View of the multi-purpose hall | Corner detail link between vocational school corridor and multi-purpose hall

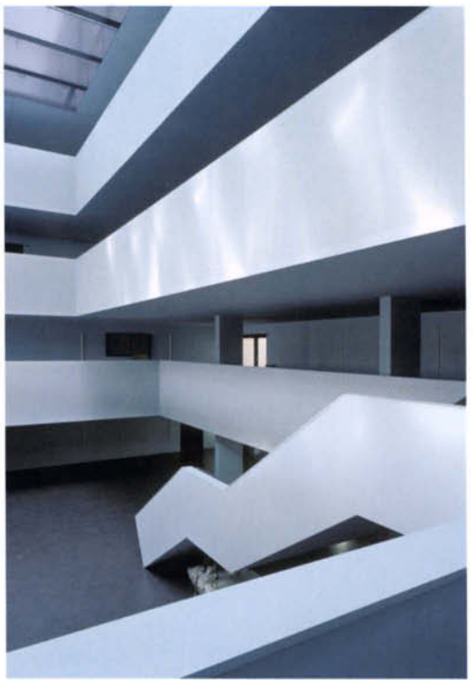
ings, the type of spaces which are more intimate and small scale. Secondly there is a horizontally orientated form of fenestration which is still solid and regular, but not fully glazed. This marks the external classroom façades to the vocational school, presenting a wall-like secure face to the surrounding streets. Thirdly there are fully glazed screen façades which look into the courtyard, again enclosing classrooms of the academic grammar school. They benefit from the north-facing aspect, thus taking advantage of good light and limited solar penetration.

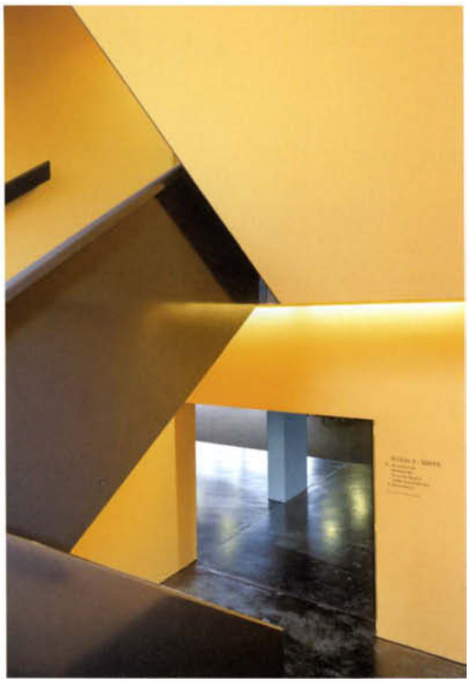
The new buildings are articulated accross the stylish rooftop courtyard space which reunites the vocational school and the grammar school. Its internal volumes concentrate on communal activities, emphasising what the students have in common, rather than their relative academic differences, providing spaces which encourage chance meetings through a sort of promenade sequence of stairs and corridors which run throughout both school buildings. Corner points are treated with particular care, so that the collision of various different forms of architecture are managed spatially to provide linking routes which emphasise threshold yet at the same time are attractive extensions of space. The multi-purpose hall is marked by a series of linked balconies which connect rather than separate spaces. Students from the two schools can enter this space seamlessly. Everything is treated with extreme care so that the end result are high quality school buildings which enthuse children and staff alike and have a type of non-hierarchical architectural spirit which is very unusual and successful.

This project does not set out to be spectacular architecturally, rather it tries hard to integrate itself into the existing context whilst presenting a new and stylish school building fit for the 21st century. It has complexity yet also a strong ordering principle with the use of two large volumes which are a signature for the new development. The blocks are unified at the ground and first floor levels by way of a base building block. Each of the two main blocks are orientated within the topography in a distinctive way: the vocational centre whithin the rupture of the hill, with stone

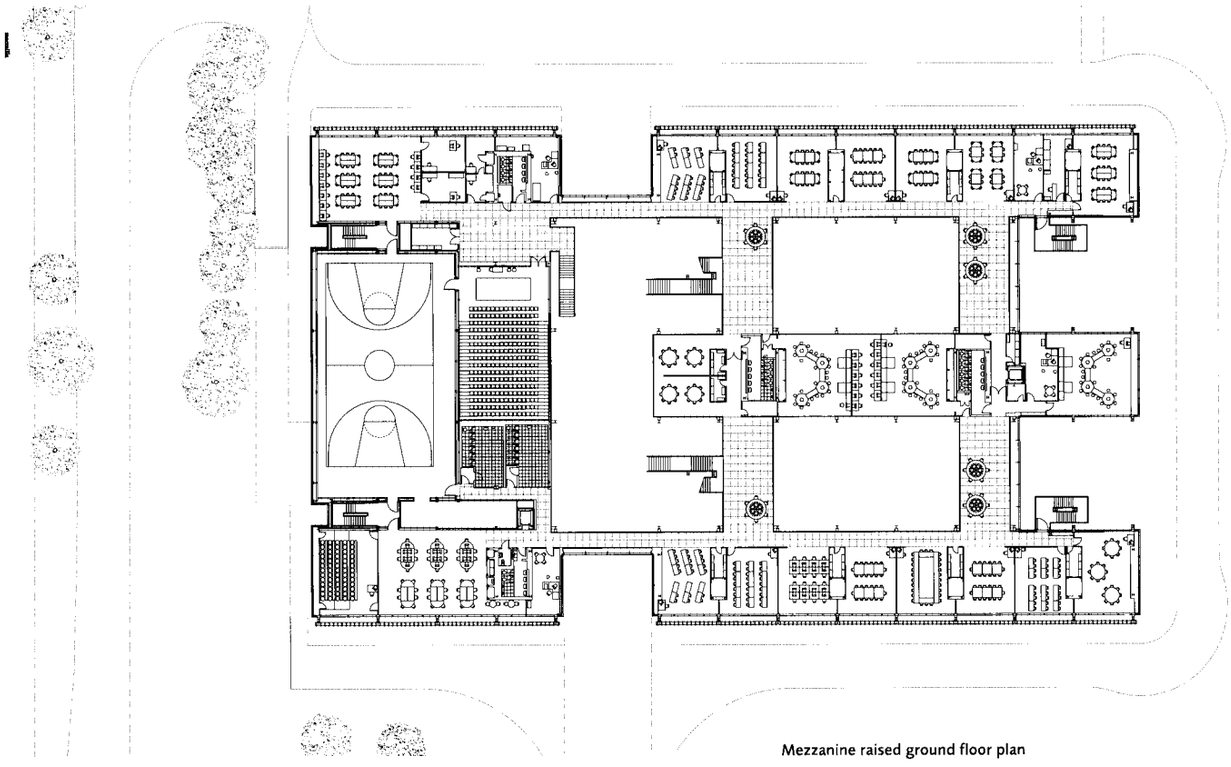


Elevations





walls and deep window reveals which draw attention to interior activities, reinforces the massiveness and plasticity of the volume, whereas the secondary school is placed on a horizontal plain of the higher plateau and is expressed by way of curtain wall glazing, all lightness and transparency. The result is a new hybrid form of school building, which dissipates the problems of selecting students for a particular stream of learning too early.



Mezzanine raised ground floor plan

View of teaching spaces from across the art courtyard | Main entrance | Interior view of technology courtyard | View of business courtyard with restaurant beneath mural showing all new pupils | A lesson takes place in the courtyard

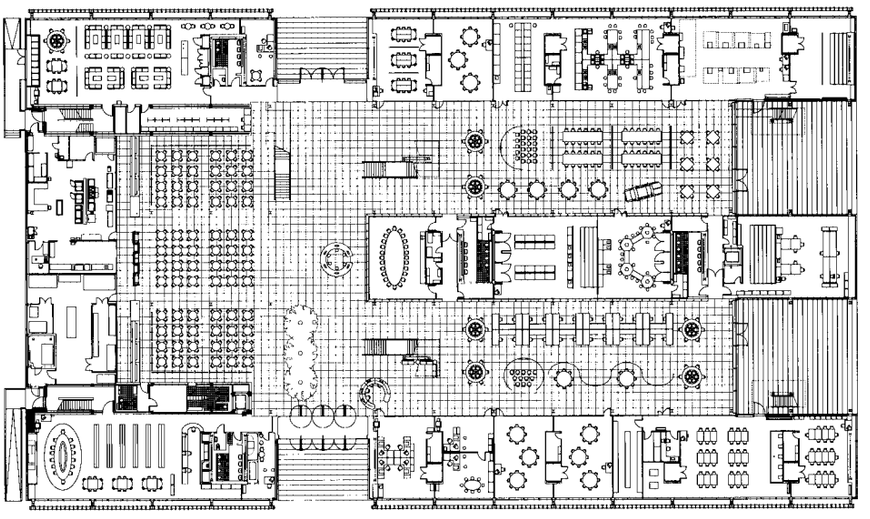
Bexley Business Academy

Bexley, London, UK

Architect	Foster and Partners, London
Pupils	1,350 aged 11-17 years
Building area	11,800 m²
Average classroom	70.6 m²
Parking spaces	n/a
Build cost	n/a
Completion	2003
Year group system	Age-related groups

Corporate image with highly glazed teaching areas and the use of open-plan teaching areas

The Bexley Business Academy in southeast London is one of the prototypes for the new generation of secondary schools in the UK. The idea is to bring a touch of market driven commercialism to the world of education. Where this vision manifests itself most obviously is in the design of the building. Walk through the doors of Bexley, and the interior immediately feels more like a corporate headquarters than a school. From the entrance and reception desk, visitors have views into a large top-lit atrium space and beyond to the restaurants, meeting rooms and classes, some of which take place in open-plan areas. To make the banking idea more explicit, the entrance atrium even has a raised stage area to mimic the dealing floors to be found in the City of London.



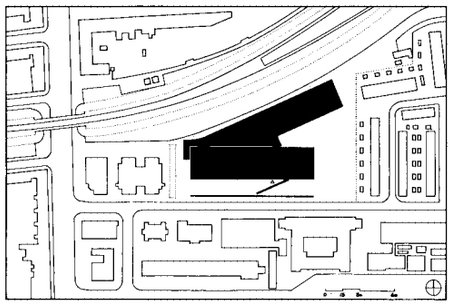
Ground floor plan with main entrance into business courtyard

Even traditional closed classrooms are mostly glazed to make the activities transparent. The use of a structural steel frame gives plenty of scope for future changes to the form of individual rooms. At present the basic layout follows a traditional programme with four class bases of 60 square metres for each year group. Each classroom has flat screen Apple Macs with teachers standing at interactive white boards.

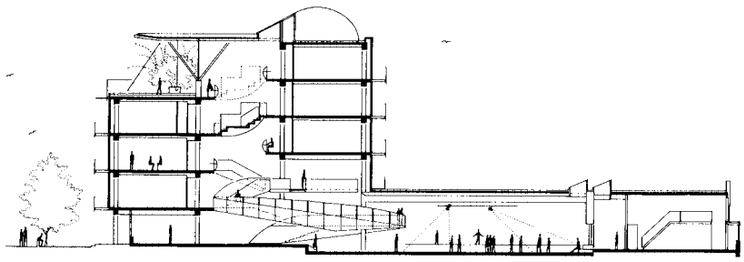
The scheme is organised around three glazed courtyards, each with a different functional theme; there is the entrance or business court, a technology court and an art court. When we visited there was a still life art class taking place with the group clustered around easels in the art court. Users are made constantly aware of the whole school community simply because they can generally see what everyone else is doing.

According to lead architect, Spencer de Grey, the scheme's sponsors took some lessons from the architects' own office layout in Battersea, which consists of open-plan working areas with discrete bays off the main spaces to provide for quieter and more contemplative activities. 'The main emphasis is on transparency to create a different slant on the normal educational experience', he says. There is a radical agenda here which raises real questions about how far change in architectural typologies can successfully mediate between the traditional pillars of education and the government's desire for more work-savvy school-leavers.

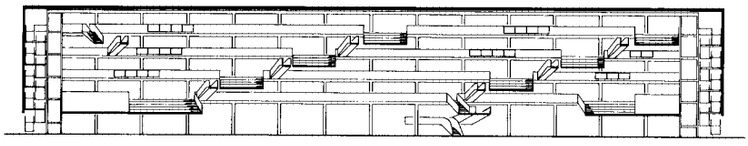
Perhaps inevitably, the flaws in this approach can be seen in the somewhat closed-off nature of the building. It largely ignores its surrounding site and tends to function as an internalised world where students can, if they choose, remain indoors throughout the day; and many do. With its single entry point and constant surveillance which the layout enables, this is an inherently secure environment which feels somewhat institutional. Time will tell if it wears well at the hands of subsequent generations of school students. However, in its pristine new condition, it is very much a place to be seen by both staff and students alike. It is a building which makes education sexy.



Site plan



Cross section



Longitudinal section

End bookstop elevation | Main street elevation makes the building out like an ocean liner, sleek and modish | Connecting staircases and social chill out spaces bridge the void at first floor level | A student works on his laptop in one of the pod study areas between the void | View up towards the void taken from the main assembly hall: A symphony of materials collaged to create a stylish layered space ideal for teenagers' sensibilities |

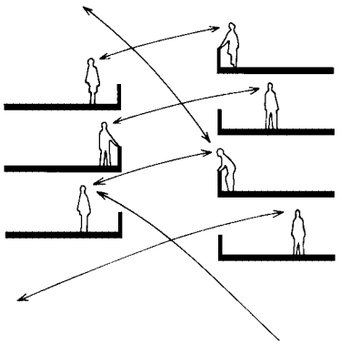
Montessori College Oost

Amsterdam, The Netherlands

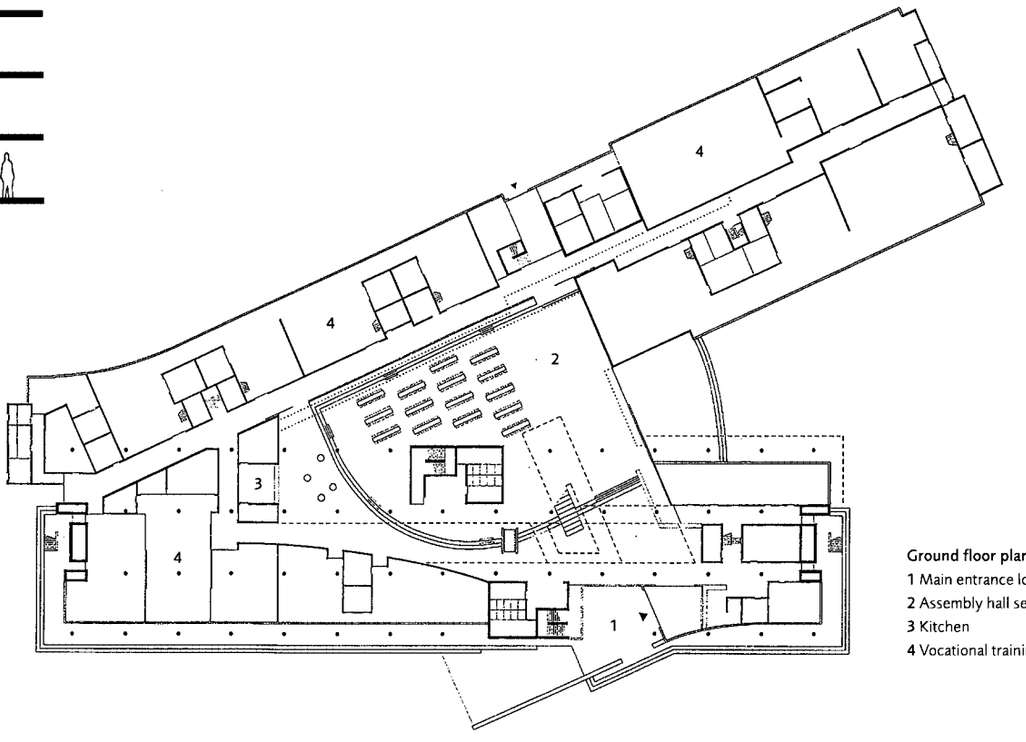
Architect	Herman Hertzberger, Amsterdam
Pupils	1,600 aged 11-16 years
Building area	17,016 m²
Average classroom	65 m²
Parking spaces	32
Build cost	15 million EUR
Completion	2000
Year group system	Traditional 2 form entry classbase system

Montessori Vocational School with enhanced communal and circulation spaces to emphasise the social and interactive side of education

The architects believe that teenage children prefer to hang out together rather than with adults. However, there is little dedicated space for teenagers to do this in the modern city, so they have developed the school as a place not just for formal learning but also one with lots of areas beyond the classroom, zones which are ideal for chance encounters. The architecture of the building also has a peculiarly 'cool' style, which feels unusual, a sort of refined street architecture, yet internalised and made secure for students to enjoy and for staff to keep a discreet eye on the diverse range of students attending Montessori College Oost. Diversity is one of the key aspects of the brief which the designers had to address. Oriented towards the needs of the refugee population in this area of Amsterdam, this is a school with a critical role to play in

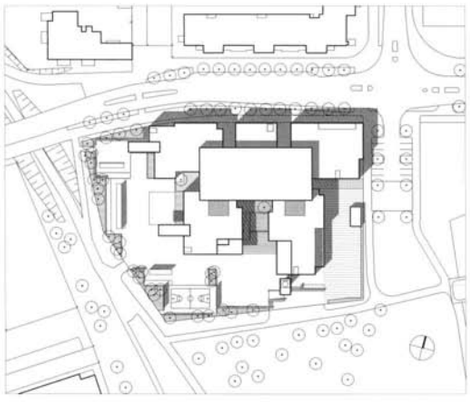


Conceptual sketch



Ground floor plan
1 Main entrance lobby with offices
2 Assembly hall set out for lunch
3 Kitchen
4 Vocational training spaces

supporting vulnerable children and helping their families to integrate into the community. Students of more than 56 different nationalities attend. Most speak little or no Dutch. For that reason alone, the architects believed that the environment needed to play a vital role in reassuring students, primarily through a sort of architectural legibility within the space-making, it being complex yet understandable and therefore not disorientating. This is a building students can decipher, like a second language. So drawing on the metaphor of the classical city space, all the areas beyond the enclosed classrooms were conceived of as an urban plaza, open to all students within the community, who are free to explore between lessons, at lunchtime and at the end of the day, just as they might explore the city itself. The main teaching accommodation is formed as a dual aspect block six storeys high in places and almost 100 metres in length. There is also a vertical gallery carved out between the two classroom blocks, with intermediate half floors on either side of the void. The conceptual sketch illustrates how students benefit from views across the void, with opposite floors at intermediate levels to each other. This also facilitates stepped connections between the two sides, encouraging a constant physical dialogue which evokes a sense of spatial complexity, again a characteristic of the city. The connections across the void are bridged over in lots of places. This bridging accommodation is formed into stepped galleries where students can sit. It is a building which trusts the students with its openness. The desire to avoid compartments with fire doors everywhere has a cost, however; the central void cannot be used as a primary fire escape. Instead the designers have provided external galleries, which connect to outside fire escape stairs at three points. On the ground floor, the plan appears to bisect, forming an additional splayed wing, which runs parallel to the adjacent railway line. This wing contains the main vocational teaching areas, large workshop spaces for the development of trade skills such as car mechanics, plumbing and joinery. The pre-eminent position of these areas and the generous well-equipped workshop spaces balance the importance of vocational training with that of the more academic subjects, which take place in the conventional, closed classroom areas. Between the two wings is the assembly hall, a space for a multitude of different activities.



Site plan

Ground floor plan

1 Main entrance
2 Project classroom
3 Home classroom
4 Library
5 Arts class
6 Music
7 Sportshall
8 Home economics
9 Technical crafts
10 Administration
11 Central space, canteen

The lower school classrooms are in the yellow clad block | The observatory tower, a decorative feature which emphasises transparency | Main entrance orientated to the south with contrasting grey and brown cladding panels with the glazed atrium at the centre | Atrium with galleries | View inside the atrium looking down towards the main staircase

Aurinkolahti Comprehensive School

Vuosaari, Helsinki, Finland

Architect	Jeskanen-Repo-Teränne; Leena Yli-Lontinnen
Pupils	540 aged 9 -15 years
Building area	6,370 m²
Average classroom	40 m² (special classes 65 - 90 m²)
Parking spaces	10
Build cost	13.4 million EUR
Completion	2002
Year group system	Age-related 3 form entry

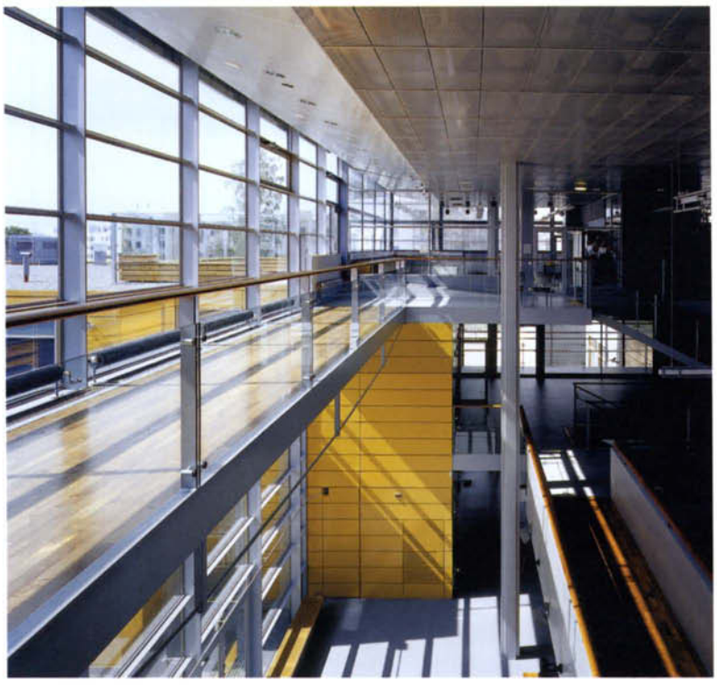
Complex office type structure with different departments identified by distinctive architectural treatment

The design incorporates departmental teaching areas arranged as clearly articulated colour coded mini-buildings or 'cells' in their own right. Each department is formed and enclosed by its own walls yet, at the same time, remains part of a coherent whole. The school classrooms and social study cell is clad in bright yellow painted steel panels, a gym block is picked out in brownish red panels, the science/technical workshop department is in grey cladding panels. A grand triple-height glazed canopy identifies the entrance or threshold to each of the three departments. This provides a further ordering device within this highly legible architectural composition.

Between the five blocks there is a three-storey high fully glazed central 'atrium' area, which not only acts

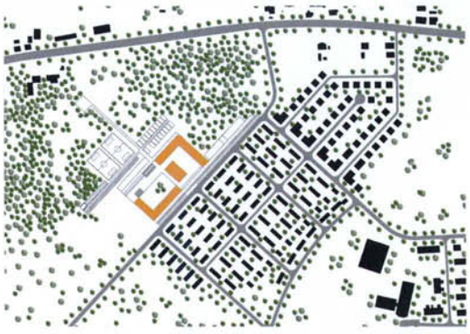
First floor plan

South elevation

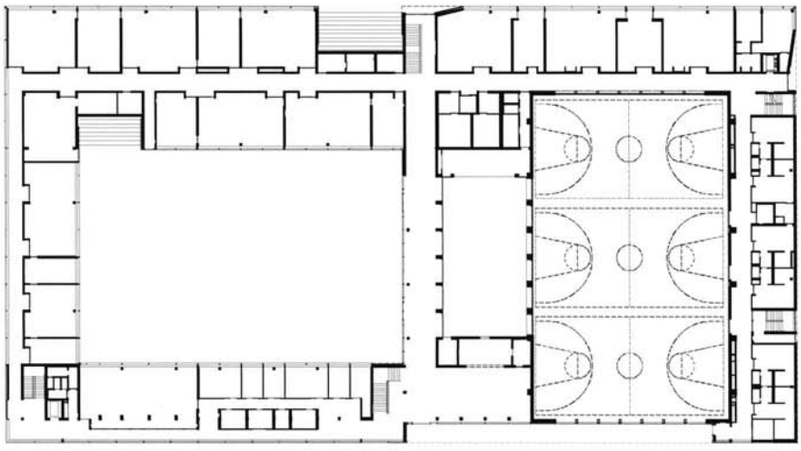


as the main circulation route between departments, but also becomes a reference point for the social life of the school as a whole. It is a place where students meet by chance on the staircases and ramps running around and between each level and the various specialist teaching areas; the galleries and balconies which surround the atrium are used as break-out zones with computer and power access for study and smaller social groups outside the classrooms; the school's main canteen and dining area spreads out across the ground floor of the atrium to provide a vibrant social heart for the community, serviced by an adjacent kitchen. As staff and students rise up through the floors, they can look down and across to maintain visual contact with all parts of the institution.

The teaching departments consist in the main of traditional cellular classrooms, however, there is a strong emphasis on open-plan learning spaces, with three large homebase areas at the heart of each of the academic teaching blocks. These areas provide a variety of workspaces, together with storage areas for pupils, washrooms and a teacher's office; they give students a more intimate homebase area for each age range, and also open up the possibility for team teaching in a variety of forms. Each part of the building is clearly articulated yet slots effortlessly into the whole. Entire departments can be quickly identified through highly glazed components, which wrap the main central core areas, providing excellent visibility. This sense of transparency enables students to be visible, and at the same time it promotes a sense of awareness of the user's own position within the building, whether it is on the ground floor or in the open galleries at the top of the building. It gives a sense of belonging to individual departments and the excitement of an adult environment where the next lesson is enhanced by the experience of built form; students can almost always see which part of the development they will be heading for next. The sense of order, which comes through this controlled use of colour and materiality, makes this an exemplar of the new architecture for schools.



Site plan



Ground floor plan

The rooftop play deck is a generous gesture | Rear façade with contoured land stepping down to provide a natural amphitheatre for sports competitions | Typical corridor with coloured glassed lower panel and mesh paneling covering the large horizontal glazing panels above | Periscope showing mirror images of roof top | Typical classroom

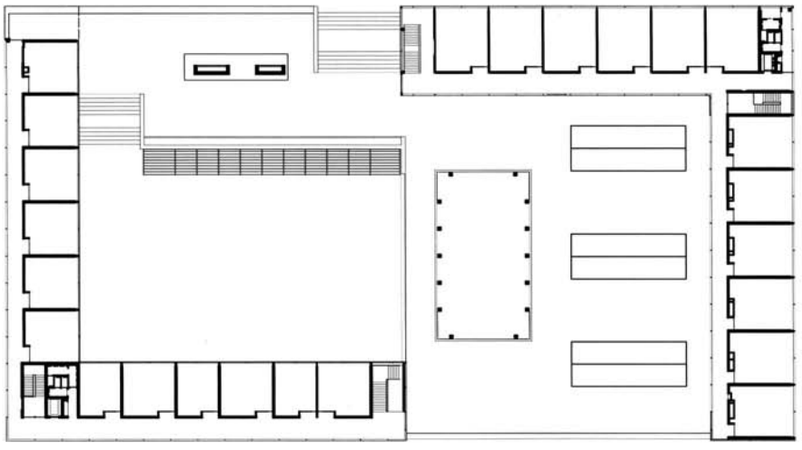
Marie Curie Gymnasium

Dallgow-Döberitz, Berlin, Germany

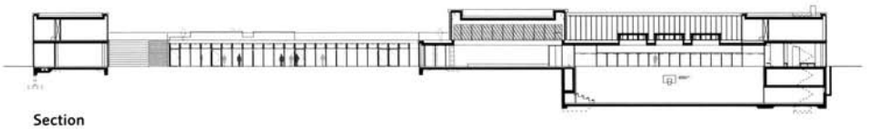
Architect	Grüntuch Ernst Architekten, Berlin
Pupils	420 aged 11-18 years
Building area	5,184 m²
Average classroom	65 m²
Parking spaces	approx. 60
Build cost	14.7 million EUR
Completion	2006
Year group system	Age-related 3 form entry, 6 grades

Rigorous architectural cool in a suburban setting

This was a scheme won in competition by the young architectural practice, Grüntuch Ernst. The brief was for a specialist science academy for high achieving students. Located on the edge of a new suburban community, the idea was that the school would attract people to live in this town in former East Germany which is easily accessible from the centre of Berlin as an efficient suburban railway takes only 17 minutes from the Zoo Station. The feel of the building does not seem particularly at home in its suburban setting, where manicured lawns and picket fences jostle for attention with neatly parked rows of Mercedes family saloons. This is suburbia with a capital S, very much on the lines of middle America suburban models. The pitched roof single-family housing has a higgledy-piggledy disorder, which is intended

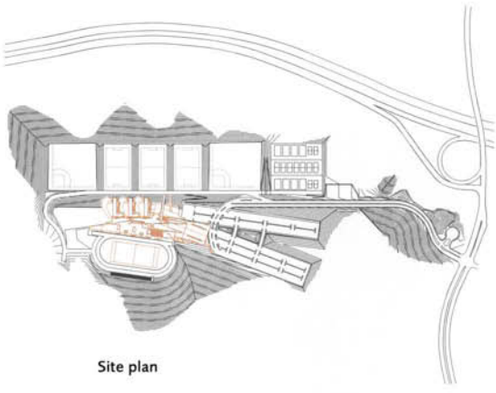


First floor plan

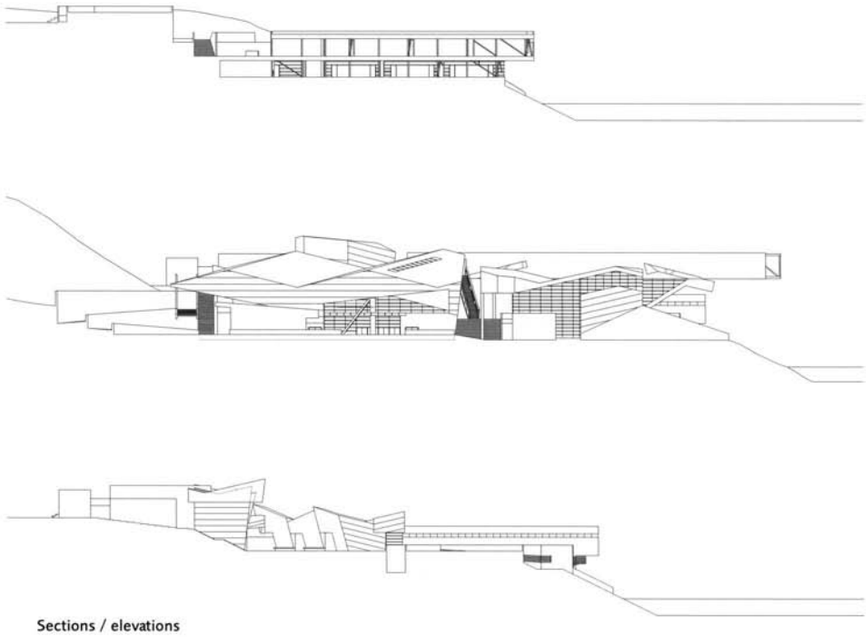


Section

to be homely. The precise high tech architecture of the new school is more like a science research centre than a school. It almost feels marooned out here, at odds with its twee rustic surroundings. According to the architects, the school fits into its surroundings by marking a clear edge to the housing development and the Brandenburg countryside beyond. It is a sort of inhabited wall, which is intended to limit the spread of suburban architectural mediocrity. The building is in the form of two main L shaped wings of classroom accommodation which are connected and linked at first floor level by a children's play deck (the roof of the first floor) leading down onto the sports ground to the rear. These two organising elements grasp and enclose an open play court on one side of the block and a large community hall and sports hall on the other. The sports hall was deliberately buried within the deepest part of the building to reduce its triple-height bulk. From its sleek exterior, it is difficult to imagine that this building houses such a large volume of accommodation. The external façades, indeed the entire architectural treatment, emphasises the horizontal plain, with cladding panels in varying shades of shiny green aluminum. They are set within a precisely articulated module, which controls the window and wall panel proportions throughout. On the south-facing main façade windows, the entire face of glass is etched in tiny words from Marie Curie's Nobel prize speech. The glass is also intended to control solar penetration and keep students cool. Indeed the interior of the building can only be described as cool. We visited on one of the hottest days of summer, and the environment was very comfortable. Naturally ventilated throughout, the building utilises a system of night-time cooling, shaded opening louvres, through ventilation and solar control glazing supporting a very successful passive environmental system. However, it is also cool in another way, almost austere in its interior architecture, full of colourless light, reflecting from white or grey floor, ceiling and wall surfaces. Certainly the building bears little resemblance to the secondary schools I knew as a child, rather this reminds me of a high quality corporate headquarters, slightly mechanistic, yet emphasising quality and expense at every turn. It is definitely one for the future, a vision of how education might feel in 50 years time.



Site plan



Sections / elevations

View of central social street with jagged metallic cladding precisely detailed in sharp relief to the mountains behind | Overall view of complex against the backdrop of the mountain range | Typical classroom | Performance space

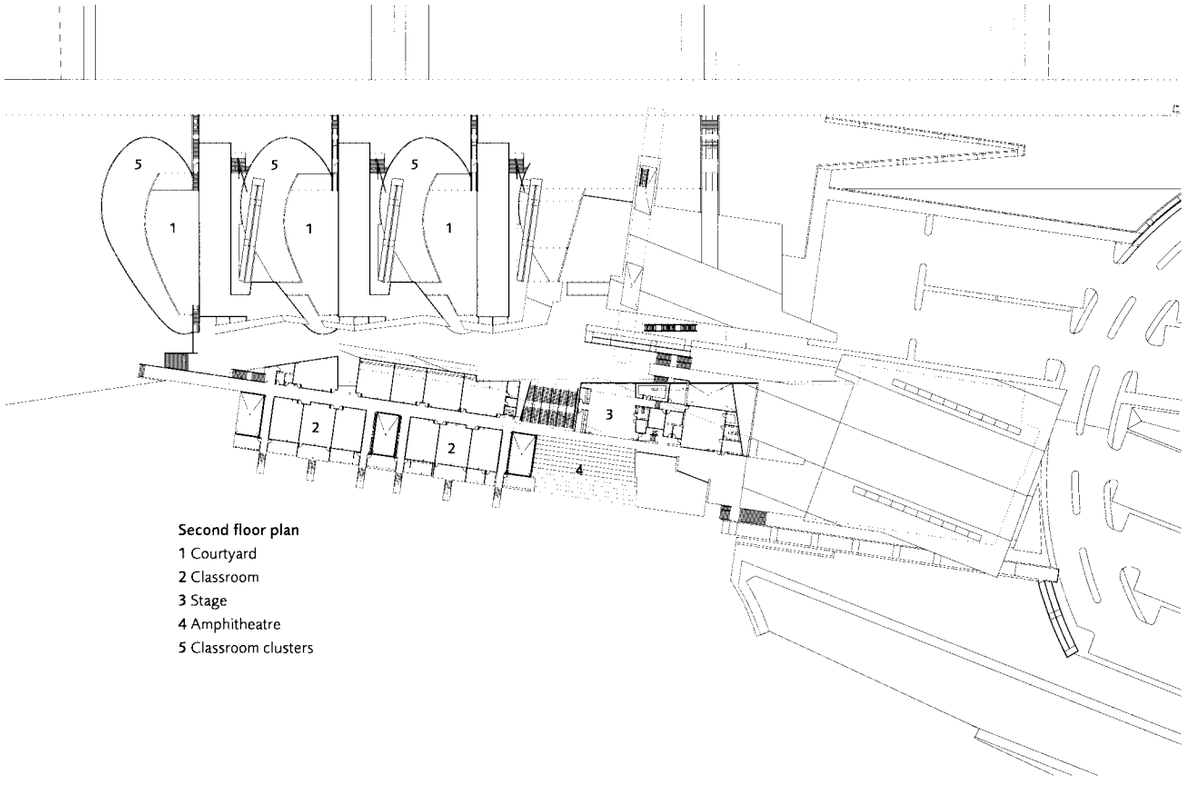
Diamond Ranch High School

Pomona, California, USA

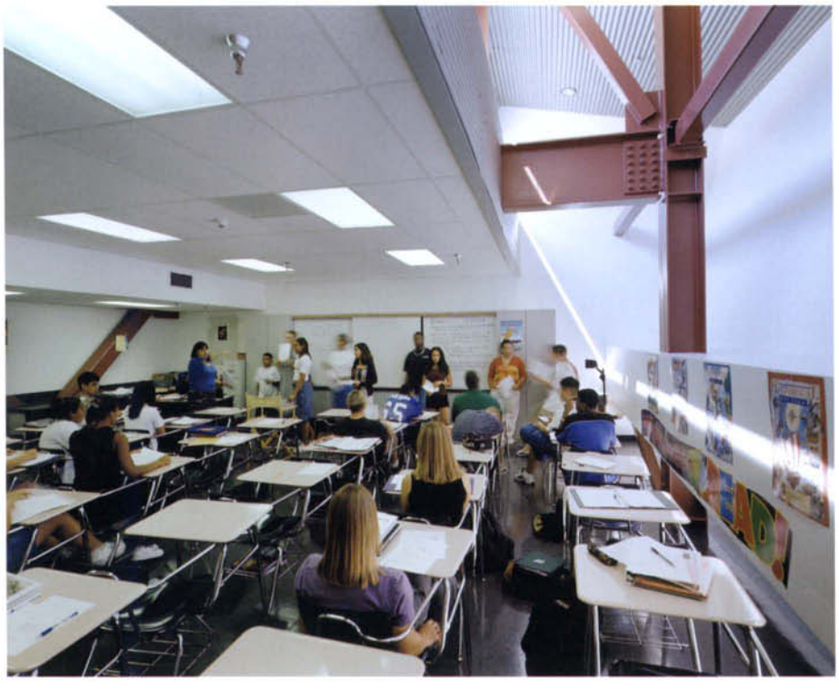
Architect	Morphosis; Thomas Blurock, Santa Monica
Pupils	1600 aged 11-16 years
Building area	15,000 m²
Average classroom	60 m²
Parking spaces	770
Build cost	n/a
Completion	2000
Year group system	Age-related groups in 50 classrooms

'Signature' architectural statement to elevate the image of schooling within the community and further afield

The jagged and inherently unstable forms of the Los Angeles foothills inform the language of the buildings as the architecture takes its organisational cues from the natural topography. Two rows of fragmented interlocking built form are set together tightly on either side of a long central 'canyon', or street, which cuts through the face of the hillside, as might a geological fault line. The street becomes the main social space sitting between the departmental areas and classrooms. As a counterpoint to the suburban nature of its surroundings, the street encloses and constricts this space to mimic the urban experience of a European town centre. The plan is organised around this street in the form of three schools within a single school plan, with two large classroom blocks and a sports and social building.The site, which runs parallel

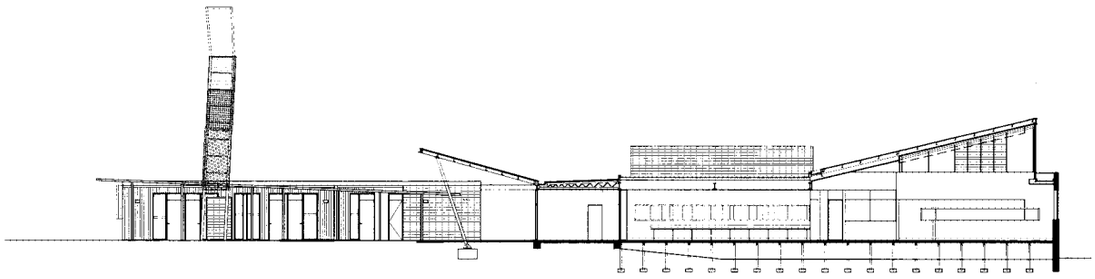


Second floor plan
1 Courtyard
2 Classroom
3 Stage
4 Amphitheatre
5 Classroom clusters

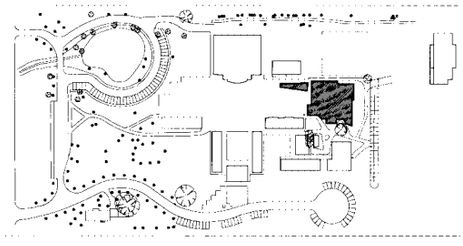


with the suburban street below, is a steep slope. To develop this complex match between the topography and the brief, with its extensive architectural programme, provided a significant challenge. In a sense the architect optimises the relationship between the rocky landscape and the new building, so that the building takes the form of a highly jagged sculptural layer defined by a thin metallic continuously undulating roof. The terrain folds around the main buildings and is carved out to form a solid/void rhythm across the site, a strategy which creates outside courts or social meeting spaces between the blocks, giving light and air to the dense accommodation schedule; these courtyards provide relief from the tightness of the built form. The teaching spaces are organised in three 250 student classroom clusters (which was a programmatic requirement). The lower block has two storeys of accommodation, the upper block has three storeys. However, these teaching blocks are articulated as solid slabs of building, which is in sharp contrast to the lighter, more fragmented shapes that define the central street. The blocks lean over the social street creating a surreal landscape which is protective and enclosing yet slightly threatening at the same time. The sports and social building contains a gymnasium with changing rooms and a cafeteria, which acts as the social heart of the complex. There is a monumental stairway which bisects the linear blocks. It functions doubly as a main pedestrian route from the entrance off the lower level street and up to the roof terrace and football field above; the stairway dissolves into an outdoor amphitheatre at its highest point which is embedded in the hillside. There is an administration block, effectively a smaller fourth element completing the overall composition. It is at the main knuckle point of the north-south and east-west geometries providing a secure entrance threshold to the self-contained confines of the interior.

It is almost impossible to view this building in its totality, a series of fragmented architectural events interweaving with the landscape to create rich spatial tension. It is very unusual to find such a stirring sense of space within a school building, and time will tell whether this has a positive effect on the quality of learning. It is a building which emphasises architecture over and above almost anything else.



Section/elevation with tilting tower



Site plan with new buildings shown in grey

Rear elevation with library block; every elevation has a different feel responding to the orientation and view | The building at night showing the tower and entrance canopy with the music wing on the left | Mondrianesque decoration illuminates the junior library entrance | Skylight feature in the senior library: natural light is reflected into the space to create a sense of drama

Ivanhoe Grammar School

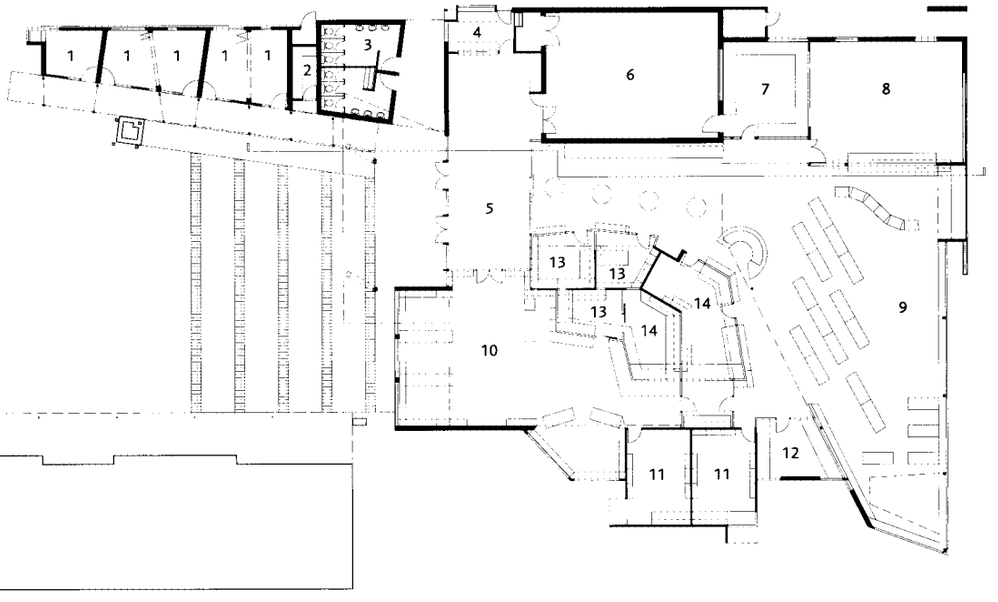
Mernda, Victoria, Australia

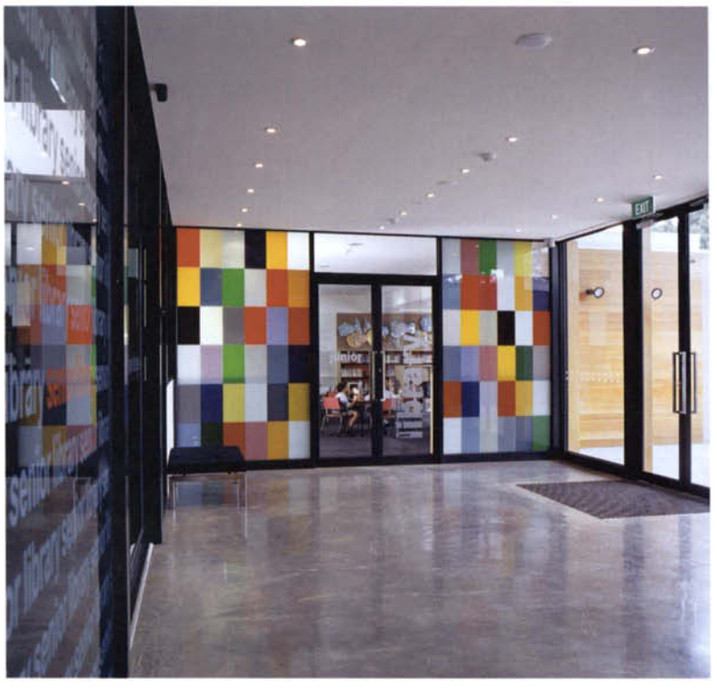
Architect	Bates Smart, Melbourne
Pupils	600 aged 6-16 years
Building area	1,200 m²
Average classroom	71.8 m² (integrated learning)
Parking spaces	60
Build cost	1.8 million AUS
Completion	2001
Year group system	Traditional 2 form entry classbase system

New resources and enterprise centre for primary and secondary students located on an existing campus

This new student resource centre is composed of two buildings and a tower. The main building, recognisable by its large, sloping entrance canopy, contains libraries for the senior and junior schools together with rooms for creative arts performance, multi-media learning, study rooms, staff rooms and kitchen facilities. Adjacent is the much smaller music block comprising sound proof rehearsal rooms. The third element is a 14 metre high tower, a gleaming feature which is lit up at night, a transparent beacon which helps to compose the whole into a unified work. It is like a church in this respect, its startling presence on this disparate campus transforming the old-fashioned idea of library into a modernist edifice full of light and energy. The building was originally conceived conventionally as a series of separate functional

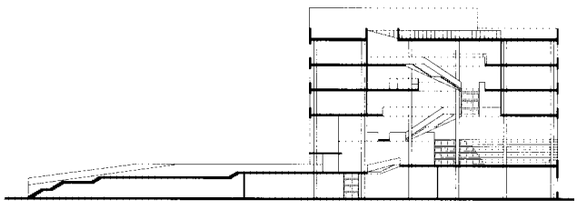
Ground floor plan
1 Music rooms
2 Storage
3 Bathroom
4 Kitchen
5 Foyer
6 Studio
7 Multi-media
8 Classroom
9 Senior library
10 Junior library
11 Staff resources
12 Study
13 Offices
14 Workrooms



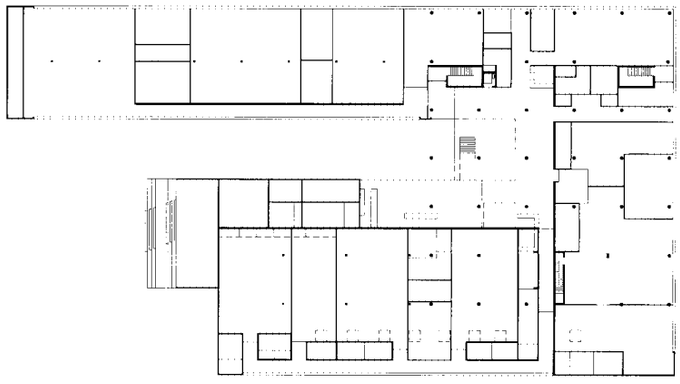


spaces, a suite of rooms each with its own defined use; however, as discussions with the client developed, it became clear that creating flexible multi-use spaces would be to the students' advantage. The entrance foyer was expanded to become a space for hanging out. It in turn flows naturally into the senior library, predominantly open-plan yet serviced with a range of more enclosed study and classroom areas. It is, however, the range and diversity of windows and roof lights with sloping highly differentiated ceiling planes which create the sense of drama within the new building. Flexible technology is not just about computer aided learning, an individual working on his or her own, contained by four walls and the screen anyplace. Rather, as students have access to learning anywhere, so that in theory the classroom becomes less important, it becomes critical to ensure that social interaction between students is maintained and encouraged. Thus the new building will act as a classroom for 600 people at any one time. This concept of the building as a flexible mega-classroom will allow for learning in a less confined way than the conventional classroom permits. The space enables students to be quiet and isolated if they need to be; they can find hidden low corners, a window booth which orientates out rather than in. Alternatively, if they feel social as they work on a task, there are big open areas full of light which encourage a sense of interaction. It empowers the students to feel grown up, as it treats them with respect through the freedom of the plan and the strength of the architectural experiences it provides.

The new building with its tower and beautifully lit interiors conveys a sense of environmental sophistication to a previously mundane campus of portable classrooms and unremarkable institutional buildings. Strategically placed at the centre of the school's campus, it provides a heart and focus to both the school and the wider community (the centre is open for public use in evenings and at weekends). Each space has been designed on its own terms for the maximum emotional potential, exploiting views and orientation. The building is illuminated at nighttime, with each part of the composition highlighted with colour to provide legibility and order. The use of the strong vertical element is symbolic, a statement of the importance and pleasure of learning.



Section



Ground floor plan

Entrance staircase | Lateral façade with technical classrooms in the 'base level' | View of central void | Grand staircase | Study area outside the classroom

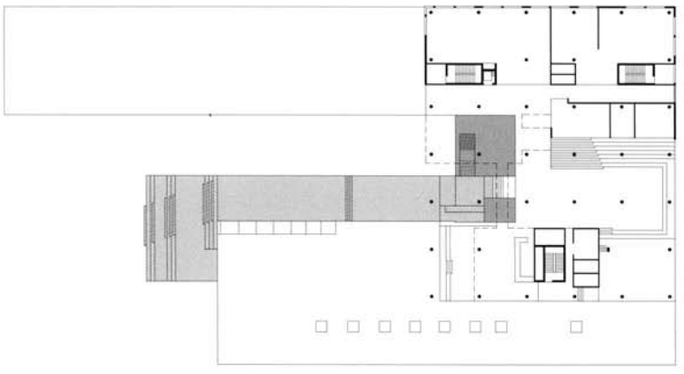
Secondary Intermediate Vocational School

Hoorn, The Netherlands

Architect	Herman Hertzberger, Amsterdam
Pupils	600 aged 11-16 years
Building area	10,300 m²
Average classroom	65 m²
Parking spaces	6
Build cost	12.5 million EUR
Completion	2004
Year group system	Traditional 2 form entry classbase system

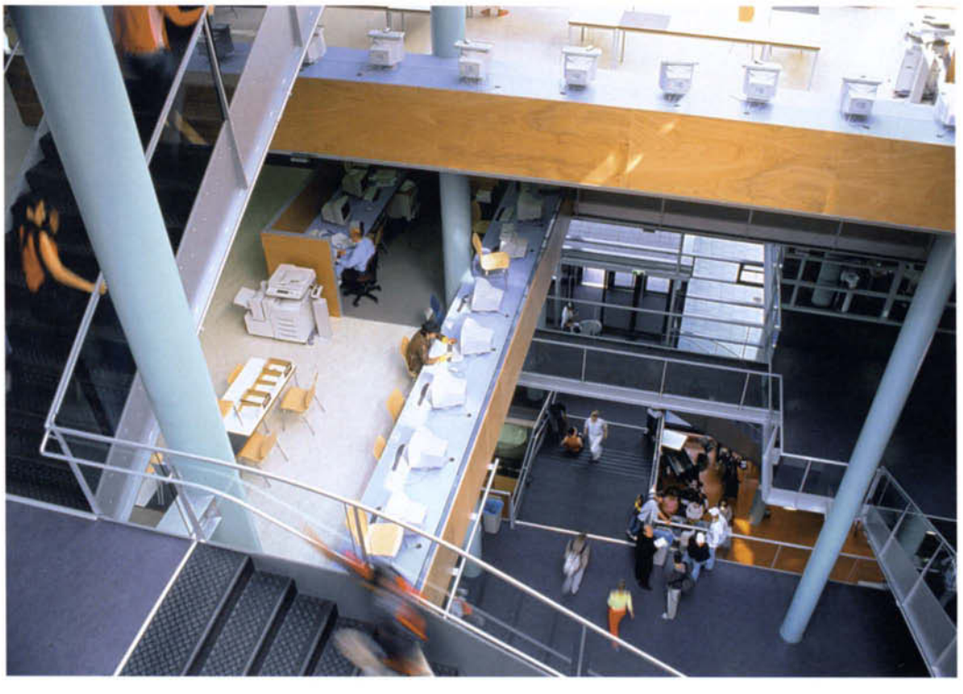
Compact multi-storey form to optimise site spread and keep construction costs low

The most compact solution was required here partly because of the limited site area, but in particular to keep the costs down, both build costs and running costs. Therefore the architects chose to stack the building on six storeys with classrooms around the outside, all served by a central void, with lifts, staircases and generous balcony/gallery areas at each level. As the most common form of school building is a single-storey volume spread across a green field setting, this is very unusual. Here is a more sustainable form with minimal external wall surface area to provide much lower running costs. However, the form provides a more immediate benefit in terms of common circulation areas, which are concentrated around the central 'core'. The most obvious benefit are the generous staircase areas, which



First floor plan

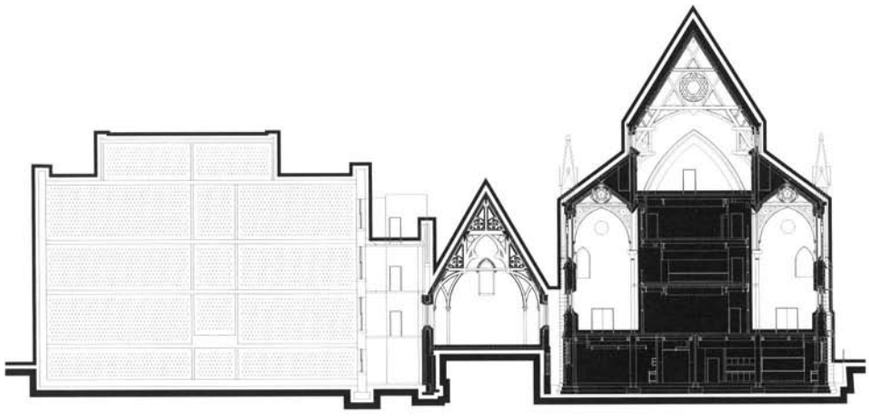
Second floor plan



act as spaces where students can meet and chat whilst changing lessons. There is a real sense of theatre about this movement corridor, with little bullying possible since everyone is in view all the time.

This school for intermediate vocational education naturally contains a considerable area devoted to practical instruction rooms and workshops along with the more conventional classrooms for teaching academic subjects. It seemed obvious that these vocational spaces, which needed to be larger and host activities such as applied car mechanics, should be at ground floor. In effect, the brief has forced the architects to dedicate two levels, a so-called 'base' level and the raised ground floor level, to vocational training spaces. The ground floor level doubles as the main entrance area which is accesed via a grand staircase that uses above the base level and leads all students into a large entrance hall, or the so-called 'central square'. Here everything and everyone comes together. There is a café and entrance (with rooftop terrace) and a music room/stage for performances to the entire school and community beyond. There is no separate assembly hall or auditorium; instead the void defines the central space, which has large stepped seating areas forming a distinctive internal landscape, a trademark feature of this architect. The staircase leading up to the intermediate floors are approximately 17 metres wide, and quite clearly they are much more than stairs. The second floor contains staff rooms, multi-media spaces including a conventional library, art and crafts areas and the central reception point. Each of the upper floors has a working space around the void before you get to the classrooms. Comprising an area approximately 7.5 x 25 metres (190 square metres), it is a secondary area for activities outside the classroom.

The architectural dexterity of the form is particularly evident in the central circulation void. It is no simple vertical hole; rather it appears to twist as each layer of accommodation adopts its specific layout. The open stairways are located in different positions as they lead up through each floor. Circulation becomes a real promenade, with constantly changing views as one ascends each level. At the top is an enormous roof light, which allows daylight to penetrate right down to the ground floor level.



Cross section

The courtyard at night | School court with its glass atrium connecting the church to the old school | View of the new break-out space | The soaring volume of the original church

Packer Collegiate Institute

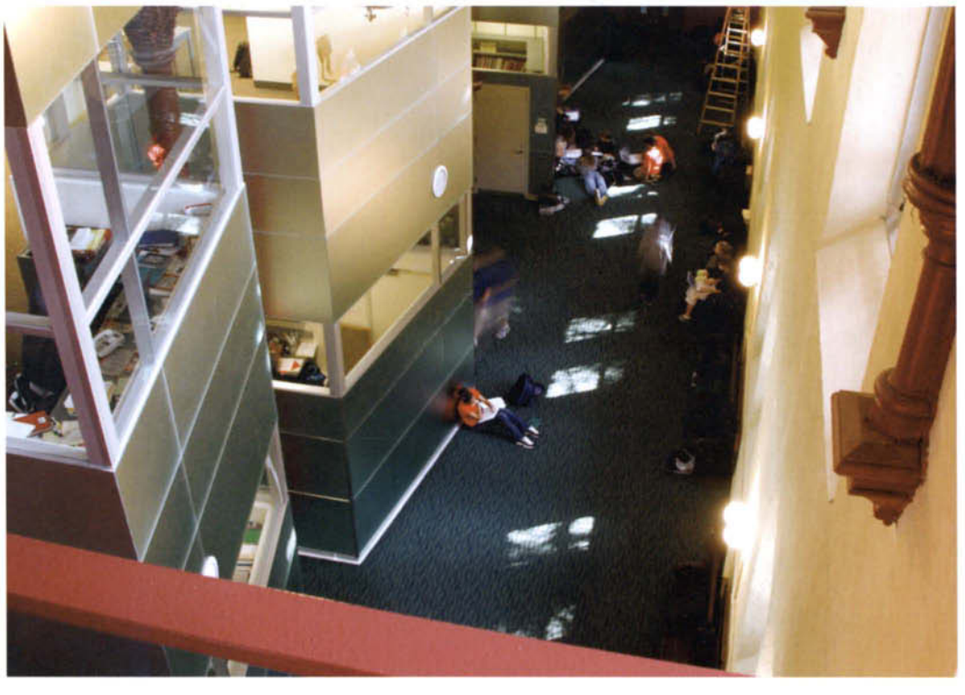
Brooklyn, New York, USA

Architect	H³ Hardy Collaboration Architecture, New York
Pupils	900 aged 3-18 years
Building area	6,317 m² renovation, 836 m² new construction
Average classroom	n/a
Parking spaces	0
Build cost	17 million USD
Completion	2003
Year group system	Age-related groups in pre-kindergarten to grade 12

Imaginative use of an old redundant church structure

Packer Collegiate Institute comprised of five loosely connected buildings, which had been added piecemeal over the course of a century from 1854 to 1969. In addition to these buildings, there was a church, St. Ann's, no longer in use, and a parish house all closely connected but not fully utilised for educational purposes. Prior to the new commission, Packer was using only the cramped main school building, due to the run-down and disconnected condition of the rest. The challenge for the architects therefore was to adapt and integrate all parts of this complex into a progressive 21st century academic programme exploiting all parts to benefit the expanding student body. Improvement work, which was on-going for over four years, has resulted in a complete re-organisation of the plan,

Ground floor plan

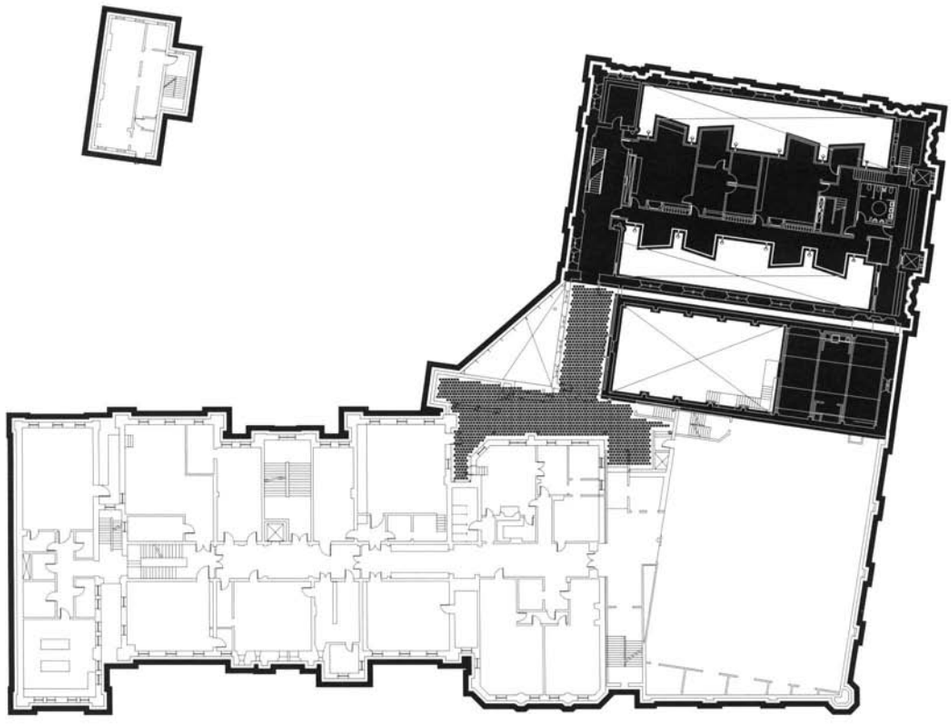


expanding accommodation into the Renwick Church, allowing for the lower, middle and upper schools to each have their own self-contained zones. The parish house has been re-configured as a shared dining room for the whole school.

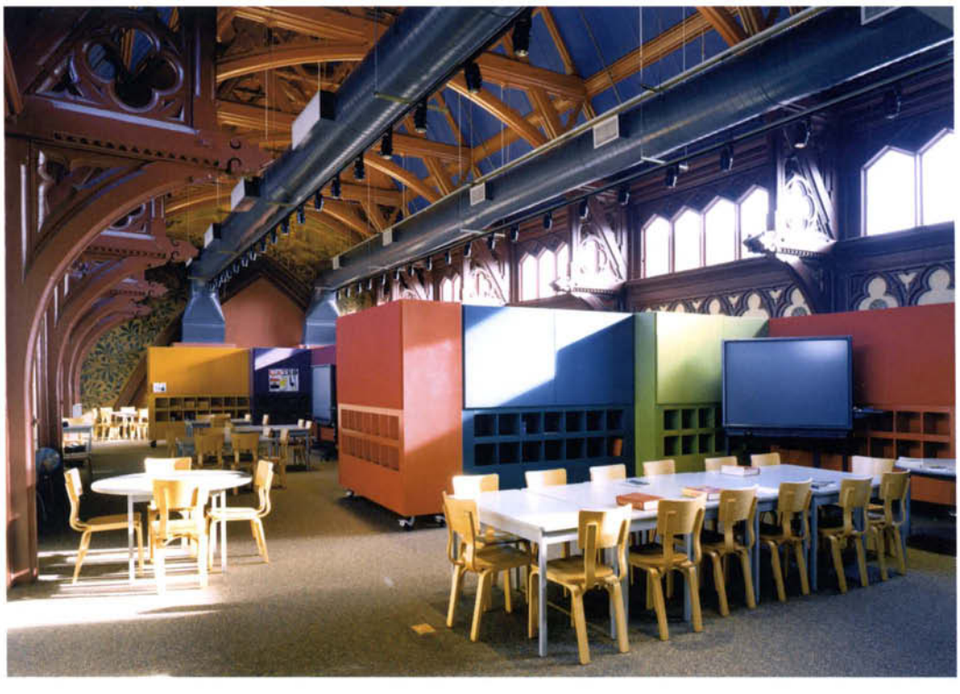
The main challenge for the designers was converting and integrating the church interior into school accommodation. Space for more classrooms was a priority and the old church was too large for its traditional purpose. The key planning move was the insertion of 18 classrooms into the former church, serviced by two 'open' corridors positioned on either side of the nave. This provides two full-height aisles along both sides of the building. Corridors occur at each level alternating between the north and south side of the church (see cross section). This creates a sense of spatial variety and dilutes the impact of noise from students changing lessons and socialising in the break-out areas.

Contemporary materials and modern lighting technology is used carefully to enhance the contrast between the exposed brick and gothic detailing of the original building, and the shiny futuristic new classroom pods with their lightweight bridges and high level access routes. It is this contrast between old and new which gives the project a rich and evocative spatial language. Lightweight, sensitive engineering solutions ensure that the original and the new structural elements work in harmony. The new steel and concrete structural system is set within a volume of load bearing masonry walls, cast iron columns and wooden floor joists which forms a single integrated composition. Mechanical equipment for ventilation was placed so that it does not disfigure the existing rooftop profiles, an issue of great concern to the community, who were consulted widely during the development of the scheme.

Equally the future of the original stained glass, which was felt to be inappropriate to the new secular function, was carefully considered. Some of the windows are of high quality with a vivid range of colours, others are more modest and some are only lightly patterned. 70% of the high quality glass was removed



First floor plan

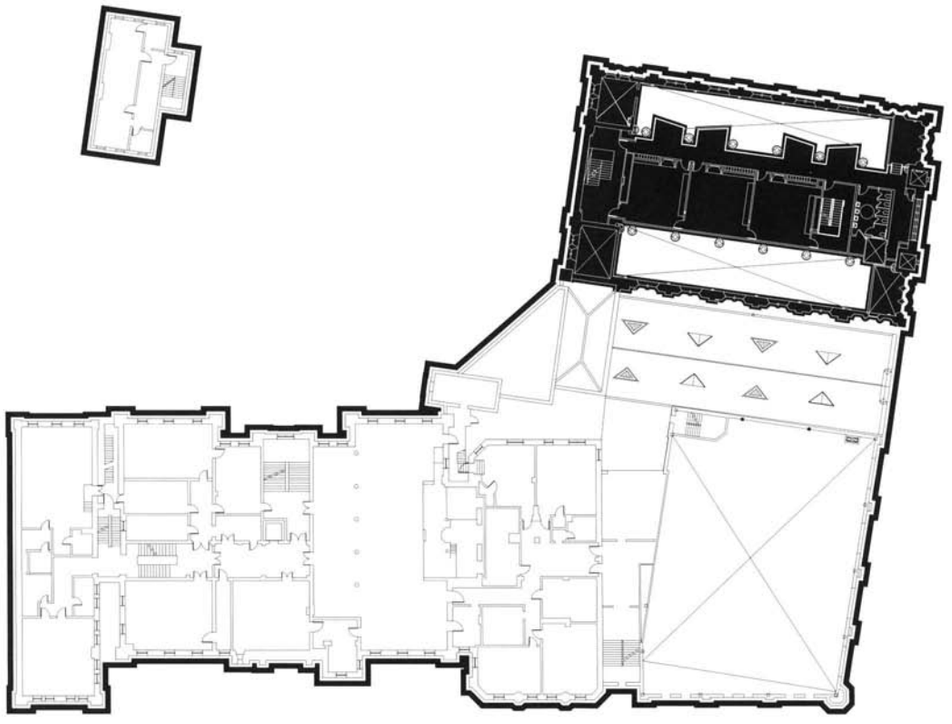


The main refectory in the old chapel | Student break-out area | Restored stained glass window in the former church | Gallery with tracery window

and taken by various museums including the Metropolitan Museum of Art, The Brooklyn Museum of Art and St. Joseph's Stained Glass Museum; all are institutions which can care for this artistic legacy. Where stained glass was removed, new insulated glass windows were installed to fit the original tracery profiles. An overlay of simulated lead frames gives the appearance of individual glass elements set in stone frames. The remaining stained glass was restored and reinstalled in the building's primary façade on the east street elevation. This creates a poetic symmetry between the past and the future.

By balancing the old with the new, the architects have retained the character of the original Victorian church, with its gothic tracery and hanging chandeliers, and successfully inserted a new state of the art four-storey classroom structure, which is no mean feat. Faced with ghost mirrors and lit with warm fluorescent feature lighting, the design allows students to experience the original soaring church interior whilst moving between lessons or enjoying their social time, whilst benefiting from an up to the minute, technology rich learning environment. It is interesting to reflect on how well the internalised world of the classrooms function for study. Perhaps the lack of direct contact to the outside urban landscape beyond the school is in this situation an unforeseen benefit of the unusual design strategy.

Each part of the refurbished building has its own character so that the whole is an integration of dissimilar parts. The new structural system within the walls of the former church is an open and free flowing accomodation compared to the rest of the school which is more conventional and cellular with a central corridor and views onto the surrounding streets from outward looking teaching spaces. The new and the existing form an L shaped plan which wraps around a landscaped courtyard. The parish house, now the only free standing form, has been refurbished. A new circulation plan to cater for the 18 classrooms placed in the church joins up to existing corridors and pathways beneath a new glass atrium. This two and a half-storey volume forms a visual and physical connection to all



Second floor plan

levels of the school, and at night presents the illuminated façades of the church and Packer buildings at the back to the main school courtyard.

The architects believe that for buildings to survive they must be used, and however sad we may feel about St. Ann's fall into disuse as a place of worship, its transformation has brought new life and vitality to its venerable structure. The church's contribution to the wider community is clear as it retains its presence both to the surrounding streets and most importantly to the school's courtyard, a vibrant new urban space within the community with the school's main entrance (which is around the corner from the original church entrance). The fusion of old and new has been a sensitive and respectful marriage, very much a result of the close working relationship between the designers and the client community to create a new building which fuses the old into its modern functions. In itself this is a fitting symbol of the school's ethos and philosophy, an environment for the future which respects and celebrates its past.